AFMR Southern Regional Meeting Abstracts

Cardiovascular Club: Mentored Oral Presentation
11:00 AM
Thursday, February 21, 2008

1 THE PREDICTIVE VALUE OF LEFT ATRIAL SIZE FOR INCIDENT ISCHEMIC STROKE AND ALL-CAUSE MORTALITY IN AFRICAN AMERICANS: THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY


Purpose of Study: The association between left atrial (LA) size, ischemic stroke and death has been investigated in non-Hispanic whites but not in African Americans despite their disproportionately higher rates of stroke and cardiovascular mortality.

Methods Used: Participants in the Jackson cohort of the Atherosclerosis Risk in Communities study have had extensive baseline evaluations, echocardiograms during the third examination (1993–1995), and have been followed for incident ischemic stroke and all-cause mortality.

Summary of Results: Of total 1887 participants 65% were women and had a mean age ± SD of 58.9 ± 5.7 years. LA diameter by tertile was significantly related to hypertension, diabetes and body mass index (BMI) (p=0.0001 for each). Over a median follow-up of 8.8 years for ischemic stroke and 8.9 years for all-cause mortality, there were a total of 103 strokes (6.47 per 1,000 person-years) and 206 deaths (13.3 per 1,000 person-years). After adjusting for age, sex, cigarette smoking, diabetes, hypertension, BMI, total cholesterol: HDL ratio, and triglycerides in a multivariable model, LA size was significantly related to all-cause mortality.

Conclusions: LA size remained significantly related to all-cause mortality after all-cause mortality, there were a total of 103 strokes (6.47 per 1,000 person-years) and 206 deaths (13.3 per 1,000 person-years). After adjusting for age, sex, cigarette smoking, diabetes, hypertension, BMI, total cholesterol: HDL ratio, and triglycerides in a multivariable model, LA size was significantly related to all-cause mortality (hazard ratio (HR) 1.58; 95% CI: 1.23, 2.00, p=0.001). The presence of diabetes in adulthood (OR: 8.83, p=0.001) and diastolic blood pressure in childhood (OR: 1.13, p=0.014) predicted concentric type of LVH in adulthood.

2 OBESITY IS THE MAJOR PREDICTOR FOR DEVELOPMENT OF LEFT VENTRICULAR REMODELING IN YOUNG ADULTS: BOGALUSA HEART STUDY


Purpose of Study: Left ventricular structural alterations are associated with increased cardiovascular (CV) morbidity and mortality in middle-aged and older population. This study was aimed to determine childhood and adulthood CV risk predictors of left ventricular (LV) geometric remodeling in a biracial (black-white) population of young adults.

Methods Used: As part of the Bogalusa Heart Study, a biracial community-based investigation of the evolution of CV diseases since childhood, echocardiographic examinations of the heart were performed in 824 adult subjects (age range 24 to 44 years, average 36.3 years, 41% male, 69% white); risk factor variables both in their childhood (24.6 years earlier) and adulthood. LV geometric patterns were determined according to LV index and relative wall thickness from standard criteria.

Summary of Results: Eccentric type of LV hypertrophy (LVH) and concentric remodeling were the most commonly encountered LV geometric patterns in this young adult population (4.7% for each). Eccentric LVH was more frequent in blacks (p=0.025, adjusted for gender). Compared to normal geometry and concentric remodeling geometric patterns, subjects with eccentric and/or concentric types of LVH had significantly increased body mass index, systolic and diastolic blood pressures, waist and hip circumferences, glucose, insulin, HbA1c, triglycerides, VLDL-cholesterol, total- / HDL cholesterol ratio, uric acid and albumin / creatinine ratio levels after adjustments for race, gender and age. Multinomial logistic regression analyses were done to determine the predictors of LV geometric remodeling according to adult as well as childhood CV risk factor variables. Both adulthood and childhood body mass index predicted eccentric type of LVH (OR: 1.15, p=0.001 and OR: 1.18; p=0.001, respectively). The presence of diabetes in adulthood (OR: 8.83, p=0.001) and diastolic blood pressure in childhood (OR: 1.13, p=0.014) predicted concentric type of LVH in adulthood.

Conclusions: In this community-based study of young adults, eccentric type of LV hypertrophy was more frequent and obesity was the only consistent and significant predictor of this type of remodeling in the heart.

3 ELEVATED SERUM COBALAMIN IN PATIENTS WITH DECOMPENSATED HEART FAILURE


Purpose of Study: Liver is a major storage site for cobalamin, or vitamin B12. The cellular uptake of circulating B12, bound to its transporter protein, transcobalamin (TCII), occurs via a membrane-bound receptor-mediated transport process. These receptors are primarily found on the endothelium of the hepatic vascularity, where B12-TCII binding and internalization occurs. The endothelium therefore plays a major role in regulating B12 uptake. The elevation in systemic venous pressure seen in decompensated biventricular failure leads to an engorgement of centrilobular veins with the stasis of blood in hepatic sinusoids having the potential for endothelial dysfunction. We hypothesized the hepatic congestion that accompanies biventricular failure is associated with impaired cobalamin uptake, expressed as elevated serum cobalamin.

Methods Used: We monitored serum B12 at the time of admission in 91 hospitalized patients: a) 38 (32 M; 52±2 yrs) with chronic biventricular failure due to a dilated cardiomyopathy (EF 26±2%) and who had decompensated failure that included clinical and echocardiographic evidence of systemic venous distention (with inferior vena cava dilatation) and functional tricuspid regurgitation (TR) of moderate to marked severity; b) 18 (11 M; 55±2 yrs) with left heart failure due to acute myocardial infarction, ischemic cardiomyopathy, or hypertensive heart
4 SIMILAR PREVALENCE OF HYPERALDOSTERONISM IN AFRICAN AMERICAN AND WHITE SUBJECTS WITH RESISTANT HYPERTENSION

S. Husain, K. Gaddam, E. Pimenta, and D.A. Calhoun. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To test for racial differences in the prevalence of hyperaldosteronism in subjects with resistant hypertension.

Methods Used: Consecutive subjects referred to the University of Alabama at Birmingham (UAB) hypertension clinic for resistant hypertension (uncontrolled blood pressure on 3 antihypertensive agents) were prospectively evaluated with a plasma aldosterone concentration (PAC), plasma renin activity (PRA), a 24-hr urine collection for aldosterone, cortisol, sodium and potassium during a normal diet. All subjects were on a stable antihypertensive regimen without use of potassium sparing diuretics.

Summary of Results: A total of 359 patients with resistant hypertension were evaluated, including 174 male and 185 females. There were 190 white and 169 black subjects. Blacks were younger than whites (Age: 51.7±10.90 vs. 57.2±10.96 years, p<0.001), had a higher BMI (34.04±7.38 vs. 31.74±5.91 kg/m, P<0.005), higher clinic BP (147±22/88±17 vs. 141±21/81±14 mm Hg p<0.001). Number of antihypertensive medications (4.08±1.25 vs. 4.13±1.08) and urinary aldosterone excretion (12.28±10.36 vs. 12.86±10.73 μg/24-hr) were similar for blacks and whites. Whites had a higher serum potassium (3.99±0.46 vs. 3.83±0.43 mEq/L, p<0.001), PAC (13.75±9.75 vs. 11.93±10.85 ng/dL, p=0.015), urinary cortisol (106±68/60.39 vs. 90.47±53.21 μg/24-hr, p=0.019), urinary sodium (195.88±82.78 vs. 171.12±91.08 mEq/24-hr, p<0.001), urinary potassium (73.00±32.53 vs. 51.89±24.83 mEq/24-hr, p<0.001), and BNP (51.63±81.59 vs. 41.69±76.22 pg/mL, p=0.023) than blacks. The prevalence of hyperaldosteronism on the basis of ARR ≥20 (29.6% vs. 31.1%) or using PRA<1.0 and urinary aldosterone ≥12μg/24-hr (23.7% vs 22.6 %) was not different by race.

Conclusions: These data demonstrate that there is no racial difference in the prevalence of hyperaldosteronism in subjects with resistant hypertension. These findings support equal vigor in screening African American and white patients with resistant hypertension for primary aldosteronism.

5 AN UNUSUAL CASE OF ENCEPHALITIS

J. Johnson. LSU, New Orleans, LA.

Case Report: J.S. is a 24 year old male with no past medical history who presented to the emergency department with a severe headache, intractable vomiting and fever. He was diagnosed with a UTI and discharged on antibiotics. He returned three days later with worsening headache, intractable vomiting, neck pain and confusion.

Physical exam revealed a temperature of 99.2 with lethargy, photophobia and meningeal signs. Lumbar puncture was performed and sent for bacterial and fungal cultures. Cerebrospinal fluid (CSF) was hazy in appearance and revealed 51 white blood cells, 140 red blood cells, with a differential of 1% segmented neutrophils, 89% lymphocytes and 10% monocytes. JS was admitted with a diagnosis of encephalitis and started on vancomycin, ceftriaxone, and acyclovir. Although he remained afibrile, his mental status continued to deteriorate. He developed urinary/fecal incontinence, ataxia, and decreased muscle strength. CT scan of head and EEG were unremarkable.

Neurology was consulted and a repeat lumbar puncture with cultures for arboviruses was done. CSF serology returned with the presence of West Nile Virus IgG and IgM antibodies. He was diagnosed with West Nile encephalitis and slowly recovered, leaving the hospital with outpatient physical therapy.

West Nile encephalitis is an infection of the brain caused by a flavivirus and is transmitted by mosquitoes. The number of cases of West Nile infections continue to increase each year in the U.S. Older age remains the major risk factor for developing encephalitis. In 2002, the median age among neuroinvasive disease cases in the U.S., was 64. Clinical manifestations include fever, headache, neck stiffness, muscle weakness and confusion. CSF usually shows pleocytosis with predominance of lymphocytes. Protein is universally elevated and the glucose is usually normal. Diagnosis is made by the detection of specific IgM antibodies in the CSF. Although CT scan of brain usually doesn’t show disease, MRI may demonstrate enhancement of leptomeninges or the periventricular area in one-third of patients. EEG typically shows generalized slowing which is more prominent in the frontal or temporal region. Treatment is usually supportive.

Although patients at highest risk are usually over the age of 50, it is important to remember that any age can be affected. This case demonstrates the presentation of West Nile encephalitis in an unusually young patient.

6 GUILLAIN-BARRÉ SYNDROME (GBS) AS INITIAL CLINICAL PRESENTATION OF WEST NILE VIRUS AND ITS IMPLICATION IN THERAPY

Y. Yaqub, and K. Nugent. TTUHSC, Lubbock, TX.

Purpose of Study: Most persons infected with the West Nile virus are asymptomatic. The usual clinical presentation is a self-limited febrile illness with fatigue, fever and weakness. Ascending lower extremity paralysis is a rare presenting complaint in <1% of infected population. This case series demonstrates the importance of recognizing GBS as initial clinical sign of West Nile virus infection since this diagnosis affects initial disease management.

Methods Used: Retrospective review of patient charts was done after obtaining IRB approval. Eleven patients presented with GBS like ascending paralysis between June 06 and June 07. West Nile virus diagnosis was based on CSF IgM-Ab (MAC-ELISA). GBS diagnosis was based on clinical presentation and electrodiagnostic studies.

Summary of Results: Eleven cases (6 women and 5 men) with mean age of 59 years (range=10-77) presented with GBS. Two patients (18%) had WN virus IgM ab in their CSF. CASE 1: 57 year old female presented with weakness in her legs progressing over 48 hours which was initially attributed to GBS. On physical examination she had tremor and areflexic weakness in both arms and asymmetric weakness in the legs with hypoactive reflexes. West Nile virus antibody was detected in CSF. Electromyographic studies showed reduced motor amplitudes with
irregular conduction velocities. CASE II: 51 year old male presented with weakness in his arms and legs. Electroencephalography showed generalized, continuous slowing, especially in the frontotemporal regions. Acute extremity paralysis was initially attributed to GBS. He was diagnosed as having West Nile encephalitis based on IgM antibody (7.63) to WN virus in CSF.

Conclusions: Ascending paralysis is a rare presentation in WN encephalitis and usually confused with GBS. About 18% of the patients in our series who presented with GBS during one year had IgM antibody to WN virus in CSF. This case series demonstrates importance of recognizing GBS as an initial presentation in West Nile virus CNS involvement. We suggest that CSF should be sent for WN IgM studies along with other routine tests in GBS cases to guide appropriate initial therapy.

8
INFLAMMATORY CLONAL T-CELL DISEASE ASSOCIATED WITH EOSINOPHILIA SUCCESSFULLY TREATED WITH HYDROXYUREA AND CYCLOSPORINE

P. Klemawesch, M. Kahn, and L. Wild. Tulane University, New Orleans, LA.

Case Report: Rationale: To describe the successful treatment of inflammatory T-cell disease associated with eosinophilia with hydroxyurea and cyclosporine.

Methods: An increasing body of research shows that a significant portion of “idiopathic” eosinophilia is due to clonal T-cell populations with production of high levels of IL-5. There is no standardized treatment regimen for these patients. We present the case of a 62 year old man with eosinophilia, clonal T-cell proliferation, asthma, and angioedema refractory to prednisone successfully treated with hydroxyurea and cyclosporine. Diagnosis was made by flow cytometry demonstrating a clonal T-cell population and bone marrow biopsy with PCR confirming T-cell clonality.

Results: Treatment with low-dose hydroxyurea followed by cyclosporine resulted in reduction of absolute eosinophil count from 53,000/ 

mL to 1,200/mL along with significant improvement in the patient’s clinical performance, with results sustained over 9 months of follow-up while on cyclosporine.

Conclusions: Hydroxyurea and cyclosporine may be an effective treatment for inflammatory clonal T-cell disease associated with eosinophilia.

9
A WAYWARD CYST - HEPATIC PSEUDOCYST AFTER ACUTE PANCREATITIS

S Kalra1, M Rogers1, M Michael1, S Duggal2, and RD Smalligan1. 1East Tennessee State University, Johnson City, TN and 2East Tennessee State University, Johnson City, TN.

Purpose of Study: Our report reminds internists to include intrahepatic pseudocyst in the differential of a cystic hepatic lesion in the setting of pancreatitis.

Methods Used: Clinical vignette.

Summary of Results: A 60-year-old alcoholic man was admitted with two days of epigastric pain, nausea, and vomiting. There was no history of fever, jaundice, hepatitis, or weight loss. Physical exam: normal vitals, epigastric tenderness and mild hepatomegaly. Laboratory: WBC 16,000, amylase 656, lipase 4590, bilirubin 0.9, AST 281, and ALP 135. CT scan: severe pancreatitis with an 8cm cystic lesion in the liver suspicious for abscess or necrotic neoplasm. Aspiration of the cyst yielded green fluid without organisms on gram stain and cultures were negative for bacteria and fungus. Amylase level in the fluid was >20,000.

Conclusions: Pseudocysts develop in the pancreas of 2-8% of patients with acute pancreatitis. They can occur at various other sites depending on the path taken by the activated pancreatic enzymes and subsequent tissue digestion. Outside the pancreas, pseudocysts occasionally occur in the lesser sac, retroperitoneum, duodenum, kidney, stomach, and in only a few case reports, the liver. The differential of cystic lesions of the liver includes simple cysts, polycystic disease, hemangiomas, abscesses, hydatid cysts, necrotic neoplasms, and other rare causes including our described intrahepatic pseudocyst. The proposed mechanism for formation of an intrahepatic pseudocyst is that pancreatic enzymes leak from the pancreas and follow different pathways to reach the hepatic parenchyma. In our case, it is suspected that the enzymes exuded from the head of the pancreas along the hepatoduodenal ligament to the porta hepatis and formed the pseudocyst in the caudate lobe of the liver. While most pseudocysts, pancreatic or extrapancreatic, resolve spontaneously and require no intervention, they can be complicated by persistent nausea, vomiting, and abdominal pain, or can rupture, form fistulas, obstruct the common bile duct or become infected. Percutaneous drainage has been an effective adjunctive treatment in many of these cases and surgery is reserved for only the most refractory. The intrahepatic pseudocyst is confirmed by finding an elevated amylase in aspirated fluid.
Case Report: A 43-year-old African American Female with End Stage Renal Disease (ESRD) secondary to SCIH admitted for hemodialysis 10 months prior to admission. Upon initiation, Hb was found to be 7.0 g/dL. As per dialysis unit protocol, ESA was initiated. During the two months prior to admission she had two episodes of severe pain with swelling over her left arm. She was treated with oxygen, hydrated cautiously, and placed on Diltiazem PCA pump. She was admitted to LSU Family Medicine and found to have a Hb of 9.1 g/dL. After transfusion of two units of packed red blood cells and electrolyte correction, patient became more stable with improvement of chest and bone pain crisis over the next few days.

Conclusion: A stable patient with SCIH was started on chronic hemodialysis treatment and under K-DQI guidelines her anemia treated with erythropoietin. Due to the likelihood that ESA will stimulate an increase in Hb S production in SCIH patients resulting in further sickling of the RBC, we propose that ESA should be given in conjunction with hydroxyurea until further studies can determine the best way to treat anemia in SCIH patients with ESRD.

11 SUCCESSFUL TREATMENT OF A LARGE RIGHT ATRIAL SEPTIC THROMBUS RELATED TO A HEMODIALYSIS CATHETER
A. Kathresal1, A. Baier1, S. Pillai1, S. Morse1, M. Bazan2, E. Aguilar1, and E. Reisin1. 1LSU Health Sciences Center, New Orleans, LA and 2LSU Health Sciences Center, New Orleans, LA.

Background: Optimal management of central venous catheter related right atrial thrombi, particularly when they are infected, remains unclear. Removal of the infected line after minimizing the risk of fatal pulmonary embolism is paramount. This is the first case reported of catheter related large atrial septic thrombus successfully managed with low dose tissue plasminogen activator (TPA).

Case History: A 53-year-old African American female on hemodialysis (HD) presented with fever. With no other sources identified her access pump. She was admitted to LSU Family Medicine and found to have a Hb of 9.1 g/dL.

Hematology was consulted and plans were made to phlebotomize patient to bring Hb back to her baseline of 7.0 g/dL. On day 4 of admission, the patient’s Hb dropped to 4.7 g/dL with deteriorating pain crisis and chest pain radiating to her back and shortness of breath.

While on dialysis, she was found to be in atrial fibrillation with rapid ventricular response, she was transferred to the ICU and placed on diltiazem drip for rate control; chest CT scan revealed numerous areas of consolidation compatible with the diagnosis of pulmonary infarctions. After the transfusion of an additional two units of packed red blood cells and electrolyte correction, patient became more stable with improvement of chest and bone pain crisis over the next few days.

Conclusion: A stable patient with SCIH was started on chronic hemodialysis treatment and under K-DQI guidelines her anemia treated with erythropoietin. Due to the likelihood that ESA will stimulate an increase in Hb S production in SCIH patients resulting in further sickling of the RBC, we propose that ESA should be given in conjunction with hydroxyurea until further studies can determine the best way to treat anemia in SCIH patients with ESRD.

12 SUPERIOR VENA CAVA SYNDROME IN HUMAN IMMUNODEFICIENCY VIRUS-INFECTED PATIENTS
T. Rehman, and D.A. Welsh. LSU Health Sciences Center, New Orleans, LA.

Case Report: The clinical presentation of superior vena cava syndrome (SVCS) is due to either extrinsic compression of, or an intrinsic obstruction to the blood flow through superior vena cava (SVC). The purpose of this case series is to highlight the multiple causes of this syndrome in the HIV-infected patients.

Case 1: A 48-year-old man, smoker, with HIV infection (CD4 = 226) presented with dyspnea, upper extremity edema and facial swelling. A CT scan of the chest showed a mediastinal mass compressing the SVC. A bronchoscopy revealed diffuse B-cell lymphoma.

Case 2: A 53-year-old HIV+ woman (CD4=157) was admitted with dyspnea and facial swelling. A diagnostic biopsy of the palpable left supraventricular lymph node showed diffuse B-cell lymphoma.

Case 3: A 33-year-old woman with AIDS (CD4=6) and end-stage renal disease on hemodialysis through a right subclavian catheter, presented with bilateral upper extremity pain and swelling, headache and facial puffiness. An upper extremity Doppler study showed varying degree of thrombotic occlusion of internal jugular and subclavian veins bilaterally.

Discussion: Classically, SVCS is due to benign (40%) and malignant (60%) causes. Lung cancers (46%) and lymphomas (8%) are the most common malignant causes, while indwelling intravascular device-induced thrombosis is seen in 28% of cases and is the most common non-malignant process leading to this condition. The data regarding the incidence of SVCS in HIV-infected patients is sparse. HIV-infected patients are at higher risk of developing conditions that may lead to SVCS. There is a 4-fold higher risk of lung cancer, independent of smoking and a 165-fold higher risk of lymphoma in HIV-infected individuals. It is also known that 70% of HIV-infected patients have acquired protein S deficiency during the course of their illness. The greater predisposition for these conditions in HIV-infected patients may reflect a higher prevalence of SVCS in this subgroup. This case series attempts to underscore the need for increased awareness of SVCS in HIV-infected patients with these predisposing conditions.

13 A SPONTANEOUS COMPARTMENT SYNDROME IN A PATIENT WITH SLE AND DIABETES MELLITUS
S. Patutswamy, P. Atwal, and S. Niranjan. Coney Island Hospital, Brooklyn, NY.

Case Report: Compartment Syndrome is a surgical emergency which can result from a variety of causes, the most common being trauma. Rarely it can develop spontaneously in association with diabetes, hypothyroidism, nephrotic syndrome. Four cases have been described with diabetes mellitus with various theories. We describe a patient with diabetes mellitus and SLE who developed a spontaneous compartment syndrome.
A 41-year-old Asian male presented to emergency room with severe pain and swelling of his right hand and forearm of one-day duration. He denied any history of trauma and fever. Past medical history was significant for diabetes mellitus type II, hypertension, SLE with lupus nephritis on prednisone. Physical examination was essentially normal except for swelling of the right hand and forearm. X-ray of the patient’s hand and forearm did not reveal any fracture or gas in soft tissues. Hematological investigation revealed leukocytes 11.7 X 10^6/L. His biochemical profile was normal except for creatinine being 4.9. His CPK was 117. Diagnosis of compartment syndrome was entertained and measured compartment pressures revealed, forearm pressure of 45 mm Hg, and hand pressure of 72 mm Hg. The patient underwent emergent fasciotomy under general anesthesia. No evidence of necrosis, ischemia, or infection was appreciated. Acute compartment syndrome is of particular concern because the diagnosis should be made essentially on clinical grounds and must be acted upon promptly if serious and potentially irreversible injury to the relevant compartment is to be avoided. It is progressive and irreversible unless surgical decompression is performed. Spontaneous compartment syndrome in a patient with history of diabetes mellitus although rare is possible and in patients presenting with characteristics symptoms, index of suspicion should be high, as early intervention can be limb and life saving.

14 THYROTOXIC CRISIS PRESENTING AS ACUTE ABDOMEN MIMICKING SUPERIOR MESENETERIC ARTERY EMBOLISM: A CLINICAL CASE SEMINAR
H.A. Shabanah Altamimi, Texas Tech University HSC, Lubbock, TX.

Case Report: A 72-year-old female presented with a 2 day history of abdominal pain, nausea, vomiting, watery diarrhea, abdominal distension, fever of 102.3°F, sweating, tremors, restlessness and confusion. Her past medical history was significant for hyperthyroidism. On examination, she had fever, thyroid gland was soft, diffusely enlarged. The abdomen was distended, not tender, bowel sounds were hyperactive. The lab data of showed a TSH of < 0.01 U/L with an elevated free thyroxine to 60 pmol/L and elevated triiodothyronine to 10 nmol/L, CT abdomen was normal. An ECG showed evidence of rapid atrial fibrillation. An emergent superior mesenteric angiogram showed no evidence of embolism (figure 1). She was started on IV hydrocortisone, potassium iodide, IV propranolol and high dose propylthiouracil. Twenty four hours later, the patient’s symptoms completely resolved. The existence of a temporal relationship between abdominal symptoms and thyrotoxicosis and its response to treatment with antithyroid drugs makes establishment of relationship between a thyrotoxic crisis and abdominal pain likely. So far, this relationship has been described in a very small number of case reports. Thyrotoxic crisis is a life threatening condition which may be fatal. Early recognition, based on a high index of suspicion, and treatment is necessary to avoid fatality.

15 SOLITARY SQUAMOUS PAPILLOMA OF THE LUNG
University of Tennessee, Memphis, TN.

Purpose of Study: Benign solitary tumors of the lung though uncommon, should always be considered in the differential diagnosis of any patient presenting with hemoptysis and lung mass.

Methods Used: A 51-year-old male presented to the pulmonary clinic with progressive hemoptysis of 2 years duration. He also had intermittent cough, but denied any other symptoms. He denied bleeding from any other site. His past history was significant for HTN, Hepatitis C and eye surgery. He had a 60 pack year history of smoking and no history of TB contacts or incarceration. His vital signs were normal. Physical exam showed a well built male in no distress. His lungs were clear to auscultation. He had inguinal lymphadenopathy but no cervical or axillary lymphadenopathy. His basic laboratory studies showed a normal CBC, CMP and urinalysis. CT scan of the chest revealed a 3.8 cm mass in the left lower lobe which was suspicious for a malignancy. Review of his records from previous admissions revealed that he had undergone bronchoscopy and biopsy for the same problem 2 years earlier which showed squamous metaplasia but no malignancy. On comparison with previous images, the mass was noted to have increased in size. Due to suspicion for malignancy, a repeat bronchoscopy was performed and this time the biopsy results were positive for a benign squamous papilloma. Due to persistent and worsening hemoptysis, the cardiothoracic surgery service was consulted and the patient subsequently underwent left lower lobectomy. Pathological analysis of the resected specimen confirmed the diagnosis of benign squamous papilloma. HPV test on the resected specimen was negative.

Summary of Results: Squamous papilloma of the lung is one of the rare benign tumors of the lung. It accounts for 0.38 % of all lung tumors and 7 to 8 % of all benign lung tumors. A review of the literature shows that there is a high risk of malignant transformation in cases of squamous papilloma associated with certain subtypes of HPV. In addition, in some of the cases a concomitant malignant lesion was missed in a bronchoscopic biopsy but observed in a resected sample.

Conclusions: Because of the malignant potential of these papillomas, it is important for the medical community to be aware of the need to test all cases of squamous papillomas for HPV and manage these patients appropriately, irrespective of their HPV status.

Pediatric Clinical Symposium
1:00 PM
Thursday, February 21, 2008

16 NO "ORDINARY" GASTROENTERITIS: LARGE PANCREATIC PSEUDOCYST IN A 4-YEAR-OLD
L.A. Boateng and R.D. Smalligan. Quillen College of Medicine, East Tennessee State University, Johnson City, TN.

Purpose of Study: To remind pediatricians that pancreatitis and pseudocyst formation can mimic acute gastroenteritis.

Methods Used: Clinical vignette.

Summary of Results: A 4-year-old boy presented with a one week history of diarrhea and vomiting followed by a 4-day history increasing epigastric pain which limited his daily activity and caused significant weight loss. His family was repeatedly told at clinic and emergency room visits that he had gastroenteritis. He had no antecedent trauma, recent illness or travel. PMH was unremarkable and he was on no...
chronic medications. Family history was negative for cystic fibrosis, gallbladder and pancreatic disease. PE: Temp102.3, P125, RR 32, BP 102/61. He was an acutely ill, dehydrated, cachectic male lying in the left lateral decubitus position. There was no adenopathy, lungs were clear, heart normal and the abdomen was distended, tympanic and rigid though bowel sounds were present. Laboratory: CBC normal except 1,000,000 platelets, BUN/Cr, AST/ALT and bilirubin were normal. Amylase 1156, lipase 1494. CT scan and ultrasound of the abdomen showed a large 10cm by 3cm by 3cm pancreatic pseudocyst with a normal gallbladder. The patient was managed in consultation with pediatric surgery with IV fluids, analgesia and TPN but had prolonged symptoms including line sepsis which required IV antibiotics. While drainage of the pseudocyst was considered due to its size and persistent symptoms, a trial of 4 weeks of conservative therapy was pursued and the pseudocyst eventually completely resolved by CT follow-up.

Conclusions: Pancreatic pseudocysts are uncommon in the pediatric population but are associated with significant morbidity. The most common associated predisposing factors include recent abdominal blunt trauma, complicated acute pancreatitis and chronic pancreatitis. While historically treatment of pancreatic pseudocysts in children has included surgical drainage if large in size or if symptoms are persistent, recent trends are to manage them more conservatively as was done in our case. Pediatricians need to have a high index of suspicion for pancreatitis and its complications if a patient’s symptoms of presumed gastroenteritis do not resolve in timely fashion.

17 SYSTEMIC TISSUE PLASMINOGEN ACTIVATOR USE IN A PEDIATRIC INTENSIVE CARE UNIT

B. Harden, M. Kong, K. Benner, and P. Prabhakaran. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To highlight the indications, dosage, and safety concerns of systemic tissue plasminogen activator(tPA) in critically ill children.

Methods Used: We report a series of 3 patients who received intravenous tPA for thrombolysis. The first patient is an 18 year old with relapsed acute lymphocytic leukemia who recently received PEG-asparaginase prior to presenting to the Emergency Department (ED) in severe shock. Physical exam was significant for rapidly progressive superior vena cava syndrome. CT venogram confirmed near complete occlusion of her superior vena cava. Intravenous tPA was infused at 0.02 mg/kg/hr for 13 hours. A clinical response was evident within 4 hours and greater than 50% radiographic resolution of thrombus was seen in 10 hours. Complications included oozing at venipuncture sites and hemoptysis. The second patient is a 17 year old with lower extremity venous malformation, status post ethanol sclerotherapy 2 weeks prior, who presented in PEA with acute right heart failure from multiple, bilateral pulmonary emboli. He received a 0.5 mg/kg tPA bolus followed by 5 hour infusion at 0.1 mg/kg/hr with dramatic improvement in circulation. Therapy was complicated by gastrointestinal bleeding and oozing from venipuncture sites. The third patient is a 3 year old with recurrent metastatic rhabdomyosarcoma who presented to the ED in shock. Echocardiogram demonstrated acute right ventricular failure. CT chest revealed a massive left pulmonary artery thrombosis. Intravenous tPA was initiated at 0.5 mg/kg/hr and discontinued 2 hours later following a full arrest likely secondary to a pulmonary hypertensive crisis. Autopsy demonstrated a dilated pulmonary trunk and arteries with absence of thromboemboli. Hypercoagulability work-up was unrevealing in the first two patients.

Summary of Results: Although well described in adult literature, the use of tPA in pediatric populations remains unclear. Understanding the indications and complications of using tPA can aid in clinical decision making and may be lifesaving under certain circumstances.

Conclusions: It is important for pediatricians to understand the indications, efficacy, and complications of tPA usage. This case series highlights the fact that prompt institution of thrombolytic therapy in a select cohort of critically ill children may be lifesaving and can be safely undertaken.

18 ACYCVLOVIR RESISTANT VACCINE STRAIN VARICELLA INFECTION IN A PATIENT WITH NEUROBLASTOMA

C.J. Bryan1, S. Daily2, G. Jefferson2, C. Hartline2, M. Prichard2, M. Shimamura2, L. Hilliard1, and K. Cassady2. 1University of Alabama at Birmingham, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: A 21-month old girl with stage IV neuroblastoma developed disseminated varicella-zoster infection while receiving cytotoxic chemotherapy. She had been vaccinated with the attenuated Oka strain of the varicella virus one week prior to initiation of chemotherapy and approximately 5 weeks before the first appearance of skin lesions. Despite acyclovir therapy, her varicella persisted, raising concern for resistance. Due to the rarity of acyclovir resistance in vaccine-associated disease and the severe nature of her infection we sought to isolate the virus and evaluate in-vitro resistance.

Methods Used: Polymerase chain reaction (PCR) of virus isolated from culture of a skin lesion was used to determine the origin of the varicella virus. Anti-viral resistance was determined by plaque assay and further elucidated by viral thymidine kinase enzymatic analysis.

Summary of Results: Polymerase chain reaction (PCR) of virus isolated from culture of a skin lesion was determined to be consistent with the Oka strain of the virus. In-vitro sensitivity analysis revealed high-level resistance to acyclovir. Further characterization of the isolated strain confirmed a mutation of the viral thymidine kinase (TK) gene whose product did not exhibit detectable enzymatic activity. The patient was ultimately treated with foscarinet but did not demonstrate full resolution of the varicella until cessation of cytotoxic chemotherapy. Three months after cessation of initial chemotherapy, the patient experienced relapse of the neuroblastoma but was ultimately able to undergo autologous stem cell transplantation without varicella reactivation.

Conclusions: This is the second reported case of acyclovir resistant Oka strain varicella developing in a child receiving chemotherapy and it is the first case in which the Oka strain virus was recovered and demonstrated to possess antiviral resistance by plaque assay and TK enzymatic analysis.

19 PNEUMATOSIS INTESTINALIS IN A FOUR-WEEK OLD WITH PROTEIN-INDUCED COLITIS

T.W. Jester1, S. Saeed2, and R. Dimmitt2. 1University of Alabama at Birmingham, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

Case Report: Protein-induced colitis is not a rare disease and is a common cause of hematocrit in infants. Usually it is diagnosed clinically based upon presentation and symptom resolution with withdrawal of the offending allergen. Radiographs are routinely not obtained. We report a case of allergic colitis confirmed by rectal biopsy, presenting with pneumatosis intestinalis and resolution of symptoms upon transition to free amino acid based formula. The patient, a former 34-week premature female with Trisomy 21, presented at four-weeks of age...
age with grossly bloody stool. Physical exam was unremarkable other than for minimal abdominal tenderness. An abdominal radiograph was obtained due to concerns with association of Trisomy 21 and Hirschsprung’s disease. Pneumatosis was found on the x-ray and a rectal biopsy was performed to assess for presence of ganglion cells. Pathology revealed presence of ganglion cells and an eosinophilic infiltrate consistent with protein-induced colitis. After 7 days of bowel rest, enteral feeds were restarted with an amino acid based formula. The patient had no further symptoms following initiation of the elemental diet, and became guaiac negative by the time of discharge from the hospital. As demonstrated in this case, pneumatosis may be seen in protein-induced colitis and should be considered as a possible cause other than for necrotizing enterocolitis. This is the first report in English literature of pneumatosis associated with protein-induced colitis.

20 BACK PAIN AS PRESENTING SYMPTOM OF LEUKEMIA

S. Lycans1, and K. Monroe2. 1UAB School of Medicine, Birmingham, AL and 2University of Alabama, Birmingham, AL.

Purpose of Study: A 5 yo black female presents with the chief complaint of back pain and possible seizure. She awoke this am complaining of lower back pain while in bathroom, she fell against the wall and had shaking of her arms and legs with eyes rolling back into her head. There was no loss of bowel or bladder function and no postictal period. Patient now complains of lower back pain.

Methods Used: ROS: intermittent back pain since fall from swingset 3 months ago. Patient occasionally complains of dizziness and enuresis. No fever no weight loss, no rash, no trauma, no change in appetite, no change in behavior. Medications: none. NKDA, UITD. FH aspergillosis in her 10 yo brother and multiple sclerosis in her mother.

Summary of Results: PE: temp 98.4F, pulse 125 respirations 32/min blood pressure 92/66. Pt appeared alert and calm and in no distress. Numbscopic, pupils equal and reactive pharynx clear and moist neck supple no lymphadenopathy lungs clear with bilateral breath sounds, cardiac exam regular rate and rhythm without murmur, palpable or clubbing exam significant for moderate diffuse tenderness and mild distension. Labs: UA unremarkable (specific gravity 1016, pH 6.0 dip negative) pregnancy test negative. White blood cell count 11,000 with 86% segs, 10% lymphs and 3% monos. Sodium 141 potassium 3.5 chloride 105 bicarbonate 22 bun 8 and creatinine 0.6 with glucose 141. Liver function tests were elevated with ALT 1295, AST 1001. amylase was 4625 (nl 30–110) and lipase 56594 (nl 23–300) GGT 378. Plain films of the abdomen were normal but Ultrasound of abdomen revealed dilated common bile duct (1 cm) with multiple gallstones and normal appearing pancreas. Patient was admitted for cholecystectomy.

Conclusions: Gallstones are not common in the pediatric patient however; need to be considered in the differential diagnosis of abdominal pain. This case was interesting because of the prolonged history of abdominal pain followed by an acute episode of cholecystitis. The pathophysiology of cholecystitis will be discussed.

22 CHRONIC SORE THROAT LEADS TO RARE DIAGNOSIS OF TAKAYASU ARTERITIS

N. Monangi, R. Habib, and K. Savells. University of South Alabama, Mobile, AL.

Purpose of Study: Takayasu arteritis is a very rare diagnosis which usually presents as systemic symptoms such as fatigue, weight loss, fever, arthralgias. There have been no known reported cases of TA presenting with a chief complaint of sore throat. We therefore present a patient with a chief complaint of sore throat whom ultimately was diagnosed with Takayasu Arteritis.

Methods Used: Chart review.

Summary of Results: A 16 year-old AAF with no significant PMH who was admitted initially with the preliminary diagnosis of retropharyngeal abscess with a chief complaint of sore throat and the feeling of something in her throat for 8 weeks. One week prior she started with symptoms of facial, chest, and back pain. She also reported subjective fevers, weight loss and decreased appetite. Labs were significant for thrombocytosis, anemia of chronic disease, and CRP of 82.7. CT of neck, abdomen, and pelvis were normal. Chest CT revealed multifocal pneumonia with small effusions. Pt was started on IV antibiotics for multilobar pneumonia. Her CRP improved, but remained in the 20s. An extensive auto-immune workup was negative. Patient was discharged on phenergan, mylicon, bentyl. NKDA, UITD. FH gallstones in her father at age 45 years. SH 9th grade, AB student, denies drugs, denies sexual activity. Lives with nuclear family, 2 dogs, cat, fish and a lizard.

Conclusions: Common presenting symptoms of acute lymphoblastic leukemia in children are pallor, fatigue, limb pain. Compression fractures following childhood trauma are rare and should prompt an evaluation for osteopenia. ALL may present as osteopenia causing fractures following minor trauma.

21 CHRONIC ABDOMINAL PAIN WITH AN ACUTE ETIOLOGY

R. Bramlett1, and K.W. Monroe2. 1UAB School of Medicine, Birmingham, AL and 2University of Alabama, Birmingham, AL.

Purpose of Study: R.S. is a 15 yo white female who presents with the chief complaint of 24 hours of severe abdominal pain. The patient has a 2 year history of similar pain but she states it is more severe this am. Pain is mid epigastrum with radiation to bilateral upper quadrants. She reports 8 episodes of bilious emesis this am and 3 loose non bloody stools.

Methods Used: ROS: similar pain for 2 years (had UGI and Abdomen and pelvic CT last year that were both normal). No fever no weight loss no recent illnesses, no rash, no trauma, no change in appetite (she has eaten a bland soft diet for the past 2 years). Medications: zantac, phenergan, mylicon, bentyl. NKDA, UITD. FH gallstones in her father at age 45 years. SH 9th grade, AB student, denies drugs, denies sexual activity. Lives with nuclear family, 2 dogs, cat, fish and a lizard.

Summary of Results: PE: temp 96.5F, pulse 77 respirations 20/min blood pressure 131/90 weight 80kg with height of 5 feet 7 inches. Pt appeared alert and calm and in no distress. Numbseopic, pupils equal and reactive pharynx clear and moist neck supple no lymphadenopathy lungs clear with bilateral breath sounds, cardiac exam regular rate and rhythm without murmur, palpable or clubbing exam significant for moderate diffuse tenderness and mild distension. Labs: UA unremarkable (specific gravity 1016, pH 6.0 dip negative) pregnancy test negative. White blood cell count 11,000 with 86% segs, 10% lymphs and 3% monos. Sodium 141 potassium 3.5 chloride 105 bicarbonate 22 bun 8 and creatinine 0.6 with glucose 141. Liver function tests were elevated with ALT 1295, AST 1001. amylase was 4625 (nl 30–110) and lipase 56594 (nl 23–300) GGT 378. Plain films of the abdomen were normal but Ultrasound of abdomen revealed dilated common bile duct (1 cm) with multiple gallstones and normal appearing pancreas. Patient was admitted for cholecystectomy.

Conclusions: Gallstones are not common in the pediatric patient however; need to be considered in the differential diagnosis of abdominal pain. This case was interesting because of the prolonged history of abdominal pain followed by an acute episode of cholecystitis. The pathophysiology of cholecystitis will be discussed.

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Conclusions: Gallstones are not common in the pediatric patient however; need to be considered in the differential diagnosis of abdominal pain. This case was interesting because of the prolonged history of abdominal pain followed by an acute episode of cholecystitis. The pathphysiology of cholecystitis will be discussed.
200/100. She had decreased pulses and blood pressure in her RLE. MRA of the abdomen revealed right renal artery stenosis(50–75%). CT angiogram of the neck revealed bilateral stenosis of the ICAs(50–60%). Our patient met the clinical criteria for the diagnosis of Takayasu Arteritis therefore she was started on high dose corticosteroids with good results and subsequent improvement in her symptoms and a decrease in her inflammatory markers to normal levels. Her blood pressure was controlled using enalapril and nifedipine.

Conclusions: Takayasu arteritis is rarely diagnosed histologically but is made on clinical findings and imaging of major arteries. In most cases of TA there is a delay in diagnosis of up to 1 year; interestingly our patient was diagnosed in approximately 2 months of her initial symptoms.

19

LIFE THREATENING METHEMOGLOBINEMIA WITH SEVERE ACIDOSIS AND SHOCK IN AN INFANT WITH DIARRHEA

M. Kong and P. Prabhakaran. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To highlight the need for pediatricians to have an awareness of methemoglobinemia in infants presenting with diarrhea, severe acidosis and shock.

Methods Used: We report a previously healthy 6 week old African American female who presented to the Emergency Department (ED) with a 2 week history of intermittent diarrhea. On the day of presentation, she had worsening diarrhea, with vomiting, lethargy and difficulty breathing. Review of systems was non-contributory. In the ED, physical examination revealed a lethargic, cyanotic infant in obvious respiratory distress and shock. Fluid resuscitation was initiated and she was intubated for profound shock. Initial laboratory results revealed severe raised anion gap metabolic acidosis, a methemoglobin level of 25%, acute renal insufficiency, leukocytosis and anemia. Arterial blood gas analysis showed normal partial pressure of oxygen. Her chest radiograph and echocardiogram were normal. Blood, urine, cerebral spinal fluid and stool were sent for culture and she was started empiric antibiotics. Despite aggressive fluid resuscitation with clinically improved perfusion, she remained acidic, needing bicarbonate replacement. Co-oximetry revealed persistently high methemoglobin levels. She was subsequently given 1 mg/kg of methylene blue intravenously and a packed red blood cell transfusion. Methemoglobinemia and acidosis promptly resolved and she was extubated the following day. Hemoglobin electrophoresis and Glucose-6 phosphate dehydrogenase (G6PD) levels were normal.

Summary of Results: Methemoglobinemia among previously healthy infants presenting with a diarrheal illness is well described, yet infrequent. The prevalence of diarrhea associated methemoglobinemia is unclear. Bacterial conversion of nitrates to nitrites with oxidation of iron in hemoglobin causes diarrheal methemoglobinemia in young infants. Patients with impairment in oxygen delivery and acidosis should receive methylene blue.

Conclusions: Methemoglobinemia should be considered in infants with diarrhea, especially if acidosis is out of proportion to the diarrhea and shock. Prompt therapy will improve outcome and prevent prolonged tissue hypoxia.

24

A VARICELLA IMPERSONATOR

E. McFarlin, J. Hu, T.A. Giorgadze, and R.D. Smalligan. East Tennessee State Univ., Johnson City, TN.

Purpose of Study: Clinical vignette.

Methods Used: Case report.

Summary of Results: A 6yo boy presented after being sent home from school with “chickenpox.” His mother stated lesions had been appearing on the arms, legs, and trunk for a week. There was no history of fever, chills, fatigue, pruritis, change in appetite, sick contacts or travel. PMH was unremarkable and he was on no medications. PE: T 36.9°C, normal exam except for multiple erythematous papules on the arms, legs, axillae, abdomen, and groin. There were excoriations and crusting of some papules. The head and neck were clear. A viral exanthem was diagnosed but 2 weeks later new lesions were forming, with moderate resolution of the old lesions. Dermatology was consulted. Lab: CBC, ASO, EBV, CMV, toxoplasmosis, hepatitis B and C were all normal/negative. Skin biopsy showed perivascular inflammation with para-keratosis consistent with Pityriasis Lichenoides et Varioliformis Acuta (PLEVA). The patient was treated with erythromycin and topical steroids, and the lesions slowly resolved over a 3 month period.

Conclusions: Pityriasis Lichenoides et Varioliformis Acuta (PLEVA) is a clonal T-cell lymphoproliferative disorder that results from a host immune response. The exact etiology is unknown but cases have been reported in association with EBV, CMV, HIV, toxoplasmosis, and hepatitis B and C. Patients typically present with multiple red papules that develop into polymorphic lesions with varying periods of remission. The lesions may develop necrotic or ulcerative changes and are typically located on the trunk and flexural surfaces of the extremities. Symptoms range from asymptomatic, as in our case, to pruritus, fever and arthralgia. Generally the prognosis is good with lesions and symptoms resolving in several weeks, however, relapses are common. Lesions heal well with the most common complication being postinflammatory hypopigmentation and varioliform scarring. Controversy exists as to whether or not PLEVA is associated with an increased risk of lymphoma. Symptomatic cases of PLEVA are treated with oral erythromycin or tetracycline along with topical corticosteroids. Phototherapy has been beneficial in some patients who fail antibiotic treatment. Although usually a benign disorder, it is important for pediatricians to consider PLEVA in the differential diagnosis of chronic, vesicopapular skin lesions that mimic varicella.

25

RARE CAUSE OF HYPERTENSIVE ENCEPHALOPATHY

S. Chandra, S. Falkos, and K. Savells. University of South Alabama, Mobile, AL.

Purpose of Study: An initial presentation of hypertensive crisis in children is relatively rare. We present an unusual case of a child presenting with hypertensive encephalopathy found to have bilateral renal masses in which she was ultimately diagnosed with focal collapsing glomerulosclerosis. Collapsing glomerulopathy is mostly seen in HIV patients, however it has been increasingly diagnosed in HIV negative people presenting equally in both genders but predominantly in African Americans.

Methods Used: Chart review.

Summary of Results: A 9 yr old white female presented to the ER with the chief complaint of headache and emesis associated with focal seizures and altered mental status. Past medical history was significant for headaches and vomiting during the previous 6 months, which a diagnosis of cyclic vomiting with migraine was made after a complete normal physical exam and normal CT scan of the brain. Physical examination revealed a blood pressure of 260/160, altered sensorium, horizontal nystagmus, normal tone with no focal deficits. Lab results revealed an elevated creatinine (1.3), BUN (22), phosphorous (7.2). Albumin was 2.9, total protein 6.4 and potassium 2.8. Urinalysis showed urine protein >300 and 24-hour urine protein was 478. Imaging: CT scan of the abdomen showed bilateral renal masses, representative of...
juxtaglomerular cell tumor versus Wilms tumor versus Wilms variant. MRI of the abdomen also confirmed bilateral renal masses. The renal masses did not contain calcifications and adrenal glands were normal bilaterally. Subsequently, the BUN/creatinine rose to 30/1.8 and serum albumin decreased to 1.9. Renin was elevated at 28.2. Serum cholesterol was 312. Histopathology and electron microscopy of her renal biopsy were consistent with collapsing glomerulopathy. Subsequently, serology was negative for Parvovirus B19, HIV, toxoplasma, cytomegalovirus and bartonella.

**Conclusions:** Patient was managed in the PICU on intravenous antihypertensives and anticonvulsants. She regained normal sensorium within 24 hours, and anticonvulsants were discontinued. Patient was commenced on amiodpine,enalapril and triazole for chronic hypervolemic shock after his second episode of hemoptysis versus hematemesis. His first bout of minor hemoptysis had occurred 3 weeks prior after being treated for status epilepticus and pneumonia. Medications included phenobarbital, levetiracetam, and diazepam. Family history was negative for bleeding disorders, aneurysms, neurocutaneous syndromes, and strokes. PE: T 99.8 P126 RR 32 BP 70/40 SaO2 90% on 50% O2 by facemask. He was paled and diaphoretic, had no nasal or oral lesions, had no murmur, had decreased breath sounds in the right lower lobe, a soft abdomen with bowel sounds present, no organomegaly and no telangiectasias noted. Lab: Hgb 5.8, platelets 223,000, PT / PTT normal, metabolic and liver panels normal. CXR: infiltrates in right middle and lower lobes. Brain MRI: normal. An NG tube yielded 350ml of heme positive, chocolate colored output. He required aggressive resuscitation with IV fluids, blood products and mechanical ventilation. EGD was normal. Bronchoscopy located the bleeding site to the lungs. Aortogram of the bronchial arteries showed multiple arteriovenous malformations (AVMs) that were treated with coil embolization. Recurrent hemoptysis prompted transfer for cianoacrylate glue embolization. Genetic tests for hereditary hemorrhagic telangiectasia (HHT) returned negative. The patient survived discharge.

**Conclusions:** Hemoptysis is uncommon in pediatrics and differentiating hemoptysis from epistaxis, oral bleeding, or hematemesis can be very difficult. Pulmonary and bronchial AVMs occur sporadically in children, with 88% being associated with the autosomal dominant HHT (Osler-Weber-Rendu) syndrome. These AVMs generally cause minor hemoptysis. Massive hemoptysis is much less common but can occur. Choice of embolizing with coils, microspheres, or glue is still somewhat center dependent. Selective intubation of one lung may be helpful in ventilatory management of massive hemoptysis. Physicians should remember to screen for other AV malformations in the liver, brain and lung. A thorough family and social history is important in considering a genetic contribution to the diagnosis.

### 26 STOP THE HEMORRHAGE; SAVE THE PATIENT

L.A. Boateng, R.D. Smalligan, and R.T. Mohon. East Tennessee State University, Johnson City, TN.

**Purpose of Study:** To remind pediatricians that life threatening, massive hemoptysis can occur in childhood.

**Methods Used:** Vignette.

**Summary of Results:** A 10-year-old boy with a long history of static encephalopathy and seizures presented in hypovolemic shock after his second episode of hemoptysis versus hematemesis. His first bout of minor hemoptysis had occurred 3 weeks prior after being treated for status epilepticus and pneumonia. Medications included phenobarbital, levetiracetam, and diazepam. Family history was negative for bleeding disorders, aneurysms, neurocutaneous syndromes, and strokes. PE: T 99.8 P126 RR 32 BP 70/40 SaO2 90% on 50% O2 by facemask. He was paled and diaphoretic, had no nasal or oral lesions, had no murmur, had decreased breath sounds in the right lower lobe, a soft abdomen with bowel sounds present, no organomegaly and no telangiectasias noted. Lab: Hgb 5.8, platelets 223,000, PT / PTT normal, metabolic and liver panels normal. CXR: infiltrates in right middle and lower lobes. Brain MRI: normal. An NG tube yielded 350ml of heme positive, chocolate colored output. He required aggressive resuscitation with IV fluids, blood products and mechanical ventilation. EGD was normal. Bronchoscopy located the bleeding site to the lungs. Aortogram of the bronchial arteries showed multiple arteriovenous malformations (AVMs) that were treated with coil embolization. Recurrent hemoptysis prompted transfer for cianoacrylate glue embolization. Genetic tests for hereditary hemorrhagic telangiectasia (HHT) returned negative. The patient survived discharge.

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**Case Reports in Cardiovascular Medicine**

2:00 PM

Thursday, February 21, 2008

### 27 TROPONIN ELEVATION IN ACUTE PANCREATITIS

S. Kalra, D. Sharma, V. Brahmbhatt, S. Duggal, and R.D. Smalligan. ETSU, Johnson City, TN.

**Purpose of Study:** Elevated troponins in the absence of a thrombotic acute coronary syndrome have been reported in a variety of clinical situations. We report one more such case: acute pancreatitis.

**Methods Used:** Clinical Vignette.

**Summary of Results:** A 43-year-old woman presented with acute epigastric pain accompanied by nausea and vomiting. She had a recent history of pancreatitis, but no history of DM, HTN, or hyperlipidemia. She was an ex-smoker, nonalcoholic, and had no family history of premature coronary artery disease. Physical exam: afebrile, BP 110/85, P 80/min, Resp 20/min. Sclerae anicteric. Exam was normal except for epigastric tenderness without rebound or guarding. Laboratory: troponin 14 (normal < 0.5), amylase 261, creatinine 0.6, calcium 8.3, magnesium 1.8, LDL 68, HDL 126, and TG 215. CT scan: pancreatitis with multiple pseudocysts. EKG: sinus rhythm without ischemic changes. Cardiac catherization: normal coronaries and normal LV function. The patient was treated conservatively and recovered, with the troponin level returning to normal over the next week.

**Conclusions:** Acute pancreatitis has been previously reported to cause ST changes on the EKG. We report the first case of pancreatitis with marked troponin elevation in a patient with normal coronaries and without any other known clinical condition associated with troponin release. Troponin elevation is indicative of myocardial cell injury which may be due to ischemia, inflammation, trauma, infiltrative diseases, systemic infection, renal failure or other causes. The mechanism of such a troponin release in pancreatitis is unknown. Since pancreatic enzymes are known to travel across the diaphragm may be responsible for direct myocardial injury. Another possibility, as seen in experimental animal models, pancreatic enzymes may have entered the bloodstream and produced myocardial injury. Other possibilities include coronary vasospasm or changes in myocardial cell membrane permeability by inflammatory mediators. Physicians should be aware that pancreatitis, in addition to the other mentioned conditions, can cause elevated troponin levels and patients should not be labeled as having coronary artery disease if they have normal coronaries.

### 28 SYNCOPE AS A PRESENTING SYMPTOM OF ACUTE RHEUMATIC FEVER

S. Bostick, D. Stokes, G.J. Blair, B. Blossom, and J.P. Payne. University of Mississippi Medical Center, Jackson, MS.

**Case Report:** Acute rheumatic fever (ARF) is an inflammatory process following a streptococcal pharyngitis that may involve the cardiovascular, musculoskeletal, neurological, or integumentary systems. We present a case of ARF in an adult male with syncope. A 48-year-old male with hypertension presented to the emergency department after a syncopal episode. He was driving when the episode occurred, and a pedestrian was killed in the resulting accident. Further work-up of his syncope and placed on telemetry. He subsequently developed a third heart sound, elevated jugular venous pressure, and...
complete AV block on telemetry requiring a temporary transvenous pacemaker. Further laboratory testing revealed an erythrocyte sedimentation rate (ESR) of 91 mm/hr (1–9 mm/hr), a C-reactive protein (CRP) of 7.3 mg/dL (0.0–0.9mg/dL), and an ASO titer of 400 iu/ml (0.0–200 iu/ml). Testing for other infectious and connective tissue etiologies was negative. Antibiotics were started empirically and his systemic symptoms and conduction abnormalities slowly resolved. The transvenous pacemaker was later removed and the patient required no further pacing.

With evidence of a recent streptococcal infection, the Jones criteria are used for diagnosing ARF. The major criteria are carditis, migratory polyarthritids, Sydenham chorea, erythema marginatum, and subcutaneous nodules. The minor criteria are fever, arthralgias, a prolonged PR interval, and elevated acute phase reactants. The patient in this case had symptoms suggestive of a recent streptococcal pharyngitis with 2 major and several minor Jones criteria consistent with a clinical history of ARF.

**Background:** Pleural effusions have been rarely reported to cause cardiac tamponade (CT). Description: A 59 year old woman was admitted to the hospital for increasing shortness of breath and right sided effusion. Her medical history was significant for diabetes, chronic renal insufficiency, and cirrhosis of the liver. After admission she became increasingly short of breath, hypotensive (80/50) and tachycardic (135 b/min). Physical exam demonstrated jugular venous distention and pulsus paradoxus (15mm). Pericardial effusion and CT was suspected. Urgent echocardiography was significant for absence of any pericardial effusion. However, there was right atrial collapse (figure 1) and hemodynamic respiratory variation with diastolic filling consistent with tamponade physiology. The right atrium was compressed with loss of about 70% of its volume due to the pleural effusion occurring throughout systole and diastole. Emergent thoracocentesis evacuating 1600cc of fluid brought marked improvement in her symptoms and blood pressure. Repeat echo showed no right atrial compression and normal physiology.

**Discussion:** CT occurs when the intrapericardial pressure increases to the point of compromising systemic venous return to the right atrium. To our knowledge there are very few reports of large pleural effusion leading to clinical and hemodynamic evidence of CT. One study notes that the incidence of right atrial collapse in presence of a pleural effusion and no pericardial effusion is as high as 18% and is not associated with hemodynamic decompression. The longer the duration of atrial inversion the greater the likelihood of CT. Conclusion: Our report serves as a useful reminder that cardiac compression should be considered in patients with large pleural effusions and hypotension. Prompt recognition and thoracocentesis might be life saving.
Time should be sought and, if discovered, relieved by stenting in patients with vasospasm.}

Correction has a 2% mortality, a 3% stroke rate, and is associated with a low incidence of complications or reocclusion. There have been no reported deaths or strokes with percutaneous repair. Surgical repair is considered for patients with severe aortic valve stenosis who are not candidates for revascularization. The incidence of CSSS is reported to be 0.44% of patients undergoing CABG. Percutaneous procedures are the preferred method of treatment for patients with CSSS. The competitive and reversed flow in the LIMA graft ceased. Nine months later, he reported a 2% mortality, a 3% stroke rate, and is associated with a low incidence of complications or reocclusion. There have been no reported deaths or strokes with percutaneous repair. Surgical repair is considered for patients with severe aortic valve stenosis who are not candidates for revascularization. The incidence of CSSS is reported to be 0.44% of patients undergoing CABG. Percutaneous procedures are the preferred method of treatment for patients with CSSS.

**32 SUCCESSFUL STENTING OF THE PROXIMAL LEFT SUBCLAVIAN ARTERY WITH RELIEF OF CORONARY-SUBCLAVIAN STEAL SYNDROME**

M.B. Jones1,2, S. Wadgaonkar1,2, R.D. Yount1,2, and D.L. Glancy1,2.

**Introduction:** Coronary steal due to subclavian artery (SA) stenosis compromising blood flow through the internal mammary artery (IMA) graft, know as Coronary-Subclavian Steal Syndrome (CSSS) is uncommon but must be considered when patients with known IMA grafts experience myocardial ischemia.

**Case:** A 78-year-old man presented with dyspnea, and chest tightness. He previously suffered a myocardial infarction and had a coronary artery bypass graft (CABG) operation that included a LIMA graft to the left anterior descending coronary artery from the left sinus of Valsalva and an ectopic origin of the circumflex coronary artery from the right sinus of Valsalva next to the origin of the right coronary artery. TOF is a complex of anatomic abnormalities arising from the maldevelopment of the right ventricular infundibulum accounting for approximately 10% of cases of congenital heart disease in the United States. It is frequently accompanied by other cardiac malformations, but it’s association to either aortic valve or subvalvular aortic stenosis is most unusual and prompts this report.

**Discussion:** Signs and symptoms of SA stenosis may include 20 mmHg difference in arm blood pressures, upper extremity claudication, and cerebrovascular insufficiency. The incidence of CSSS is reported to be 0.44% of patients undergoing CABG. Percutaneous procedures are the preferred method of treatment. Angioplasty with stenting is an effective treatment for patients with SA stenosis. The competitive and reversed flow in the LIMA graft ceased. Nine months later, he reported a 2% mortality, a 3% stroke rate, and is associated with a low incidence of complications or reocclusion. There have been no reported deaths or strokes with percutaneous repair. Surgical repair is considered for patients with severe aortic valve stenosis who are not candidates for revascularization. The incidence of CSSS is reported to be 0.44% of patients undergoing CABG. Percutaneous procedures are the preferred method of treatment. Angioplasty with stenting is an effective treatment for patients with SA stenosis.

**Conclusion:** Transient left ventricular (LV) apical ballooning syndrome is a cardiac syndrome characterized by transient LV dysfunction, electrocardiographic changes that can mimic acute myocardial infarction (MI), and minimal release of myocardial enzymes, in the absence of obstructive coronary artery disease. A preceding emotional or physical stressor is usually identified. Although a catheterization or angiography would be required to make the diagnosis, it may be related to catecholamine-mediated cardiotoxicity. The syndrome has a favorable prognosis.

**Case Report:** An 84 year old female with past medical history significant for hypertension, diabetes, hyperthyroidism, and Parkinson’s disease, was brought to the Emergency Department by her son, because of progressive decline in mental status for the last 3 days prior to admission. She denied dyspnea, chest pain, or syncope. Physical exam was remarkable. She was diagnosed with a urinary tract infection, which was started on antibiotics. Her admission ECG was remarkable for left anterior fascicular block. The following morning, her ECG revealed deep symmetric T wave inversions in the precordial leads, Q waves in leads V1 and V2 and 1mm ST-segment elevation in leads V1-V3. A bedside echocardiogram showed depressed LV function, with apical and mid-ventricular hypokinesis. Troponin-I was mildly elevated. The patient remained asymptomatic. On the basis of this presentation, an anterior MI was suspected and the patient was taken to the cath lab. Coronary angiography revealed normal coronary arteries, with apical dyskinesis. Based on these findings the diagnosis of transient LV apical ballooning syndrome was made. Her hospital stay was uncomplicated and she was discharged in a stable condition.

**Joint Poster Session**

**Adolescent Medicine and Pediatrics**

5:00 PM

Thursday, February 21, 2008

**33 TRANSIENT LEFT VENTRICULAR APICAL BALLOONING SYNDROME: A MIMIC OF ACUTE MYOCARDIAL INFARCTION**

S. Stavrakis1,2, C. Te1,2, C. Murray1,2, and P. Lozano1,2. 1 University of Oklahoma Health Sciences Center, Oklahoma City, OK and 2VA Medical Center, Oklahoma City, OK.

**Introduction:** Transient left ventricular (LV) apical ballooning syndrome is a cardiac syndrome characterized by transient LV dysfunction, electrocardiographic changes that can mimic acute myocardial infarction (MI), and minimal release of myocardial enzymes, in the absence of obstructive coronary artery disease. A preceding emotional or physical stressor is usually identified. Although a catheterization or angiography would be required to make the diagnosis, it may be related to catecholamine-mediated cardiotoxicity. The syndrome has a favorable prognosis.

**Case Report:** An 84 year old female with past medical history significant for hypertension, diabetes, hyperthyroidism, and Parkinson’s disease, was brought to the Emergency Department by her son, because of progressive decline in mental status for the last 3 days prior to admission. She denied dyspnea, chest pain, or syncope. Physical exam was remarkable. She was diagnosed with a urinary tract infection, which was started on antibiotics. Her admission ECG was remarkable for left anterior fascicular block. The following morning, her ECG revealed deep symmetric T wave inversions in the precordial leads, Q waves in leads V1 and V2 and 1mm ST-segment elevation in leads V1-V3. A bedside echocardiogram showed depressed LV function, with apical and mid-ventricular hypokinesis. Troponin-I was mildly elevated. The patient remained asymptomatic. On the basis of this presentation, an anterior MI was suspected and the patient was taken to the cath lab. Coronary angiography revealed normal coronary arteries, with apical dyskinesis. Based on these findings the diagnosis of transient LV apical ballooning syndrome was made. Her hospital stay was uncomplicated and she was discharged in a stable condition.

**29 SEDATION PRACTICES IN PEDIATRIC EMERGENCY DEPARTMENTS**

D. Foster, C.R. Willis, E. Nelson, and R. Dick. University of Arkansas for Medical Sciences, Little Rock, AR.

**Purpose of Study:** Pediatric sedation by non-anesthesiologists has changed significantly in the last 20 years. More medications are used in different areas of hospitals for a variety of procedures. The purpose of this study was to discover the most frequent providers of sedation, the most commonly used medications, and the most frequent specialties and conditions requiring sedation in the pediatric emergency department (PED) at different children’s hospitals.

**Methods Used:** A survey regarding sedation practices and the credentialing and quality improvement processes for the providers of sedation was mailed to the medical directors of the PEDs of 99...
children’s hospitals that are members of the National Association of Children’s Hospitals and Related Institutions (NACHRI). A cover letter and a stamped, return envelope were included. The survey was mailed again to non-responders of the first and second mailings. The study was approved by our university’s Institutional Review Board.

Summary of Results: The total response rate was 73% (72/99). The top 2 sedation providers in PEDs are PED attending physicians and PED fellows. 43 hospitals have a sedation service, but only 8 PEDs consult it and for less than 10% of their sedation cases.

The most common medications used for sedation in PEDs are ketamine and/or midazolam. 47 PEDs can administer propofol, but it is only the 4th most common medication used in PEDs. 26 PEDs have formal guidelines and 16 PEDs have informal guidelines that differ from the American Society of Anesthesiologists (ASA) pre-procedure fasting guidelines. 28 PEDs follow the ASA guidelines about 90% of the time, 12 follow them about 75% of them time, 12 follow them about 50% of the time, and 13 follow them less than 10% of the time. The top 3 specialties utilizing sedation in PEDs are orthopedics, general PED patients, and ENT/plastic surgery.

The top 3 conditions requiring sedation in PEDs are fracture reduction, laceration repair, and incision and drainage of abscess. 26 PEDs sedate patients outside of the PED, mostly in radiology for CT scans.

Conclusions: PED physicians perform most of the sedation cases in PEDs. Fasting guidelines in PEDs often differ from the ASA guidelines. PED physicians commonly sedate patients outside of the PED. This study provides a current summary of sedation in PEDs.

35  SEDATION PRIVILEGES AT CHILDREN’S HOSPITALS

D. Foster, C.R. Willis, E. Nelson, and R. Dick. University of Arkansas for Medical Sciences, Little Rock, AR.

Purpose of Study: Pediatric sedation by non-anesthesiologists has changed significantly in the last 20 years. Several professional societies have developed and updated similar guidelines for the qualifications of sedation providers. The Joint Commission on Accreditation of Healthcare Organizations requires hospitals to have formal credentialing and quality improvement processes for non-anesthesiologist providers of sedation.

The purpose of this study was to learn how these processes vary at different hospitals.

Methods Used: A survey regarding sedation practices and the credentialing and quality improvement processes for sedation providers was mailed to the medical directors of the pediatric emergency departments of 99 children’s hospitals that are members of the National Association of Children’s Hospitals and Related Institutions. A cover letter and a stamped, return envelope were included. The survey was mailed again to non-responders of the first and second mailings. The study was approved by our university’s Institutional Review Board.

Summary of Results: The total response rate was 73% (72/99). Certification in Advanced Pediatric Life Support or Pediatric Advanced Life Support is required by 51 hospitals for obtaining moderate sedation privileges. No certification in any life support course is required by 16 hospitals. 4 hospitals require documentation of sedation cases from a fellowship for obtaining moderate sedation privileges. 10 hospitals require the observation of a certain number of sedation cases. The requirements for obtaining deep sedation privileges differ from those for moderate sedation privileges at 17 hospitals. 14 hospitals require a minimum number of sedation cases for the renewal of one’s sedation privileges. The range is 5 to 50 cases in 2 years. Other requirements include: a peer review of cases at 18 hospitals, a hospital review of cases at 26 hospitals, a cognitive evaluation at 21 hospitals, and a competency evaluation at 7 hospitals.

Sedation cases are reviewed at 64 hospitals. The reviews may affect the renewal of one’s sedation privileges at 87% of hospitals.

Conclusions: The requirements for obtaining sedation privileges vary among children’s hospitals. Many require certification in life support. Most do not require the documentation or observation of cases. The majority of hospitals review sedation cases.

36  A CASE OF LISTERIA MENINGITIS

J. Johnson. 1LSU, New Orleans, LA and 2LSU, New Orleans, LA.

Case Report: J.N. is a 14 year old male who presented with complaints of fever, headache, vomiting, diarrhea, and decreased mental status for 3 days. His family noted that during the start of his symptoms, he had fecal/urinary incontinence, ataxia and tremors. His travel history included a trip two months prior to New Mexico for Boy Scout camp, along with a trip to North Carolina.

Physical exam revealed a temperature of 100.7. During the exam, he mumbled unintelligible words and opened his eyes only to painful stimuli. Meningeal signs were evident. A lumbar puncture was performed and sent for bacterial, viral and fungal cultures. Cerebrospinal fluid (CSF) revealed 1110 white blood cells and 93 red blood cells with a differential of 60% segs, 22% lymphs, 18% monos. CSF glucose was 32 mg/dL and protein was 84 mg/dL. There were no organisms and only rare white blood cells seen on Gram stain.

J.N. was admitted with a diagnosis of meningitis and started on vancomycin and ceftriaxone. CSF cultures grew Listeria Monocytogenes and ampicillin was added. His mental status improved and 5 days after admission, he was discharged home with outpatient antibiotics. Listeria monocytogenes, a gram positive motile bacteria, is a cause of meningitis that primarily occurs in newborns, the elderly, and the immunocompromised. The route of acquisition of Listeria is through ingestion of contaminated food products such as unprepared meats (hot dogs and deli meats), dairy products (unpasteurized milk), and unwashed raw vegetables. In most forms of bacterial meningitis, the cellular response consists of greater than 80% neutrophils. In Listeria meningitis, the percentage of neutrophils is reduced and Gram stain is usually of low yield because the organism is often found intracellular.

Although most patients will present with typical signs and symptoms of meningitis, some may present differently due to the ability of Listeria to directly invade the nervous system. Seizures are frequently present, and brain abscesses have been found in up to 5% of patients. CNS infection can be fatal in 30-60% of cases.

Our current guidelines recommend amoxicillin based empiric antibiotic treatment for patients greater than fifty or with risk factors for Listeria infection. J.N. was an unusual case not only because there were no risk factors for Listeria meningitis, but multiple tests found him to be immunocompetent.

37  EMERGENCY DEPARTMENT MANAGEMENT OF AND DISCHARGE INSTRUCTION FOR SEVERE ALLERGIC REACTIONS IN PEDIATRICS: A RETROSPECTIVE CHART REVIEW


Purpose of Study: Anaphylaxis is a severe allergic reaction with systemic symptoms including rash, respiratory distress, hypotension, and gastro-intestinal distress that can be life threatening. Front line therapy includes IM epinephrine, however, studies show that the use of epinephrine is not consistent in the adult population. The objective of
this study was to evaluate the frequency of cases of severe, systemic allergic reaction, frequency of epinephrine use, and quality of discharge teaching provided in an urban pediatric emergency department.

**Methods Used:** A retrospective chart review of all patients seen in the Emergency Department during a five year period that were discharged with a final diagnosis of allergic reaction or anaphylaxis was performed. Our hospital is an urban, tertiary-care pediatric hospital that sees approximately 55,000 patients in the ED per year. Patients were identified using ICD-9 coding for the time period between January 1, 2002 and December 31, 2006.

**Summary of Results:** A total of 685 unique patient visits to the ED during the five year period for allergic/anaphylactic reaction have thus far been reviewed with the last 69 yet to be reviewed. Visits that met the classic “three organ system” definition of anaphylaxis numbered 32 while there were an additional 87 visits that could be classified as “severe” or “systemic” allergic reactions. Of these patients 67 received epine in the field or in the ED and 2 received racemic epinephrine. Of the 83 patients that were discharged from the ED, the documented discharge teaching was very inconsistent. Eleven patients had no follow-up instructions. Twenty-two charts had attending documentation of plans that included prescription of epi pen and epi pen teaching but no mention of epi pen in the discharge instructions provided to the families. Referral to an allergist or suggested allergist follow-up was not consistent.

**Conclusions:** Severe allergic and anaphylactic reactions are relatively common. Every day, patients are treated for these life-threatening emergencies, and the standard of care has been well established. The actual treatment and discharge teaching, however, remains uneven.

**38 NUCLEAR FACTOR-KAPPA B ACTIVITY IN MEDULLOBLASTOMA**

S.E. Spiller1,2, and N.J. Logsdon2. 1The Children’s Hospital of Alabama, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** Medulloblastoma is a highly metastatic cerebellar malignancy in children. Nuclear factor-kB (NFkB) controls adhesion molecules that are tightly regulated in granule cell migration during cerebellar development. Importantly, many cancers have constitutive nuclear NFkB activity which is thought to contribute to proliferation, angiogenesis, evasion of tumor suppression, and metastatic spread. This activity has not been well-described in medulloblastoma. If NFkB is dysregulated in medulloblastoma, it could be responsible for adhesion and de-adhesion necessary for cells to leave the primary tumor mass and adhere to new sites, representing metastatic spread.

**Methods Used:** Two established medulloblastoma cell lines, Daoy and D283, were used in the present study. Nuclear extracts were prepared from cells grown with the NFkB stimulators PMA and TNF alpha, or the NFkB inhibitors pyrrolidine dithiocarbamate (PDTC) and sulfasalazine (SAS). Proliferation was determined by cell count using a Coulter counter.

**Summary of Results:** Western analysis demonstrated p65, the DNA binding subunit of NFkB, present in the nucleus of unstimulated medulloblastoma cell lines. The signal was not increased with PMA, an activator of NFkB suggesting constitutive control. Furthermore, EMSA confirms that NFkB protein is bound to the kB site on DNA, PMA and TNF alpha appear to increase the amount of NFkB binding to DNA. Inhibition of NFkB with SAS probably decreases NFkB DNA binding. Functionally, inhibition of NFkB using PDTC or SAS resulted in profound decrease in proliferation of cells in culture. This decreased proliferation correlates with annexin V staining, suggesting apoptotic cell death.

**Conclusions:** These results suggest that NFkB is aberrantly active in vitro, and may be responsible for promoting survival of this highly malignant cancer. Further studies will focus on identifying adhesion molecules that are controlled by NFkB in medulloblastoma which may promote its ability to metastasize via the cerebral spinal fluid. This will provide a specific target to exploit in treating children with medulloblastoma.

**Joint Poster Session**

**Allergy/Immunology/Rheumatology**

5:00 PM

Thursday, February 21, 2008

**39 ROLE OF SPHINGOSINE KINASE 1 IN A MOUSE MODEL OF CHRONIC INFLAMMATION**

D. Baker1,2, L. Obeid1,2, and G. Gilkeson1,2. 1Medical University of South Carolina, Charleston, SC and 2Ralph H. Johnson VA Medical Center, Charleston, SC.

**Purpose of Study:** Sphingosine kinase 1 (SphK1) is one of the two enzymes that phosphorylates sphingosine to create sphingosine 1 phosphate (SIP) and has an established relationship with cell signaling molecules such as ERK and p38 MAPK. Abnormalities in sphingolipids are implicated in a variety of disease states, especially in the pathogenesis of certain cancers. However, their role in other disease states is poorly understood. Based on previous in vitro results, S1P has an apparent role in inflammation. Recent data demonstrated a relationship between TNF alpha, a contributor to inflammation, and S1P produced by SphK1. Fibroblast cell lines stimulated with TNF alpha lead to an increase in S1P following SphK1 activation. Removal of SphK1 by siRNA in fibroblast cell lines stimulated with human TNF alpha (hTNF) lead to a decrease in the formation of the inflammatory mediator prostaglandin E2 (PGE2) (Pettus et al., 2003). This in vitro data lead us further to experiment in an in vivo model. We have obtained transgenic mice that constitutively express a modified copy of the hTNF alpha gene leading to chronic, progressive synovitis detectable as swelling and deformity in the fore and hind paws at around 20 weeks of age.

**Methods Used:** These mice were crossed with mice lacking functional copies of the SphK1 gene (SphK1 KO). Thus, the absence of the SphK1 gene will allow us to study its direct effects on hTNF-induced chronic synovial inflammation. The mice were genotyped to determine the presence/absence of SphK1 and the transgene and monitored weekly for evidence of inflammation.

**Summary of Results:** In preliminary observations of a limited number of mice, hTNF transgenic SphK1 KO mice develop less joint swelling and deformity than hTNF transgenic mice with functioning copies of SphK1. Also, TNF transgenic, Sphk1KO mice have less joint swelling and deformity than hTNF transgenic SphK1 KO mice of comparable age. These results suggest that SphK1 induced S1P production is a key factor in the inflammatory arthritis present in hTNF mice.

**40 IS THERE ANY ASSOCIATION BETWEEN TNF- ANTAGONISTS AND INSULIN RESISTANCE?**

R.S. Cuchacovich, H. Thompson, and L.R. Espinoza. LSUHSC, NO, New Orleans, LA.

**Purpose of Study:** To determine the association and potential mechanisms between TNF- antagonists and the incidence of IR in a cohort of RA patients.

**Methods Used:** 37RA patients were studied. 10 patients were treated with TNF antagonists, 13 with methotrexate and 14 were naive to treatment; none
of the patients had a diagnosis or treatment for DM, HTN or dyslipidemia. Mean age 47.2 (SD 11.3), 52.3 (SD 16.6), 51.2 (SD 13.3) years; mean disease 102 (SD 90.4), 72.9 (SD 67.3), 71.3 (SD 87.1) and treatment duration 24.2 (SD 18.5), 34.7 (SD 32.2), 0 months, for each group. Clinical data (systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass index (BMI) was assessed at the time of the samples were drawn. Disease activity was determined by DAS-28 index. Fasting serum samples were stored at 80 °C. A quantitative ELISA assay for IL-6, soluble IL-6 R, IFN-gamma, TNF alpha, soluble TNF- R I, soluble TNF -RII, IGF-I, Adiponecin was performed in duplicate (Quantikine High Sensitivity Immunoassay, R & D systems). Fasting glucose, insulin, and lipid profile,CRP and ESR were concomitantly done to all the samples at the same time. HOMA-IR and QUICKY indexes were calculated. Statistical Analysis was based on ANOVA test (p <0.05), with Spearman’s correlation coefficient for the associations between treatment and clinical and serological findings.

**Summary of Results:** Statistically significant differences observed between the TNF group and the other two groups were: TNF -alpha levels (p: 0.0014), soluble TNF-RII (p: 0.0432), IFN-γ (p: 0.008), and DAS-28 -2.6 (p: 0.033). No significance was found in the three groups for SBP, DBP, BMI, HOMA-IR, QUICKY, IL-6, soluble IL-6 R, soluble TNF RI, adiponectin and IGF-I. No differences in the pattern of associations emerged when the obese people were analyzed separately.

**Conclusions:** No association was found between insulin resistance and TNF blockade therapy. The observed increased level of soluble TNF RII is likely to neutralize the TNF -alpha actions. High levels of IFN-γ might mediate inflammatory effects that contribute to the progression of an atherosclerotic lesion including alterations in cholesterol trafficking in macrophage-derived foam cells. Based on these observations further studies with larger number of patients are needed to elucidate the role of TNF blockade in IR and CV events in RA patients.

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**40a**

**STRUCTURAL, CHEMICAL AND IMMUNOGENIC EFFECTS OF ROASTING ON ARA H 3, A MAJOR PEANUT ALLERGEN**

S. Dyer1, S. Malecki2, L. Mack2. Tulane University School of Medicine, New Orleans, LA and 2US Dept of Agriculture, New Orleans, LA.

**Purpose of Study:** We have previously shown that processes, such as roasting, can alter the allergenic properties of peanuts. To understand these observations at a molecular level, the solubility, IgE binding and structural characteristics of Ara h 3 purified from raw and roasted peanuts were assessed. Also, the alterations to oligomeric state of Ara h 3 within the context of raw and roasted peanuts was determined.

**Methods Used:** The solubility and digestibility of Ara h 3 within the context of peanuts, roasted to different degrees, were assessed using SDS-PAGE and allergen specific antibodies. Ara h 3 purified from raw, light roast (LR) and dark roast (DR) peanuts was subjected to circular dichroism (CD) spectroscopy before and after reduction of disulfide bonds, atomic force microscopy (AFM), and IgE binding with peanut allergic sera using Western blot analysis.

**Summary of Results:** While secondary structure of Ara h 3 from raw, LR and DR peanut is affected with reduction of disulfide bonds, the roasting process itself only slightly altered the secondary structure rendering Ara h 3 to form oligomers, become less soluble and more resistant to digestion. AFM demonstrates the height and shape of Ara h 3 oligomers.

**Conclusions:** The alterations in IgE binding and resistance to digestion of Ara h 3 is most likely due to roasting induced chemical modifications (i.e. Maillard reaction) and oligomerization., and less likely to small structural changes within the monomer. This implies that patients that have higher skin test reactivity to the roasted peanut (previously presented) may have specific IgE to allergen epitopes that are chemically modified by the roasting process or oligomeric state of allergens rather than to structurally altered epitopes in addition to other IgE epitopes that are recognized by the majority of peanut allergic patients.

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**NEW ONSET OF ASTHMA, SENSITIZATION TO ENVIRONMENTAL ALLERGENS AND ASPIRIN HYPERSENSITIVITY IN THE AFTERMATH OF KATRINA - A CASE REPORT**

A. Fiorillo and P. Kumar. Louisiana State University Heath Science Center, New Orleans, LA.

**Purpose of Study:** Hurricane force winds of Katrina lead to levee breaches resulting in massive flooding of homes and business. The stagnant water in the buildings coupled with loss of power, high temperatures and humidity lead to heavy mold growth. Many of our patients in the aftermath of Katrina reported increased symptoms of allergic rhinitis and asthma. We report a patient with new onset asthma, neosensitization to environmental allergens including molds and development of aspirin exacerbated respiratory disease.

**Methods Used:** A 63 year old man had been attending LSU Allergy Clinics for 8 years (pre-Katrina) for chronic cough due to post nasal drip from allergic rhinitis. His skin prick tests in the past were positive to house dust mite. The spirometry, methacholine challenge, CXR and CT were negative. His symptoms were well controlled in H-1 antihistamines, corticosteroid nasal spray and allergen specific immunotherapy. He was also using aspirin 81 mg per day for years on the advice of his primary care physicians without any adverse reactions. During his visit to the clinic approximately 6 months after Katrina, he reported shortness of breath, wheezing and worsening cough.

**Summary of Results:** A repeat skin testing revealed that in addition to positive skin prick tests for house dust mites, he was now positive to Alternaria, Aspergillus Fumigatus, Cladosporium and Italian rye. The total sera IgE level post-Katrina was increased and pulmonary function studies with methacholine challenge confirmed the presence of reactive airway disease. An aspirin challenge performed in the clinic with a starting dose of 40 mg resulted in significant reduction in his peak flow compared to his baseline together with shortness of breath and wheezing, resulting in admission to the emergency room.

**Conclusions:** The development of new onset asthma and sensitization to molds may be casually related, perhaps as a result of increased exposure to molds. The new onset aspirin exacerbated respiratory disease may suggest heightened sensitivity to other agents in the aftermath of Katrina. The follow-up of more patients in a systemic manner may be warranted in flood prone areas.

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**42**

**ANALYSIS COLLAGEN TURNOVER IN HEALTHY HUMAN GINGIVAL FIBROBLASTS TREATED WITH DIFFERENT DOSES OF TACROLIMUS**

N. Gagliano1,3, C. Moscheni1, G.M. Tartaglia1, S. Selleri1, M. Chiriva-Internati2,3, E. Coboz2,3, C. Torri1, F. Costa1, L. Pettinari1, and M. Gioia1. 1University of Milan, Segrato, Milan, Italy; 2Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX and 3Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX.

**Purpose of Study:** We previously demonstrated that a high dose (1 μM) of tacrolimus induced matrix metalloproteinases (MMP) protein
expression in human cultured gingival fibroblasts, suggesting this as the major molecular mechanism implied in maintaining the gingival collagen homeostasis in tacrolimus treated patients. Here we aimed at analyzing if the effect of tacrolimus on collagen turnover might be dose-dependent.

Methods Used: Human gingival fibroblasts were incubated for 72 hours with 10 nM, 100 nM and 1 μM tacrolimus, or left untreated (CT). Collagen type I and III (COL-I, COL-III), lysyl hydroxylase 2b (LH2b), MMP-1 and 2, tissue inhibitor of MMP-1 (TIMP-1) and transforming growth factor-β1 (TGF-β1) mRNA levels were assayed by RT-PCR, collagen protein levels by dot blot, and MMP activity by SDS-PAGE.

Summary of Results: Tacrolimus did not affect COL-I, COL-III, or MMP gene expression, whilst LH2b and TGF-β1 tended to be down-regulated after 1 μM FK506. Conversely, MMP-1 (p ns) and MMP-2 (p=0.05 vs CT, 10 nM, 100 nM) protein levels were up-regulated after 1 μM tacrolimus.

Conclusions: Our findings confirmed that a high dose of tacrolimus does not induce interstitial collagen overexpression by gingival fibroblasts, and up-regulates MMPs protein levels. At dose corresponding to the blood trough levels, tacrolimus does not exert any evident effect on collagen turnover pathways, suggesting that at this dose tacrolimus very likely does not affect collagen turnover and homeostasis in the gingival connective compartment of FK506-immunosuppressed subjects. This effect does not seem to be dose-dependent.

43 PROLONGED EOSINOPHILIA AND RESPIRATORY FAILURE ASSOCIATED WITH VISCERAL LARVA MIGRANS


Purpose of Study: Visceral larva migrans (VLM) is due to Toxocara canis, the common roundworm of the dog. T. canis infection is often subclinical, but pulmonary, ocular, and hepatic complications have been reported in children and adults. The purpose of this report is to review a case of prolonged, marked eosinophilia and recurrent respiratory distress associated with VLM.

Methods Used: We report a case of an 11-month old admitted to Arkansas Children’s Hospital with cough, fever, respiratory distress, and diffuse rash.

Summary of Results: During hospitalization, CH failed to respond to broad-spectrum antimicrobials and experienced increased leukocytosis with marked eosinophilia. Comprehensive cultures/PCR were negative for bacterial, viral, and tick-borne etiologies. CH’s peak absolute eosinophil count (AEC) was 29 × 103/μL (normal ≤700) and bone marrow aspirate confirmed eosinophilia without evidence of malignancy. Laboratory for immunologic disorders including flow cytometry, mitogen assay, RAST panel, immunoglobulins, and serum tryptase were normal. A markedly elevated T. canis antibody level of 7.3 IV (normal ≤0.8 IV) was reported. The family confirmed a history of pica and exposure to the family dog. CH was treated for VLM with Mebendazole and discharged to home. Two months after discharge, CH presented to the ED with acute severe respiratory distress and AEC of 55 × 103/μL. He was subsequently intubated and admitted to the PICU. Studies to rule out primary hypersensitivity syndrome (HES) were negative including fluorescence in-situ hybridization (FISH) to rule out deletions at the CHIC2 locus (chromosome 4q12). There were no observed abnormalities of the platelet-derived growth factor receptor α (PDGFRα) or Fip1-like 1 (FIP1L1) gene regions. One year after diagnosis, CH continues to require daily corticosteroids (0.25 mg/kg) to control eosinophilia and respiratory symptoms.

Conclusions: To our knowledge we are the first to report an infant with prolonged, marked eosinophilia and respiratory failure associated with diagnosis of VLM.

44 LYMPHOMA ARISING FROM A CALCINOTIC LESION IN A PATIENT WITH JUVENILE DERMATOMYOSITIS

A.A. Herrera Guerra and P. Morris. University of Arkansas for Medical Sciences, Little Rock, AR.

Purpose of Study: The association of dermatomyositis and malignancy in adulthood is well-documented. This phenomenon is not seen in patients with juvenile dermatomyositis. We review the case of an adolescent who presented with B-cell lymphoma arising from a calcinotic lesion associated with juvenile dermatomyositis. We found only 1 other similar case reported in the literature, and that individual did not develop malignancy until he was an adult.

Methods Used: We review the case of a girl diagnosed with juvenile dermatomyositis who developed B-cell lymphoma arising from a calcinotic lesion 3 years after her dermatomyositis diagnosis.

Summary of Results: The patient presented to our pediatric rheumatology clinic where she was diagnosed with juvenile dermatomyositis. She was treated aggressively with multiple agents including corticosteroids, hydroxychloroquin, methotrexate, azathioprin, intravenous immunoglobulin, and 1 dose of cyclophosphamide, but after 3 years, she continued to have active disease and widespread calcinosis. The patient developed a painful mass associated with an area of calcinosis in the right thigh. Following surgical removal of the lesion, pathological studies revealed that the lesion was consistent with B-cell non-Hodgkin’s lymphoma.

Conclusions: There is only one other case of malignancy arising from an area of calcinosis associated with juvenile dermatomyositis reported in the literature.

45 JUVENILE DERMATOMYOSITIS AS A PARANEOPLASTIC PHENOMENON?

A.A. Herrera Guerra and P. Morris. University of Arkansas for Medical Sciences, Little Rock, AR.

Purpose of Study: To review the literature regarding the occurrence of malignancy in pediatric patients with dermatomyositis and to determine if this occurrence may represent a paraneoplastic phenomenon.

Methods Used: The literature regarding malignancy and dermatomyositis and the case reports of pediatric dermatomyositis patients and malignancy were reviewed.

Summary of Results: Approximately 1/3 of adult patients with dermatomyositis develop malignancy with up to 42% presenting after the diagnosis of dermatomyositis has been made. The development of malignancy is often within the year of diagnosis of dermatomyositis, and the dermatomyositis improves when the malignancy is treated. This phenomenon has not been noted in pediatric patients. In our review of the literature we found 6 case reports of malignancy in patients with juvenile dermatomyositis or polymyositis. We noted that in those cases reported, 4 of the 6 patients had unusual physical findings at presentation such as splenomegaly or lymphadenopathy, and the malignancy was diagnosed within a mean of 6.7 months after diagnosis of juvenile dermatomyositis, suggesting that the dermatomyositis in these patients may represent a paraneoplastic phenomenon.

Conclusions: The simultaneous occurrence of juvenile dermatomyositis and malignancy is rare. The case reports reviewed would suggest that
when this phenomenon does occur, it may represent a paraneoplastic event indicating that patients who have unusual physical findings at the time of initial diagnosis of juvenile dermatomyositis may need further evaluation to determine if malignancy is present.

### 46 DEVIC’S SYNDROME AS INITIAL PRESENTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS!

**S.C. Karim, I. Grover, J. Taylor, and V. Majithia. Division of Rheumatology, Jackson, MS.**

**Introduction:** Devic’s syndrome or Neuromyelitis Optica (NMO) is an inflammatory demyelinating disease of central nervous system associated with optic neuritis, myelitis involving 3 or more contiguous spinal cord segments and seropositivity for NMO-IgG antibody. Devic’s syndrome as an initial manifestation of Systemic Lupus Erythematosus (SLE) has been reported once previously.

**Case:** A 22-year-old African-American female P1G0 at 22 weeks of gestation presented with weakness for 1 week. The weakness initially started in the left lower extremity and then involved the other extremities. She also had horizontal diplopia, temporal headache and arthralgias. Upon physical examination, she was found to have a discoid rash behind the left ear and muscle strength of 3/5 in the upper and 0/5 in the lower extremities as well as hyporeflexia. Her routine laboratory tests, tests for vasculitis, hepatitis and infectious etiology were normal. She had lymphopenia, a highly positive ANA and SS-A/ SS-B antibodies. Her MRI showed abnormal cord signal within the brain, cervical and thoracic spine. Salivary gland biopsy revealed mild lymphoplasmacytic inflammation. Her NMO antibody was positive. A diagnosis of Devic’s syndrome in association with SLE was made and she was treated with pulse IV solumedrol for 4 days and plasmapheresis.

**Discussion and Conclusion:** There is a debate about the relationship of NMO with autoimmune disorders such as SLE or Sjogren’s syndrome. If clinically evident SLE or Sjogren’s or positive auto-antibodies coexist with NMO signs and symptoms, the neurologic process may be a vasculitic complication of the systemic disease. Our case highlights these issues related to occurrence of this serious neurologic disease, difficulty in making a correct diagnosis of the underlying connective tissue disease and choosing the appropriate management in these patients. Further case studies are needed to explore these important issues.

### 47 SMOLEERING IGA MULTIPLE MYELOMA AND RECURRENT SINUSITIS

**J.R. Lurie. Tulane University, New Orleans, LA.**

**Rationale:** In a patient with recurrent sinopulmonary infections, immunologic evaluation with a serum protein electrophoresis is an essential part of the work up.

**Methods:** The patient is a 44 year-old male with a history of recurrent sinusitis for 2 years. He presented with symptoms of bilateral nasal congestion, thick purulent nasal drainage, facial pain over his left eyebrow, and anosmia. He had multiple courses of antibiotics that only temporarily improved his symptoms. He underwent sinus surgery twice and has grown from his sinonasal secretions organisms including Pseudomonas and Klebsiella. He denied symptoms of fever, fatigue, skeletal pain, urinary symptoms, motor weakness, sensory loss, or visual changes. His past medical history is significant for Hodgkin’s lymphoma at 17 years old and Type 2 Diabetes Mellitus. On physical exam his vital signs were stable; he had erythematous nasal mucosa with thick yellow mucus and no significant edema of the turbinates. The remainder of the exam was normal.

**Results:** The patient was found to have a total serum IgA of 1496 mg/dl. On serum protein electrophoresis a monoclonal band was seen. It was characterized by immunofixation as an IgA Kappa monoclonal band measured at 1.0 g/dl. Bone marrow biopsy revealed a plasma cell component of 5.5%. IgG, IgM, and IgE were normal. Response to pneumovax was adequate. Prick skin testing to common inhalants was negative.

**Conclusions:** The patient was diagnosed with a smoldering IgA multiple myeloma and recurrent sinusitis.

### 48 DIAGNOSTIC CRITERIA FOR ATROPHIC RHINOSINUSITIS

**T.H. Ly, R.D. deShazo, S.P. Stringer, and C.M. Stodard. University of Mississippi Medical Center, Jackson, MS.**

**Purpose of Study:** Atrophic rhinosinusitis is a syndrome associated with the loss of the normal nasal epithelium, resulting in intractable symptoms. The condition appears to be a final common pathway of nasal inflammation and ischemia leading to scarring and fibrosis of nasal mucosa and loss of mucociliary function. There is no consensus on diagnosis, and diagnostic criteria are not available to perform multicenter trials for this disease. The objective is to identify those clinical features most appropriate as diagnostic criteria for atrophic rhinosinusitis.

**Methods Used:** We reviewed the medical records of 50 patients and identified those for whom there was a consensus on the diagnosis among the team of allergist-immunologists and otolaryngologists caring for these patients. Clinical data on patients were tabulated on spread sheet for analysis.

**Summary of Results:** Twenty-two patients with the consensus diagnosis of atrophic rhinosinusitis were identified. A number of shared features of the disease immediately became apparent. Eighteen had two or more sinus surgeries, and fourteen of these had surgical turbinectomy. Eight had a variety of conditions associated with chronic nasal inflammation to include sarcoidosis, allergic fungal sinusitis, or chronic use of vasoconstrictor medications. Twenty-one reported nasal purulence, 18 had nasal obstruction, and 21 had erythematous nasal mucosa on rhinoscopy. Twelve had crusting nasal mucosa on exam, 8 had epistaxis, and 6 reported anosmia. Patients appeared to separate into two groups, those with chronic nasal purulence growing coliform bacteria, and a second group with a dry crusty and often bleeding nasal mucosa.

**Conclusions:** We conclude that diagnostic criteria for atrophic rhinosinusitis include the following symptoms and signs greater than six months: (A) Patient reported complaints of (1) frequent epistaxis, (2) anosmia, or (3) nasal obstruction. (B) Physicians observed abnormalities of (1) nasal purulence, or (2) severe crusting of nasal mucosa. (C) Documented histories of (1) multiple sinus surgeries, or (2) previous chronic inflammatory disease involving the nose or sinuses. Further analysis of the proposed criteria in multicenter studies of atrophic rhinosinusitis will lead to selection of those with the highest sensitivity and specificity for diagnosis.

### 49 CLINICAL AND IMMUNOLOGIC MANIFESTATIONS OF MIXED CONNECTIVE
TISSUE DISEASE IN MIAMI HISPANIC POPULATION COMPARED TO MIDWESTERN CAUCASIAN MIXED CONNECTIVE TISSUE DISEASE POPULATION

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Purpose of Study: A cross-sectional study of Mixed Connective Tissue Disease (MCTD) was performed to determine if there were differences in the clinical expression of MCTD associated with race or ethnicity.

Methods Used: Concurrently collected Miami MCTD and Systemic Lupus Erythematosus (SLE) cohorts and a well-characterized Midwestern Caucasian MCTD and SLE cohort. The clinical and laboratory features of the Miami MCTD cohort were compared to a matched Miami SLE and to a Midwestern MCTD cohort. Disease activity, severity and functional status were measured using a series of validated measures. CD4+CD25high expressing T regulatory cells were enumerated and serum soluble L selectin was measured as biomarkers of disease activity.

Summary of Results: Significant clinical and laboratory differences were found between the Miami MCTD and Miami SLE groups despite similar disease duration, activity, severity and functional status. Raynaud’s phenomenon, hand swelling, synovitis, myositis and sclerodactyly were all significantly more common in MCTD versus SLE. The Miami and Missouri Caucasian MCTD groups, while differing from SLE, were largely similar; however, gastroesophageal reflux, sclerodactyly and malar rash were significantly more frequent in the Missouri MCTD group.

Conclusions: Ethnic differences were observed in the frequency of end organ involvement in the Miami MCTD versus Missouri Caucasian MCTD groups. Clinical and laboratory features of all MCTD groups were clearly different from SLE, despite similar disease activity, disease severity and functional status. Disease activity measures appeared to behave similarly as valid measures of disease activity in SLE and MCTD.

50 ALLOPURINOL INDUCED DRESS SYNDROME


Purpose of Study: DRESS syndrome or Drug-Rash with Eosinophilia and Systemic Symptoms is a rare but life-threatening reaction. First, this syndrome is characterized by rash, eosinophilia, lymphadenopathy and fever. This is the rare case on Allopurinol induced syndrome in its florid state involving multiple organs including Skin, Liver, GI tract and Lungs. [8/11/1#]

Methods Used: A 29 years old African-American Male was admitted to our hospital with one - week history of severe itching, macular rashes all over his body, generalized abdominal pain, oral mucositis, pharyngitis, tender lymphadenopathy, diarrhea and palpitations. His symptoms started 2 weeks after taking allopurinol which was initiated by his primary physician for suspected gout. Abdominal pain and tenderness and pruritis were also noted. Initially the rash presented on his waist and quickly spread to involve the whole body involving about 75% of his body surface. The rash began as macules, progressed to papules before coalescing into plaques and later started desquaminating (picture 1). Oral lesions persisted as severe mucositis. Initial laboratory findings included apart from normal chemistry sodium of 134, potassium of 5.6, creatinine of 1.6, his liver function tests were abnormal with, ALT of 1250, AST of 576, alkaline phosphatase of 96, total bilirubin of 1.46 with most of it being unconjugated. CBC showed high eosinophil count with rest of the differentials being normal. A subsequent skin punch biopsy revealed a superficial and deep perivascular lymphocytic and eosinophilic infiltrate (picture 2). Colon and liver biopsies showed with crypt abscess formation and focal necrosis respectively (pictures 3 and 4).

Summary of Results: A diagnosis of anti-convulsant hypersensitivity and steroids were initiated as treatment. The rash, pruritis and skin sensitivity/tenderness improved within 3-4 days, as did eosinophil, and white blood cell counts. Other tests including those for viral infections such as monospot test, EBV and CMV titers, and bacterial infections were negative.

Conclusions: But unfortunately the patient was readmitted with worsening symptoms and despite treatment with IVIG (intravenous immunoglobulin) his liver panel abnormalities and eosinophilia worsened along resulting in his transfer to nearby burns unit where ultimately patient succumbed to this drug reaction.

51 AN INFANT WITH PARTIAL DIGEORGE SYNDROME, CHARGE ASSOCIATION, AND CONGENITAL MICROGASTRIA

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Purpose of Study: Infants with DiGeorge syndrome classically present with hypocalcemia, thymic hypoplasia, and cardiac defects. Microgastria, a rare congenital malformation of the foregut, has not been described in these patients.

Methods Used: An infant with partial DiGeorge syndrome , CHARGE association and congenital microgastria is discussed.

Summary of Results: A male infant was delivered at 36 weeks gestation and noted to have low-set ears, small phallus, microphthalmia, and a systolic ejection murmur. Chest x-ray showed the orogastric tube curled in the proximal esophagus, and CT-angiogram revealed complete esophageal atresia, tracheoesophageal fistula and microgastria. Echocardiogram revealed a moderate sized patent ductus arteriosus; renal and spinal ultrasounds were normal. The infant subsequently developed hypocalcemic seizures requiring ongoing calcium supplementation. He was noted to be lymphopenic, and immunophenotyping revealed significantly decreased T-cell numbers (18% CD3: 393/mm3), the majority being CD4+ CD45RA+ (67%), with normal B-cell and natural killer cell numbers. Lymphocyte proliferative responses to phytohemagglutinin (PHA) were markedly diminished (10,862; control 94,408). IgM levels were normal for age; IgA and IgG were undetectable. There were no deletions detected by fluorescent in situ hybridization or microarray analysis on either chromosome 22 or 10. The infant was treated with immunoglobulin, protective isolation, and prophylaxis for Pneumocystis jiroveci. Further evaluation revealed optic nerve hypoplasia, bilateral colobomas and failed hearing exams. Repeat immune evaluation reveals increasing T-cell numbers and improving proliferative response to PHA.

Conclusions: This infant presented with dysmorphic faces, hypocalcemia and immunodeficiency consistent with partial DiGeorge syndrome as well as tracheoesophageal fistula, coloboma, genital and ear anomalies consistent with the CHARGE association. Congenital microgastria remains a rare anomaly that has previously been linked to the VACTERL association. However, this is the first report of microgastria associated with partial DiGeorge syndrome and the CHARGE association.

52 FATAL NECROTIZING FASCIITIS WITH METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) COMPLICATING THERAPY OF RHEUMATOID ARTHRITIS WITH INFlixIMAB
54 ADALIMUMAB MORE EFFECTIVE THAN INFlixUMAB IN TREATMENT OF PAPA SYNDROME

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Purpose of Study: Although similar in mechanism of action, adalimumab may prove more effective in controlling some patients with an “autoinflammatory” disorder than infliximab.

Methods Used: A trial of adalimumab after an extensive therapeutic trial with infliximab, using surface area of healed skin and decreased occurrence of joint effusion as positive indicators of therapeutic success.

Summary of Results: WH is a 21-year-old African American male with a lifelong history of intermittent pustular skin eruptions, occasional joint effusions, and persistent unexplained neutropenia. This constellation of symptoms worsened at puberty, becoming persistent in nature and evaded diagnosis until recently. Use of prophylactic antibiotics and treating his chronic neutropenia with G-CSF (Filgastrim) was only partially effective. After an exhaustive immunologic work-up at many institutions, including dihydrodosphamide assays showing sub-optimal function but not consistent with chronic granulomatous disease, the patient was finally diagnosed with PAPA syndrome (pyogenic sterile arthritis, pyoderma gangrenosum, acne), considered an “auto-inflammatory” disorder with a mutation of CD2 Binding Protein 1 causing abnormal neutrophil cytoskeletal structure. The patient failed his initial treatment of methotrexate and prednisone. The literature suggests treatment with either IL-1 antagonist or anti-TNF agent, so he was then given infusions of infliximab for 8 months with minimal improvement and significant infusion reactions. Following 1 month of adalimumab, the patient had the vast majority of chronic lesions healed and no joint complaints.

Conclusions: Using an alternative form of TNF binding agent proved more effective than its counterpart in the treatment of our patient with PAPA syndrome.
Achilles tendon insertion. His Schober’s test and chest expansion was normal. His laboratory tests including blood counts, chemistries, liver function tests, rheumatoid factor, anti-CCP antibody, ACE levels, HIV, hepatitis serology and urine studies were normal. Hand radiographs revealed severe erosive arthritis of involved digits. Radiographs of chest, spine and sacroiliac joints were negative. He was initially treated with minocycline and later methotrexate with minimal relief. He has been started on adalimumab 40 mg every 2 weeks recently with good clinical relief.

**Discussion and Conclusion:** Reactive arthritis is generally an episodic mono or asymmetric oligoarthritis affecting the large joints of lower extremity. Commonly associated infectious agents include Chlamydia, Shigella, Salmonella species, Yersinia and Campylobacter. NSAIDS are the primary treatment of choice in majority of patients with complete resolution of symptoms but chronic cases may require use of DMARDs like sulfasalazine and methotrexate as well as biologic agents. Our case highlights that reactive arthritis can have a presentation similar to other erosive arthritides such as rheumatoid arthritis and psoriatic arthritis. It can also be aggressive and resistant to NSAIDS as well as traditional DMARDs. It should be considered in patients presenting with polyarthritis and hand involvement.

### 56 NECROTIZING LYMPHADENITIS IN A PREVIOUSLY HEALTHY YOUNG WOMAN: KIKUCHI-FUJIMOTO’S DISEASE OR SYSTEMIC LUPUS ERYTHEMATOSUS?

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**Introduction:** Kikuchi-Fujimoto’s disease (KFD) and Systemic Lupus Erythematosus (SLE) are included in the differential diagnosis of patients with acute necrotizing lymphadenitis.

**Case Report:** A 41 year old previously healthy Caucasian female presented with a one week history of high fevers, malaise, mild dyspnea and left sided neck pain. She denied sick contacts, insect bites and recent travel. She also denied any arthritis, previous rash, photosensitivity, sicca symptoms, alopecia or pleurisy. The patient was febrile, had localized swelling and tenderness over the left posterior cervical triangle and a diffuse, blanching maculopapular rash on her back and extremities. Breath sounds were decreased in the bases bilaterally. Lab studies showed a positive ANA at 1:3240, positive anti-Ro/SSA and anti-La/SSB antibodies, lymphopenia and microcytic anemia. PPD skin test, HIV serology, ANCA, cryoglobulins, rheumatoid factor, complement levels and blood and urine cultures were negative or normal. Neck CT revealed a 1.2 cm abscess within the left sternomastoid muscle with soft tissue inflammation and regional lymphadenitis. Left lower lobe pneumonia was present on chest x-ray. Neck biopsy showed acute necrotizing lymphadenitis, soft tissue necrosis and vasculitis. Gram stain and cultures for bacteria, fungi or AFB were negative. Skin biopsy findings were suggestive of SLE. Two days after abscess incision and drainage the patient became afibrile, with the rash improving after several more days. She did not receive any steroids and was discharged on antibiotics.

**Discussion:** KFD and SLE are well described causes of acute necrotizing lymphadenitis in young women, with common histologic and clinical features. KFD may occur in pre-existing SLE, coexist with SLE or evolve into SLE. Our patient presented with clinical features typical of KFD, while the serological pattern and lupus-like rash suggested an evolving autoimmune process. Since differentiation between the two entities on a purely morphologic basis is difficult, serological evaluation for SLE in all KFD patients should be undertaken. The patient’s future course will better delineate her disease, whether this proves to be truly self-limited or evolves into SLE.

### 57 PANCREATITIS, PANNICULITIS AND POLYARTHRITIS SYNDROME: A RARE COMPLICATION OF A COMMON DISEASE

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**Introduction:** Disseminated fat necrosis, also known as Pancreatitis, Panniculitis and Polyarthritis (PPP) syndrome, is a rare complication of pancreatic disease, with less than a hundred cases described in the medical literature.

**Case Report:** A 52 year old alcoholic male presented with a two week history of abdominal pain, anorexia and nausea. Serum amylase and lipase levels were over 2000 [units/L] and 4000 [units/L] respectively and abdominal CT showed a cystic pancreatic mass, suggestive of pseudocyst. Soon after admission, the patient developed right hand swelling, erythema and tenderness, more pronounced over the first metacarpophalangeal (MCP) joint, with the contralateral thumb and foot later also involved. The patient denied skin trauma and history of arthritis. The right MCP was aspirated and empiric antibiotics and steroids were started, although the aspirate was negative for bacteria and crystals. Because of persistent inflammation and fluctuance four days later, incision and drainage over both involved thumbs was performed, yielding yellow, thick fluid. Fluid cultures were again negative. Right hand and left foot MRI showed multifocal areas of bony edema interpreted as osteomyelitis. Bone scan showed multiple areas of increased uptake in the hands and feet. Blood cultures remained negative and echocardiogram was negative for endocarditis. Since infection was excluded clinically and by culture, the possibility of fat necrosis was raised. Tissue biopsy showed panniculitis, consistent with pancreatitis-induced fat necrosis. Antibiotics were discontinued and the patient was discharged on long term total parenteral nutrition for treatment of his pancreatic disease.

**Discussion:** The PPP syndrome should be considered in patients with panniculitis, polyarthritis and/or osteomyelitis in the presence of a variety of pancreatic disorders; although rare, the syndrome may also be encountered in the absence of symptomatic pancreatic disease. Early detection may spare patients from unnecessary diagnostic procedures and long term antibiotic treatment. MRI imaging and bone scan aid in early and accurate diagnosis. Treatment of the underlying pancreatic disease usually results in resolution of peripheral inflammation.
(short-term) duration in 24 (17 men; 49.6±2.4 yrs) and associated with a dilated cardiomyopathy with reduced ejection fraction (EF, <35%); 19 outpatients with compensated HF (14 men; 52.6±2.7 yrs) with comparable EF; 16 outpatients (9 men; 55.4±2.9 yrs) without HF; and 9 healthy volunteers (3 men; 35.8±3.5 yrs). Serum creatinine was <2.0 mg/dL in all patients.

**Summary of Results:** Serum 25(OH)D ≤30 ng/mL was found in 96% and 90% with protracted or short-term decompensated HF, where it was of moderate to marked severity (<20 ng/mL) in 83% and 76%, respectively. In patients with either compensated or no HF, 25(OH)D <30 ng/mL was found in 95% and 100%, respectively, and in 30% of volunteers. Serum 1,25(OH)2D levels were normal and did not differ between patient groups. Serum PTH >65 pg/mL was found in all with decompensated HF of ≥4 wks (132.4±12.0 pg/mL) and 67% with 1-2 wks duration (82.3±7.9 pg/mL), but only 11% with compensated HF (45.8±5.1 pg/mL), 12% without HF (29.6±5.4 pg/mL), and none of the volunteers (31.1±3.9 pg/mL). Calculated creatinine clearance (CrCl) did not differ between patients. In preliminary studies, twice-weekly application of irradiation from a UVB-emitting lamp to the exposed back in suberythemal doses for 12 wks in AA patients with hypovitaminosis D, led to a 63% improvement in 25(OH)D.

**Conclusions:** Hypovitaminosis D is prevalent amongst AA residing in Memphis, with or without HF. Elevations in serum PTH in keeping with secondary hyperparathyroidism are only found in decompensated HF, where hypovitaminosis D and other factors are contributory. Correction of hypovitaminosis D by a “vitamin D lamp” holds promise towards an inexpensive home therapy for the management of AA with heart failure.

59 SERIAL MONITORING OF SERUM COBALAMIN IN PATIENTS WITH DECOMPENSATED BIVENTRICULAR FAILURE


**Purpose of Study:** A distention of systemic veins and elevation in venous pressure occurs with the intravascular volume expansion that accompanies decompensated biventricular failure. There follows an engorgement of centrifibular veins and stasis of blood in hepatic sinusoids. An elevation in circulating cobalamin, or vitamin B12, occurs in this setting and may be related to endothelial dysfunction vis-à-vis hepatocellular injury. Serial monitoring of B12 over the course of days may offer insights into its pathogenic mechanisms: a rapid decline favoring endothelial dysfunction; as contrasted to a more prolonged defervescence that follows hepatocellular injury.

**Methods Used:** In 6 patients with decompensated biventricular failure having systemic venous distention and tricuspid regurgitation (TR) on clinical presentation and echocardiographic evidence of inferior vena cava dilation and moderate to severe TR, we monitored serum cobalamin on admission and discharge, after intensive medical treatment that included bedrest, intravenous loop diuretic, ACE inhibitor and spironolactone. On admission we also monitored serum aspartate (AST) and alanine (ALT) transaminases, markers of hepatocellular injury.

**Summary of Results:** Serum cobalamin on admission was elevated (1356±67 pg/mL), exceeding the upper limit to the normal reference range (600 pg/mL) in patients with decompensated biventricular failure. At the time of hospital discharge (2-7 days after admission), serum B12 had fallen by 29% (p<0.05) to 958±88 pg/mL in response to bedrest and intensive medical therapy. Serum AST and ALT on admission were normal.

**Conclusions:** In hospitalized patients with decompensated biventricular failure, elevations in serum cobalamin were found on admission and which declined within days of medical treatment. In future studies, we will determine the minimum time needed for serum B12 levels to fall within the normal range (<600 pg/mL), together with a resolution of inferior vena cava dilation, to suggest a presumptive return in euvolemia and loss of hepatic and splanchnic congestion, where the latter would suggest the optimal time to use oral medications.

60 EXCRETORY ZINC LOSSES AND BONE ZINC RESORPTION IN RATS WITH ALDOSTERONISM

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**Purpose of Study:** Zinc is an essential micronutrient having a myriad of biologic functions. Hypozincemia has been reported in patients with congestive heart failure (CHF), where neurohormonal activation, mediated largely by effector hormones of the renin-angiotensin-aldosterone system, accounts for a salt-avid state with salt and water retention. The influence of such hormones on zinc homeostasis is largely unknown. Herein, we used a rat model of aldosterone/salt treatment (ALDOST) to monitor excretory Zn losses and bone Zn, a major Zn storage site, together with plasma Zn levels.

**Methods Used:** Eight-wk-old male Sprague-Dawley rats were maintained on standard laboratory chow with Zn content (78.84 mg of Zn/kg) and received ALDOST (0.75 μg/hr) by implanted minipump and 1% NaCl/0.4% KCl in drinking water for 1 and 4 wks at which times we monitored urinary and fecal Zn excretion using a metabolic cage. 65Zn resorption from bone, and plasma Zn. Urine, fecal, and plasma Zn were monitored by atomic absorption spectroscopy, 65Zn by gamma scintillation counter with radioactivity in bone assessed following intravenous 65Zn administration, and bone:plasma area under the 65Zn concentration-time curve (AUC) ratio in each group. Untreated age-/gender-matched rats served as controls.

**Summary of Results:** Urinary Zn excretion was increased (p<0.05) at wks 1 and 4 ALDOST (18.9±3.1 and 20.2±2.7 μg/24h) compared to controls (3.9±0.2 μg/24h) and was even greater for fecal Zn excretion (5650±856 and 5994±1268 μg/24h) compared to controls (743±30 μg/24h). Plasma Zn was reduced (p<0.05) from levels found in controls (80.5±3.4 μg/dL) to 29.7±1.5 and 35.8±2.4 μg/dL at wks 1 and 4 ALDOST. At 4 wks ALDOST, 65Zn distribution to bone was significantly less (p<0.05) at all sampling time points (1, 4, 8, 24 and 48h) and 65Zn accumulation in bone was reduced (p<0.05) compared to controls as demonstrated by a 46% decrease in the AUC ratio. No change in the bone:plasma AUC ratio was found between controls and wk 1 ALDOST.

**Conclusions:** In rats receiving ALDOST, excretory Zn losses are considerable and for a fixed dietary Zn intake this leads to hypozincemia and to associated Zn resorption from bone that seeks to restore extracellular Zn homeostasis.

61 TUBERCULOSIS PERICARDITIS

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**Purpose of Study:** Tuberculosis (TB) should always be taken into consideration when we deal with constrictive pericarditis even in developed countries.

**Methods Used:** Case Report.

**Summary of Results:** 59 years old male presented with retrosternal pleuritic type chest pain, low grade fever, cough for four months associated with night sweats, weight loss and progressive shortness of breath on exertion. He had history of renal stone, hypertension and 20 pack year history of smoking. On examination, vitals were stable, jugular venous distension (JVD) was observed with a prominent ‘Y’ descend and there was S3 gallop. Laboratory
research revealed Erythrocyte sedimentation rate of 101 and atelectasis of both lower lobes on chest x-ray. The PPD was positive and the CT scan showed enlarged pretracheal and aortopulmonary lymph nodes and scarring of the left lower lobe, right middle lobe and right lower lobe, pericardial effusion and thickened pericardium. Echo cardiogram exhibited respiratory variation of mitral inflow and the late diastolic reversal of hepatic vein blood flow on expiration. Collagen vascular disease work up was negative. Pericardial biopsy demonstrated organizing inflammatory and hemorrhagic exudate but was negative for acid fast bacillus (AFB) and fungus. Bronchoalveolar lavage showed abundant macrophages and occasional giant cells. The pleural fluid showed giant cells and mixed inflammatory cells with small lymphocytic predominance. The patient was diagnosed to have constrictive effusive pericarditis most probably secondary to tuberculosis and was empirically started on rifampin, pyrazinamide, INH, ethambutol, pyridoxine, and prednisone. The four drug regimen was continued for two months and prednisone for six weeks. Then he received INH and rifampin along with pyridoxine for another two months. Towards the end of this treatment regimen, ESR normalized, pericardial effusion disappeared. Finally the patient’s symptoms improved and he was eventually free of fever and night sweats.

**Conclusions:** We conclude that TB should be considered as a potential cause of pericarditis especially in susceptible populations and it is worthwhile to empirically treat such cases that have not been proven to be TB and to follow the response to anti tuberculosis therapy.

**62 CORRELATION OF QRS DURATION WITH LEFT VENTRICULAR EJECTION FRACTION (LVEF)**

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**Purpose of Study:** Patients with low ejection fraction have a high incidence of sudden cardiac death. However the diagnosis of low ejection fraction in an asymptomatic patient is often delayed since there is no good way to estimate ejection fraction without performing an echocardiogram. If we can predict low ejection fraction by performing a 12 lead Electrocardiogram (EKG) we will be able to identify these patients earlier. This may decrease the incidence of sudden cardiac death.

**Methods Used:** List of patients who had echocardiogram in Coney Island Hospital in the year 2005 was obtained. From this list, patients who had LVEF of 40% and less were selected for the study. Patients with valvular heart disease, myocardial infarction and those who had permanent pacemaker were excluded from the study. The QRS duration of these patients (n=138) were recorded from their EKGs. The values of the QRS duration and the LVEF were analyzed using the Pearson product moment correlation. Statistical differences between the means of two groups were assessed using independent t-tests.

**Summary of Results:** LVEF diminished from a high of 30.2 in the 80-100 QRS duration group to a low of 18.0 in the 160 - 180 group (p < 0.001, Anova).

**Conclusions:** LVEF estimated by echocardiogram correlated with the QRS duration obtained from the EKG. Low LVEF can be predicted in non-ischemic cardiomyopathy patients using the easily available cost effective EKGs.

**63 IS THE INCIDENCE OF CAD AFFECTED BY HDL LEVEL IN PATIENTS WITH DIABETES MELLITUS OR METABOLIC SYNDROME?**

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**Purpose of Study:** Diabetes mellitus (DM), HDL level, and metabolic syndrome(MetS) are considered CAD risk factors. The purpose of this study was to determine the independent additive value of these factors for predicting CAD.

**Methods Used:** This study included 600 patients with no history of CAD who presented for elective cardiac cath (342 men and 258 women). Patients were evaluated for MetS using NCEP-ATP III criteria. DM was defined as fasting blood glucose>126 or DM therapy. CAD was defined as the presence of at least 70% stenosis in one of the 3 major coronary vessels or 50% stenosis in the left main coronary artery. Univariate relationships were assessed using the Pearson chi-square test and multivariate relationships were tested by logistic regression analysis.

**Summary of Results:** HDL<40 was present in 167 patients (mean age 59.4) and HDL>40 was present in 434 patients(mean age 62.6); 28% of the total group had DM and 47% had MetS. DM+/HDL<40 group had higher incidence of CAD than DM+/HDL>40 group (p<0.001); there was no sig difference in the incidence of CAD between DM-/HDL<40 and DM-/HDL>40 groups. Also, there was a sig higher incidence of CAD in MetS+/HDL<40 group compared to MetS+/HDL>40 group (p<0.01) and no sig difference in the incidence of CAD between MetS-<40 and MetS-<40 groups. Logistic regression showed a sig interaction between DM and HDL for predicting CAD, but there was no additional value for considering MetS.

**Conclusions:** Low HDL has sig additive value for predicting CAD in patients with DM, but did not add to risk assessment in DM- patients. After considering DM and HDL, MetS was not shown to have independent value for risk assessment.

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**64 MOLECULAR EVENTS AND THE RAT MYOCARDIUM IN RESPONSE TO AND RECOVERY FROM ALDOSTERONISM**
**65 PREDICTORS OF MORTALITY AFTER PERCUTANEOUS INTERVENTION ON UNPROTECTED LEFT MAIN CORONARY ARTERY**


**Purpose of Study:** The safety and efficacy of percutaneous intervention (PCI) in patients with unprotected left main coronary artery disease (LMCA) in whom surgical revascularization was considered high risk is unknown. The objective of the study was to determine the mortality and its predictors after PCI in this population.

**Methods Used:** Data were collected in 19 patients (mean age 72 years, 17 males) who underwent PCI of LMCA at Veterans Affair Medical Center from December 2004 - August 2006. Data on patient demographics, cardiac risk factors, ejection fraction (LVEF), initial presentation, Parsonnet and Euro scores were collected.

**Summary of Results:** 10 patients (68%) presented with acute myocardial infarction. Among the entire population, hypertension was present in 79%, dyslipidemia in 95%, diabetes in 42%, and chronic renal insufficiency in 16% of patients. 42% were smokers. Mean Parsonnet and Euro score was 17.3 ± 9.1 and 7.8 ± 3.1 respectively. Over a 12 month follow up (mean 12.3 months), 30 day mortality was 21% and 1 year mortality was 36%. Cause of death was non-cardiac in all patients. Patient age and initial presentation with acute myocardial infarction were the most significant predictors of mortality (both p<0.04).

**Conclusions:** PCI on LMCA in patients who are poor surgical candidates is feasible. Patients presenting at older age and with acute myocardial infarction are at higher risk for mortality.

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**66 RISK FACTORS FOR LEFT VENTRICULAR DILATION IN YOUNG ADULTS: THE BOGALUSA HEART STUDY**

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**Purpose of Study:** Cardiac enlargement is an important predictor of adverse cardiovascular (CV) events. Left ventricular (LV) dilation is a precursor both of LV dysfunction and clinical heart failure. This study examined LV dilation in a biracial young adult population.

**Methods Used:** Risk factors for LV end-diastolic dilation were examined in 841 young adult subjects (341 male, 490 female) who participated in the Bogalusa Heart Study. Ventricular dimensions were determined by M-mode echocardiography following and indexed to height using a standard method. Logistic regression models were used, stratified by race and sex, to assess the relationship of CV risk factors with quintile of LV end-diastolic dimension.

**Summary of Results:** In sex-specific models adjusted for age, race, blood pressure, and measure of insulin resistance, body mass index in the obese range was a significant predictor of LV dilation in both men and women (Odds Ratio [OR], 3.06; 95% Confidence Interval [CI], 1.67 to 5.61 in men; OR, 2.38; 95% CI, 1.45 to 3.91 in women). Among men, race was a marginally significant predictor of LV end-diastolic dimension (OR, 1.76; 95% CI, 0.92 to 3.38) with higher blood pressure levels in black men as compared to white, while among women, no difference was observed. A triglycerides level >155 mg/dL was also marginally significantly associated with LV dilation in men, while LDL cholesterol>160 mg/dL was marginally significantly associated with LV end-diastolic dilation among women.

**Conclusions:** In this study, obesity was the most consistent predictor of LV dilation in a generally healthy, asymptomatic, young adult population.

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**67 LOW BIRTH WEIGHT IS ASSOCIATED WITH LOWER LARGE ARTERY COMPLIANCE IN ASYMPTOMATIC YOUNG ADULTS: THE BOGALUSA HEART STUDY**


**Purpose of Study:** Low birth weight, an indicator of intrauterine growth restriction, is associated with adult cardiovascular (CV) disease, type 2 diabetes and adverse levels of CV risk factors. Impaired arterial compliance is also an independent predictor of early vascular damage and related CV outcome. However, information is scant regarding the influence of birth weight on arterial compliance. This study assessed the hypothesis that low birth weight is related to impaired arterial compliance.

**Methods Used:** The study cohort consisted of 624 black and white subjects (29 % black, 43 % male) aged 25-44 years enrolled in the Bogalusa Heart Study. Birth weight and gestational age information on the study cohort were obtained from the Louisiana State birth certificates. Arterial compliance was assessed in terms of large artery (capacitive) compliance and small artery (oscillatory) compliance by noninvasive radial artery pressure pulse contour analysis.
These results suggest that low birth weight is adversely associated with cardiovascular disease in adult life through systemic inflammation.

**Conclusions:** These results suggest that low birth weight is adversely associated with CV risk in young adult life through early vascular damage.

**68 ANGIOTENSIN-CONVERTING ENZYME INHIBITORS AND CHANGES IN SERUM CREATINETINE LEVELS AFTER CORONARY ANGIOPLASTY**

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**Purpose of Study:** Contrast-induced nephropathy (CIN) is a dreaded consequence of several contrast procedures and an important cause of morbidity and mortality. ACE-inhibitors have been analyzed in a few research studies involving CIN yielding mixed results. In practice, ACE-inhibitors are often held prior to the administration of IV iodine contrast. The aim of this study was to determine the effects of ACE-inhibitors on CIN and post-procedure serum creatinine by studying a cohort of patients undergoing coronary angiography.

**Methods Used:** We screened a cohort of 600 consecutive patients at high risk of developing CIN because of baseline impairment in renal function or diabetes who underwent coronary angiography between 2001-2006. These patients were matched according to gender, ethnicity, presence or absence of diabetes, and baseline GFR, with 57 patients with no prior use of ACE inhibitors. Serum creatinine levels were measured at baseline as well as up to 72 hours post-procedure. The primary measure was the incidence of CIN. The secondary endpoint was a change in serum creatinine up to 72 hours post coronary angiography/angioplasty.

**Summary of Results:** CIN occurred in 7 patients treated with ACE-inhibitors (12%) and in 11 patients not treated with ACE-inhibitors (19%), odds ratio 0.59 (95% CI 0.19-1.81, P=0.30). An increase in serum creatinine levels occurred in a significantly higher number of patients without ACE-inhibitors verses those with ACE-inhibitors (P=0.023). A significant increase in creatinine values was observed in patients not treated with ACE-inhibitors (+0.22±0.65 mg/dl, P=0.012). No significant change was found in patients treated with ACE-inhibitors (+0.04±0.31 mg/dl, P=0.39).

**Conclusions:** This study shows that patients on ACE-inhibitors have no significant increase in serum creatinine values after coronary angiography compared to patients who were not on ACE-inhibitors. Ultimately, whether the lack of increase in serum creatinine in patients on ACE-inhibitors translates into a clinical benefit remains unclear. Larger randomized, controlled trials should examine this issue. In the meanwhile, the internist should recognize the potential benefit of continuing patients on ACE-inhibitors prior to dye procedures to avoid the dreaded consequences of CIN.

**70 INTERACTION OF G-PROTEIN B3 SUBUNIT AND NITRIC OXIDE SYNTHASE GENES ON CARROTID ARTERY INTIMA-MEDIA THICKNESS IN YOUNG ADULTS: THE BOGALUSA HEART STUDY**


**Purpose of Study:** G-protein beta-3 subunit (GNB3) gene C825T and endothelial nitric oxide (eNOS) gene G894T polymorphisms both influence arterial structure and function. However, information is scant regarding the interaction of these genes on arterial wall thickness.

**Methods Used:** This aspect was examined in 654 white and black subjects, aged 25 to 43 years (72.9% white, 39.3% male). Arterial wall thickness was assessed in terms of the average intima-media thickness (IMT) of common carotid, internal carotid and carotid bulb segments by B-mode ultrasonography.

**Summary of Results:** The variant T allele frequency of the GNB3 C825T polymorphism was higher in blacks compared to whites (0.718 vs. 0.65, P=0.007), adjusting for race, age, sex, gestational age, body mass index and smoking. With respect to WBC differential counts, Pearson correlation coefficients between birth weight and neutrophils were -0.093 (r=0.014) for whites, -0.082 (p=0.168) for blacks and -0.084 (p=0.008) in total sample, after adjusting for covariates. Birth weight was not correlated with other leukocyte subtypes. Moreover, mean values of WBC decreased with race- and sex-specific quintiles of gestational age-adjusted birth weight (p for trend =0.0009).

**Conclusions:** The findings from this study suggest that low birth weight is associated with increased systemic inflammation.
CALCIUM AND ZINC DYSHOMEOSTASIS OF THE HEART, ITS CARDIOMYOCYTES AND MITOCHONDRIA IN RATS WITH ALDOSTERONISM


Purpose of Study: A dyshomeostasis of such divergent cations as Ca\(^{2+}\) and Zn\(^{2+}\) is increasingly recognized as a factor contributing to pathophysiologic expressions of congestive heart failure, where neuromuscular activation is an integral feature. The impact of neuromuscular activation on Ca\(^{2+}\) and Zn\(^{2+}\) homeostasis of the myocardium remains uncertain. Toward this end, we monitored Ca\(^{2+}\) and Zn\(^{2+}\) concentrations in heart tissue, its cardiomyocytes and their mitochondria harvested from rats with chronic aldosteronism.

Methods Used: Eight-week-old male Sprague-Dawley rats received aldosterone/salt treatment (ALDOST, 0.75 μg/h by implanted mini-pump) with 1% NaCl/0.4% KCl in drinking water for 4 wks or ALDOST plus spironolactone (Spi; 150 mg/kg/day by gavage), an aldosterone receptor antagonist, for 4 wks. Untreated, age/-gender-matched rats served as controls. We monitored: a) in intact myocardium, total Ca\(^{2+}\) and Zn\(^{2+}\) by atomic absorption; b) in isolated cardiomyocytes, cytosolic-free [Ca\(^{2+}\)]\(_i\) and [Zn\(^{2+}\)]\(_i\) by Fura-2 and FluoZin3-fluorescent probes; and c) in isolated mitochondria, total [Ca\(^{2+}\)]\(_m\) and [Zn\(^{2+}\)]\(_m\) by atomic absorption.

Summary of Results: At 4 wks ALDOST alone vs. controls vs. 4 wks ALDOST+Spi, we found: increased (p<0.05) total cardiac Ca\(^{2+}\) 5.42±0.31 vs. 3.78±0.16 vs. 3.96±0.28 nEq/mg fat-free dry tissue (FFDT); increased (p<0.05) total Zn\(^{2+}\) 93±3 vs. 79.5±1 vs. 79±1 ng/mg FFDT; increased (p<0.05) cardiomyocyte [Ca\(^{2+}\)]\(_i\) 80.2±4.5 vs. 29.0±4.0 vs. 28.2±3.2 nmol/L; increased (p<0.05) [Zn\(^{2+}\)]\(_i\) 1.64±0.08 vs. 0.76±0.12 vs. 0.86±0.16 nmol/L; and increased (p<0.05) total [Ca\(^{2+}\)]\(_m\) 103±4.10±0.4 vs. 47.9±4.9 vs. 65.9±4.1 ng/mg protein and [Zn\(^{2+}\)]\(_m\) 41.6±2.7 vs. 26.3±2.8 vs. 26.8±3.8 ng/mg protein.

Conclusions: Chronic aldosteronism is accompanied by intracellular Ca\(^{2+}\) and Zn\(^{2+}\) overloading of the heart, including its cardiomyocytes and their mitochondria and which can be prevented by spironolactone cotreatment. The impact of these iterations in cardiomyocyte and mitochondrial Ca\(^{2+}\) and Zn\(^{2+}\) on their redox state is under investigation.

ECHOCARDIOGRAPHIC CORRELATES OF LEFT BUNDLE BRANCH BLOCK WITH RIGHT AXIS DEVIATION ON ELECTROCARDIOGRAM (ECG)

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Purpose of Study: Left bundle branch block (LBBB) with right axis deviation (RAD) has been reported in some 105 patients, but echocardiographic data are missing in nearly all of them.

Methods Used: We report the echo-doppler findings in 3 such patients.

Summary of Results: Patient 1. At 9 months he had repair of supraavalvular aortic stenosis. At 38 years he had NYHA Class III cardiac failure and on ECG, left ventricular hypertrophy (LVH) with QRS prolongation. After replacement of a stenotic bicuspid aortic valve with a porcine prosthesis, the ECG showed LBBB with an indeterminate axis. At 43 years he had Class IV cardiac failure (BNP >4,000 pg/ml) and LBBB, RAD. Echo revealed LVH and dilatation; an ejection fraction (LVEF) of 20%; a restrictive filling pattern with a left ventricular end-diastolic pressure (LVEDP) >25 mm Hg; and septal to lateral wall dysynchrony (>250 ms). Pressure was 20 mm Hg in right atrium (RAP) and 60 mm Hg in a pulmonary artery (PAP) with preserved right ventricular function.

Patient 2. A 68-year-old man with hypertension came with a Class IV exacerbation of cardiac failure (BNP, 996) and LBBB, RAD. Echo showed LVH and dilatation; LVEF of 20%; restrictive filling pattern with LVEDP >25 mm Hg; no dysynchrony (<100 ms); and normal PAP, RAD, and right ventricular function.

Patient 3. A 56-year-old man with cardiomyopathy came with Class IV cardiac failure and LBBB, RAD. His echo showed left ventricular dilatation; LVEF of 10%; restrictive filling pattern with LVEDP >25 mm Hg; dysynchrony (>250 ms); and normal PAP, RAD, and right ventricular function. Restrictive filling pattern normalized with treatment.

Conclusions: Most of the 105 previously reported patients with LBBB and RAD had a dilated cardiomyopathy, either idiopathic or due to one of many specific etiologies. The LV was large in nearly all; the right ventricle, in most; and the majority had cardiac failure. The clinical and echocardiographic data in our 3 patients support the view that LBBB with RAD is a reliable sign of severe left ventricular dysfunction, but right ventricular function may be preserved.

HYPOALBUMINEMIA IN AFRICAN-AMERICANS WITH DECOMPENSATED HEART FAILURE


Purpose of Study: Albumin is synthesized by the liver; 60% of albumin is distributed within the interstitial space while 40% is contained in the vascular space. An expansion of total body water, as occurs with decompensated heart failure, serves to hydrate the extracellular collagen matrix and to provide an expanded interstitial space for the accumulation of albumin. An expanded interstitial space may be a cause of the hypoalbuminemia seen in heart failure. In African-Americans (AA), the relationship between hypoalbuminemia and expanded extravascular volume is uncertain. Herein we began to address this issue and hypothesized serum albumin would be lower in AA patients with decompensated failure that included lower extremity edema vis-a-vis AA patients with compensated heart failure without edema and AA patients without heart failure.

Methods Used: In 68 patients, we monitored serum albumin: at the time of admission in 40 hospitalized patients (26M, 14F; 52.6±2.8 yrs) with decompensated heart failure; in 28 outpatients (8M, 8F; 49.9±2.7 yrs) without heart failure. AA patients with compensated heart failure without edema and AA patients without heart failure.

Summary of Results: Albumin (p=0.006). In 68 patients, we monitored serum albumin: at the time of admission in 40 hospitalized patients (26M, 14F; 52.6±2.8 yrs) with decompensated heart failure; in 28 outpatients (8M, 8F; 49.9±2.7 yrs) without heart failure. AA patients with compensated heart failure without edema and AA patients without heart failure.
Conclusions: Hypoalbuminemia was present in hospitalized AA patients with decompensated heart failure that included lower extremity edema vis-a-vis AA outpatients with compensated heart failure or without failure. The role of a hydrated collagen matrix and expanded interstitial space in contributing to hypoalbuminemia in AA patients with decompensated failure is therefore called into question. Our study did not address impaired hepatic albumin synthesis or reduced dietary protein intake.

SYNCOPE IN A HISPANIC POPULATION

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Purpose of Study: Syncope is defined as a transient loss of consciousness with an inability to maintain postural tone that is followed by spontaneous recovery. Syncope is a prevalent disorder, accounting for 1-3% of emergency department visits, and up to 6% of hospital admissions each year in the United States. A retrospective analysis was done to evaluate the characteristics of a Hispanic population admitted with a primary diagnosis of syncope and collapse.

Methods Used: The medical records of patients admitted at the Cardiovascular Center of Puerto Rico and the Caribbean, from 1999 to 2005, after an episode of syncope were reviewed. The characteristics of this population and the etiologies of syncope were analyzed. One hundred and eighty six patients were identified with a primary diagnosis of syncope and collapse.

Summary of Results: Although many etiologies for syncope exist, recent studies suggest categorization into cardiac, noncardiac, and unknown groupings for the purposes of future risk stratification. A primary diagnosis of syncope and collapse was above 60 years of age, while admissions due to cardiac, neurologic, metabolic, and unknown etiologies of syncope were analyzed. One hundred and seventy-three patients were identified with a primary diagnosis of syncope. A retrospective analysis was done to evaluate the characteristics of a Hispanic population admitted with a primary diagnosis of syncope and collapse. The highest incidence of arrhythmias or intraventricular block occurred in those patients admitted with cardiac syncope. Although the cause of syncope is often benign, identifying the occasional life-threatening cause (tachyarrhythmias, heart block) is important. With accurate diagnosis and appropriate treatment, syncope can be resolved in most patients, and recurrence may be avoided.

Conclusions: The studied population showed a higher incidence of atrial fibrillation when compared with a control group of diabetic only patients (12% vs. 5.9%; P < 0.001). The studied population showed a higher incidence of atrial fibrillation when compared with the control group. The probable causes of these findings are: 1) A subnormal Left Ventricular Ejection Fraction (50 ± 8% vs. 62 ± 12%; P < 0.001), 2) A higher end-systolic dimension of the left atrium (46 ± 10 mm vs. 40 ± 8 mm; P < 0.05), 3) A continuous left ventricular and atrial remodeling process, 4) Infiltration of fat in the right atrium and sinus node, 5) Fibrosis of both atria and ventricles.

CALCIUM AND ZINC DYSHOMEOSTASIS AND OXIDATIVE STRESS IN RATS WITH ALDOSTERONISM

M.S. Gandhi, S.K. Bhattacharya, R.A. Ahokas, Y. Sun, I.C. Gerling, and K.T. Weber. University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: The chronic neurohormonal activation that contributes to the clinical syndrome congestive heart failure (CHF) is accompanied by a systemic illness that includes the appearance of oxidative stress in diverse tissues. Pathogenic mechanisms responsible for this altered redox state are under investigation. This includes factors contributing to the induction of oxidative stress and activity of endogenous antioxidant defenses. Toward this end, we monitored calcium and zinc homeostasis in rats with aldosteronism, with the perspective that iterations in these metals could influence the balance between oxidative stress and antioxidant defenses—as pro- and antioxidants, respectively.

Methods Used: Uninephrectomized 8-wk-old male Sprague-Dawley rats received an implanted minipump administering aldosterone (ALDO; 0.75 µg/h) together with 1% NaCl/0.4% KCl in their drinking water (ALDOST) for 4 wks when we monitored: urinary and fecal Ca2+ and Zn2+ excretion; plasma-ionized [Ca2+]i, and total Zn2+; plasma α-antiproteinase (AP) activity, an inverse correlate of oxidative stress; and plasma Cu/Zn-superoxide dismutase (SOD) activity. Unoperated, untreated age-gender-matched rats served as controls.

Summary of Results: At 4 wks ALDOST vs. controls, urinary and fecal excretion of Ca2+ were increased (7015±372 µg/24h and 172±27 mg/24h, respectively; p<0.05) vs. (531±164 µg/24h and 66±10 mg/24h). Urinary and fecal Zn2+ excretion (20±3 µg/24h and 599±41268 µg/24h vs. 3.9±0.2 µg/24h and 73±30 µg/24h) were also increased. Plasma [Ca2+]i, and Zn2+ were each reduced (0.7±0.02 mmol/L and 36±2 µg/dL; p<0.05 vs. 1.0±0.04 mmol/L and 81±3 µg/dL). Plasma α1-AP and Cu/Zn-SOD activities were each reduced 24.3±1.2 µmol/L and 1.7±0.1 U/mL; p<0.05 vs. 39.8±2.1 µmol/L and 2.4±0.1 U/mL in controls.
Conclusions: A dyshomeostasis of Ca\(^{2+}\) and Zn\(^{2+}\) is present in rats with aldosteronism. This includes their increased excretory losses, particularly from the gastrointestinal tract. For a fixed dietary intake of these minerals, these losses contribute to a fall in their plasma concentrations and the appearance of oxidative stress coupled to a compromise in endogenous antioxidant defenses.

### 77 CACHEXIA AND RECOVERY FROM WASTING IN RATS WITH ALDOSTERONISM

K.D. Green, Y. Sun, and K.T. Weber. University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** Chronic neurohormonal activation in congestive heart failure (CHF) includes aldosteronism and is accompanied by a systemic illness with a progressive loss of soft tissue and bone eventuating in a wasting syndrome termed cardiac cachexia. We hypothesized aldosteronism in rats would lead to cachexia at 4 wks ALDOS/salt treatment (ALDOST), defined as a failure to gain body weight, skeletal muscle atrophy, and bone resorption, followed by recovery at 4 wks after ALDOST had been discontinued.

**Methods Used:** To simulate the inappropriate (relative to dietary Na\(^+\)) chronic elevations in plasma aldosterone (ALDO) found in human CHF, 8-wk-old male Sprague-Dawley rats received ALDO (0.75 µg/h) by implanted minipump for 4 wks, together with 1% NaCl in drinking water; a 0.4% KCl supplement is provided to prevent hypokalemia. In untreated controls and in treated rats, we monitored body weight at 8, 12 and 16 wks of age, which respectively represented baseline, 4 wks ALDOST, and 4 wks off ALDOST. In each group, we monitored body and skeletal muscle (gastrocnemius) weight and the morphologic appearance of muscle fibers. Bone mineral density of the tibia was also determined.

**Summary of Results:** Comparisons were made with age/gender-matched controls.

**Conclusions:** Chronic aldosteronism in rats is accompanied by cachexia, expressed as a failure to gain body weight, skeletal muscle atrophy and bone resorption. The withdrawal of ALDOST is accompanied by a recovery in body weight, skeletal muscle weight and myofiber size, and restoration of bone mineral density raising the prospect for recovery in patients with CHF.

### 78 MATRIX METALLOPROTEINASE-9: ONE ENZYME, MULTIPLE ACTIONS

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**Purpose of Study:** Matrix metalloproteinases (MMP) is a family of enzymes responsible for the proteolytic processes leading to diverse pathological situations such as cancer invasion, and heart failure. MMP-9, a major component of this family cleaves type IV and V collagen, however cleavage of triple helical type I collagen by this enzyme has not been reported yet. Herein we demonstrate that the fully active MMP-9 cleaves triple helical type I collagen.

**Methods Used:** Enzyme derived from human adenomacarcinoma cells and purified using gelatin based column. To get the intermediate and fully active forms, purified enzyme was incubated with 1 mM 4-aminophenylmercuric acetate at 37°C for 30 minutes and 24 hours respectively. Preparation of recombinant MMP-9 and its carboxyl terminal truncated mutant was generated by PCR using a template and a set of primers, followed by digestion with restriction enzymes. Enzyme activity was assessed by gelatin zymography. The type I and V collagenolytic activity of the enzymes was determined by using bovine type I collagen and human placental type V collagen as substrate respectively. All purified enzymes were checked for possible adulteration with other collagenases using western blot technique.

**Summary of Results:** Fully active form of MMP-9 (68 kDa) cleaved triple helical collagen. It was demonstrated as identical cleavage pattern as other native collagenases. Interestingly, like native fully active enzyme, only the recombinant MMP-9 whose carboxyl terminal was truncated acquired type I collagenolytic activity. Both fully active MMP-9 and truncated recombinant MMP-9 retained all other MMP-9 proteolytic activity like collagen type V cleavage. No other enzyme was detected on purified fully active MMP-9 samples using western blotting.

**Conclusions:** This is the first time to report that MMP-9 cleaves triple helical type I collagen. In fact, we hypothesize that the enzymatic activity of MMP-9 could be changed from one substrate to another throughout activation process. Of clinical importance, cardiac remodeling after myocardial infarction and progression of aortic dissection could be affected by one enzyme that has the capability of digesting broad spectrum of substrates. This enzyme might also be selectively blocked at different sites with pharmacological or biological agents as a therapeutic approach in these patients.

### 79 CHRONIC MESENTERIC ISCHEMIA: CASE SERIES

V.R. Jaligam, R.D. Yount, and R.E. Quintal. LSUHSC, New Orleans, LA.

**Purpose of Study:** This article summarizes the available evidence regarding the diagnosis and percutaneous intervention in chronic mesenteric ischemia.

**Methods Used:** We have treated 11 mesenteric arteries in 10 patients with 100% technical success. Most of these patients were female and the average age was 73 years. Ten of the eleven treated arteries were stented. In one of these patients we failed to deliver the stent from femoral approach but were successful from the brachial approach. In one case we deployed a second stent because of the first stent did not properly cover the ostium. The only artery not stented was a superior mesenteric artery with an area of stenosis at the branch point of an anomalous right hepatic artery arising from the body of the superior mesenteric artery. A restenosis rate of 27% was noted. All restenosed vessels were treated successfully with angioplasty with 1 requiring restenting (sandwich stenting). All the patients were discharged from the hospital alive. Complications included one retroperitoneal hematoma and the one surgical repair of a brachial artery.

**Summary of Results:** Our study indicates, angioplasty and stenting of the mesenteric arteries can be carried out with high success and low rate of complications. The main complication was restenosis treated with a second angioplasty. The advent of drug eluding stents may minimize the risk of restenosis As compared to surgery, ours and other published data indicate that percutaneous interventions provides good results with minimal risk of death and low procedure related morbidity. Therefore, we conclude that the initial treatment approach for chronic mesenteric ischemia should be, nonsurgical. In addition, routine revascularization of the internal iliac artery may decrease the incidence of ischemic colitis and the recurrence of ischemic symptoms.
by providing further collateral support of the circulation of the left side of the colon.

**Conclusions:** Patients with chronic mesenteric ischemia are at increased risk of acute intestinal ischemic events secondary to late diagnosis. It is now clear that optimal treatment of mesenteric ischemia depends on prompt diagnosis and high index of suspicion. With the available data it is clear that percutaneous intervention is highly effective and feasible. It should be preferred primary modality for all patients, and should be considered as an option for non-operative patients.

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**80 ENDOVASCULAR STENT GRAFT REPAIR OF INFRArenal ABDOMINAL AORTIC ANEURYSM**

V.R. Jaligam, R.D. Yount, and R.E. Quintal. LSUHSC, New Orleans, LA.

**Purpose of Study:** Infra-renal abdominal aortic aneurysm poses a significant mortality and morbidity without treatment. With open surgical repair the outcomes are directed by the co-morbid conditions. Endovascular stent graft repair with new generation stent grafts, in selected high risk /or nonsurgical candidates, has better outcomes and a reduced complication rate.

**Methods Used:** Retrospective short term study (2005-2007) of a total of 18 elective patients. The patient’s age ranged between 65-84 years old, and they were predominantly men. Using the criteria for high risk, defined (by Endovascular Aneurysm Repair Trial-2) as age > 60 with aneurysm size > 5 cm, plus at least 1 comorbidity, (cardiac, pulmonary, or renal) were treated. FDA approved devices were used (Grafts used were Medtronic-Aneurx, Gore-excluder, Endologix). Chart reviews were performed on these patients independently. All of the 18 patients undergoing met high risk criteria. Primary outcome were 1) Aneurysm related death, 2) all-cause death, and 3) Aneurysm rupture. Secondary measures were: 1) endoleak, 2) Aneurysm sac enlargement, and 3) migration.

**Summary of Results:** No deaths occurred as a result of procedure or its complications. One patient had a type I endoleak and three had small type II endoleaks. Hospital stay was less than 3days. One patient required blood transfusion. Average follow up was at least 2 years. Thirty day operative mortality was 0%. Aneurysm related death rate after endovascular stent graft was 0% at 1 year. Overall survival was excellent. After treatment with endovascular stent graft, it successfully prevented rupture in all patients at 1-2 years.

**Conclusions:** Endovascular stent graft repair of infrarenal abdominal aortic aneurysm in selected patients with FDA approved devices appear safe, and feasible. It represents a potential alternative to open surgical repair, and provides immediate and lasting protection from aneurysm related mortality. The hospital stays in markedly reduced to an average of 2 days. This procedure should be individualized to patient with careful scrutiny of anatomy to avoid complications of endoleaks or device migration. Most of the initial studies were done with first-generation endografts. The new generation endovascular grafts are superior. Long term study data with large randomized trials are required for this evolving therapy.

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**81 INCREASED OXIDATIVE STRESS IN MITOCHONDRIA HARVESTED FROM RAT HEARTS DURING CHRONIC ALDOSTERONISM**


**Purpose of Study:** Oxidative stress is increasingly recognized as a participant in cardiac injury found in diverse disorders. In some cases, mechanisms responsible for the induction of oxidative stress in the heart may have a common pathophysiologic origin. For example, intracellular calcium overloading of contractile cells, such as occurs in cardiomyocytes with ischemia/reperfusion injury or the catecholamine “storm” associated with pheochromocytoma or subarachnoid hemorrhage, is detrimental to cell survival mediated by reactive oxygen species. In aldosteronism, parathyroid hormone (PTH)-mediated intracellular calcium overloading involves diverse tissues, including the heart, and is associated with oxidative stress and cardiomyocyte necrosis. We have previously reported (J Inv Med 2007;55(Suppl 1):S255) an excessive accumulation of calcium occurs in cardiomyocytes and their mitochondria in rats receiving chronic aldosterone/salt treatment (ALDOST). Herein, we hypothesized the presence of increased oxidative stress in mitochondria harvested from rat hearts during chronic ALDOST.

**Methods Used:** There were two experimental groups: untreated, age- and gender-matched controls (C); and rats receiving ALDOST for 4 wks (0.75 µg/h by osmotic minipump, together with 1% NaCl/0.4% KCl in drinking water). We monitored oxidative stress in isolated cardiac mitochondria with succinate-induced production of hydrogen peroxide (H2O2) by Amplex Red/horseradish peroxidase assay and malondialdehyde (MDA) concentration, a marker of lipid peroxidation, by N-methyl-2-phenylimidole, a chromogenic reagent.

**Summary of Results:** We found (see table; *p<0.01; ALDOST vs. C): Conclusions: Both H2O2 production and the presence of lipid peroxidation were increased in cardiac mitochondria harvested from hearts in rats receiving 4 wks ALDOST. These findings suggest mitochondria can be both a source and a target of reactive oxygen species and may mediate the cardiac injury that appears during chronic aldosteronism.

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<tr>
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<th>Control</th>
<th>Aldosterone</th>
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<tr>
<td>H2O2 (pmol/mg/mix)</td>
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<td>148.2±13.2*</td>
</tr>
<tr>
<td>MDA (nM/mg)</td>
<td>0.51±0.08</td>
<td>0.84±0.06*</td>
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**82 SERUM COBALAMIN, NOT B-TYPE NATRIURETIC PEPTIDE, DISTINGUISHES DECOMPENSATED BIVENTRICULAR FAILURE FROM LEFT HEART FAILURE**


**Purpose of Study:** In decompensated biventricular failure, an expansion of intravascular volume with distention of systemic veins leads to an elevation in venous pressure. Lacking valves to protect the liver, elevations in venous pressure account for an engorgement of centrilobular veins. Biomarkers of hepatic congestion would be a valuable diagnostic aid. Plasma levels of B-type natriuretic peptide (BNP) are monitored to address the presence of heart failure while elevated serum cobalamin levels, or vitamin B12, indicate hepatic congestion. Herein, we compared serum cobalamin and BNP levels in patients with and without hepatic congestion seen with biventricular vs. acute left heart failure, respectively.

**Methods Used:** We monitored serum B12 and plasma BNP at the time of admission in 56 hospitalized patients: 38 (32M; 52±2 yrs) with decompensated biventricular failure due to a dilated (idiopathic) cardiomyopathy with reduced EF (26±2%) having echocardiographic...
evidence of inferior vena cava dilation and moderate to marked tricuspid regurgitation (TR); and 18 (11M; 55±2 yrs) with acute left heart failure having a myocardial infarction, ischemic cardiomyopathy, or hypertensive heart disease with reduced EF (27±3%), where dilation of the inferior vena cava and TR were uncommon echocardiographic features.

Summary of Results: In patients with decompensated biventricular failure, serum cobalamin was increased (861±56 pg/mL) above the normal range (180-600 pg/mL) and significantly (p<0.0001) greater than the levels found in patients with left heart failure (384±25 pg/mL). Plasma BNP, on the other hand, was elevated above the normal reference range (100 pg/mL) in both groups, including patients with biventricular failure (1320±138 pg/mL) and patients with acute left heart failure (993±261 pg/mL).

Conclusions: Elevated serum cobalamin is a biomarker of decompensated biventricular failure with systemic venous distention, TR, and hepatic congestion and which is not seen with acute left heart failure, whereas elevated plasma BNP is indicative of cardiac chamber distention that accompanies either biventricular or acute left heart failure, or in response to myocardial infarction.

83 OXIDATIVE STRESS IN RATS WITH ALDOSTERONISM. RESPONSE TO NEUROHORMONAL WITHDRAWAL

University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: The systemic illness that accompanies chronic neurohormonal activation in congestive heart failure (CHF) involves the presence of oxidative stress in such diverse tissues as the heart, skeletal muscle, skin, peripheral blood mononuclear cells, and blood. In rats with chronic aldosteronism, where plasma levels of aldosterone (ALDO) are inappropriately (relative to dietary Na⁺) raised to those found in human CHF, evidence of oxidative stress is found in heart and blood. Herein we hypothesized the oxidative stress that appears in heart and blood in rats receiving ALDO/salt treatment (ALDOST) for 4 wks could be reversed thereafter by 4 wks of discontinued treatment.

Methods Used: Eight-wk-old male Sprague-Dawley rats received an implanted minipump administering ALDO (0.75 µg/h), together with 1% NaCl in their drinking water for 4 wks; a 0.4% KCl supplement was added to the diet for controls (0.57±0.08 nmol/mg protein) and were restored to control levels 4 wks after ALDOST had been discontinued. Plasma α₁-antiproteinase activity (an inverse correlate of oxidative stress) were monitored in controls, at 4 wks ALDOST, and at 4 wks off ALDOST that was preceded by 4 wks ALDOST/salt treatment (ALDOST) for 4 wks could be reversed thereafter by 4 wks of discontinued treatment.

Summary of Results: Cardiac malondialdehyde levels (an index of lipid peroxidation) in the heart and plasma α₁-antiproteinase activity (an inverse correlate of oxidative stress) were monitored in controls, at 4 wks ALDOST, and at 4 wks off ALDOST that was preceded by 4 wks ALDOST.

Conclusions: Cardiac malondialdehyde levels were increased (p<0.05) at 4 wks ALDOST (0.88±0.08 nmol/mg protein) compared to controls (0.57±0.05 nmol/mg protein) and were restored to control levels 4 wks after ALDOST had been discontinued. Plasma α₁-antiproteinase activity was reduced (p<0.05) at 4 wks ALDOST (24.3±1.2 µmol/L) compared to controls (39.8±2.1 µmol/L) and returned to control levels 4 wks after the withdrawal of ALDOST (32.8±0.9 µmol/L).

Conclusions: The presence of oxidative stress that appears in the heart and blood in rats receiving ALDOST could be corrected by reversing aldosteronism. This suggests neurohormonal activation contributes to the altered redox state in CHF raising the prospect for its recovery by interventions that withdraw this hormonal stimulus.

84 PROTEIN KINASE G (PKG)
OVER-PHOSPHORYLATE SMAD3: POTENTIAL INHIBITOR OF TGF-β-INDUCED CARDIAC FIBROSIS AND REMODELING

P. Li, M. Renfrow, J. Lucas, S. Oparil, and Y. Chen. UAB, Birmingham, AL.

Purpose of Study: Atrial natriuretic peptide (ANP), via the cGMP-PKG signaling pathway, modulates expression of extracellular matrix (ECM) molecules in cardiac fibroblasts (CFs). Transforming growth factor (TGF)-β, via the Smad signaling pathway, stimulates myofibroblast (MF) transformation in CFs, resulting in increased ECM expression and collagen deposition. We have shown that activation of ANP-cGMP-PKG signaling interrupts TGF-β-induced MF transformation in CFs by blocking phospho-Smad3 nuclear translocation. Phosphorylation of the C-terminal Ser423/425 of Smad3 by the TGF-β receptor kinase is critical for its nuclear translocation and downstream signaling, but additional phosphorylation on other sites could interrupt the process. This study tested the hypothesis that Smad3 is a substrate of PKG that can be phosphorylated on amino acid residues other than the C-terminal Ser423/425.

Methods Used: A GST-Smad3 fusion protein was purified by the glutathione affinity chromatography. Smad3 (2 µg) was incubated with recombinant PKG-I α (1000 U) in buffer with or without γ-32P-ATP (1 µCi) for 20 min at 37°C. In study 1, to remove the C-terminal residues, the PKG phosphorylated Smad3 was incubated with carbboxypeptidase Y for 1, 30 and 60 min. The products were subjected to Western and autoradiographic analyses to identify the pSmad3 fragments. In study 2, to directly identify the specific site(s) for phosphorylation by PKG, Smad3 was reacted with PKG or vehicle (negative control) for 20 min, fragmentized by trypsin or GluC (n=6), and then subjected to the electron capture dissociation (ECD)-Fourier Transform-ion cyclotron resonance (FT-ICR) mass spectrometric (MS/MS) analysis.

Summary of Results: Western and autoradiographic analyses demonstrated that PKG phosphorylated Smad3 when the C-terminal residues were removed. The MS/MS analysis covered 99% (except Val424 and Ser425) of the Smad3 sequence and showed that the Ser309 and Thr388 residues on pSmad3 were phosphorylated by PKG.

Conclusions: These results indicated that Smad3 is a substrate of PKG and suggest that over-phosphorylation of Smad3 by PKG might be a key mechanism by which ANP-cGMP-PKG signaling blocks TGF-β-induced ECM production by MFs. We postulate that this process contributes to the anti-fibrogenic effects of ANP signaling in the pressure overloaded heart.

85 BONE MINERAL STATUS AND OSSEOUS COMPLICATIONS IN PEDIATRIC HEART TRANSPLANT RECIPIENTS

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Purpose of Study: There is paucity of literature on bone mineral status and its clinical correlate in pediatric heart transplant (PHT) recipients. We sought to determine the bone mineral density and osseous complications in PHT recipients.

Methods Used: PHT recipients being followed at our institution, who had bone mineral density (BMD) performed formed the study cohort. Data was retrospectively obtained from their medical records regarding general demographics, BMD and other radiological studies, total serum calcium, phosphorus, alkaline phosphatase, osseous complications and their management.

Summary of Results: Study cohort included 23 (15 males) of the 149 PHT recipients followed at our institution. Cardiac diagnosis included...
congenital heart disease (10), dilated cardiomyopathy (10) and others (3). Mean age at transplant was 6.9 yrs ± 9.9. BMD was done at a mean of 2.6 years ± 1.9 after PHT. The total serum calcium and phosphorus were similar at the time of transplant and BMD. Although serum alkaline phosphatase at time of BMD (214 ± 92) trended to be higher compared to baseline (166 ± 104), it did not reach statistical significance (p = 0.2). The mean z-scores were: whole body −0.44 ± 1.65, lumbar spine −1.23 ± 1.75, femur −0.51 ± 1.95, forearm −0.44 ± 1.1. BMD results demonstrated that 7 (30.4%) had osteoporosis, 7 (30.4%) had osteopenia and 9 (39%) had normal bone densities. Two patients had spinal fracture identified on X-ray, one of them underwent vertebral cementing.

**Conclusions:** BMD is reduced, especially in the lumbar region in PHT and can result in spinal fractures. Careful surveillance of these patients should be performed using serial BMD so that early treatment can be initiated to prevent morbidity. Prospective studies are needed to evaluate risk factors for osseous complications in this high risk population.

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### 86 PERCUTANEOUS CORONARY INTERVENTIONS FOR CARDIAC ALLOGRAFT VASCULOPATHY IN PEDIATRIC HEART TRANSPLANT RECIPIENTS

N.K. Meena¹, R. Sachdeva², E.A. Frazier³, and R. Sachdeva.¹

¹University of Arkansas for Medical Sciences, Little Rock, AR; ²University of Arkansas for Medical Sciences, Little Rock, AR and ³University of Arkansas for Medical Sciences, Little Rock, AR.

**Purpose of Study:** Cardiac allograft vasculopathy (CAV) can cause rapid deterioration and sudden death in pediatric heart transplant recipients. While percutaneous coronary intervention (PCI) has been used for palliation of CAV in adults awaiting re-transplantation, there is limited data available in children. We sought to evaluate our experience with PCI’s for CAV in pediatric heart transplant recipients.

**Methods Used:** Retrospective review of the medical records of the 4 patient who underwent PCI for CAV, including demographic data and catheterization reports.

**Summary of Results:** Of the 149 pediatric heart transplant recipients followed at our institution, 4 underwent a total of 7 PCI procedures for CAV. All donor hearts had normal coronary anatomy documented in the records except case 4 who had pre-existing coronary artery disease. Patient demographics and PCI are summarized in the table. CAV was diagnosed angiographically in each patient. Risk factors for coronary artery disease were present in case 1 and 4. Both had morbid obesity, hyperlipidemia and systemic hypertension. PCI involved deployment of drug eluting stents in each patient. Procedural success was 100% with PCI for CAV in adults awaiting re-transplantation, there is limited data available in children. We sought to evaluate our experience with PCI’s for CAV in pediatric heart transplant recipients.

**Conclusions:** In pediatric heart transplant recipients, PCI using stents is a safe and effective palliative measure for CAV while awaiting re-transplantation.

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### 87 COMPARISON AND PREDICTORS OF OUTCOME IN DIABETIC PATIENTS TREATED WITH DRUG ELUTING VERSUS BARE METAL STENTS


University of Arkansas For Medical Sciences, Little Rock, AR.

**Purpose of Study:** Diabetes is a major risk factor for coronary artery disease and predicts adverse prognosis. Drug-eluting stents (DES) reduce angiographic restenosis and major adverse cardiac events (MACE) in de novo coronary lesions as compared with bare metal stents (BMS). Recently, there has been much controversy about the long term safety of DES. The objective of the study was to determine the long term outcome of DES and BMS in diabetic patients.

**Methods Used:** We performed a retrospective analysis of all diabetic patients who had percutaneous intervention from January 2003 to August 2004 in our institution. Data on cardiac risk factors, angiographic details and outcomes (including late stent thrombosis, myocardial infarction and death) were collected.

**Summary of Results:** There was no difference in the long term outcome (mean follow up duration 36 months) of diabetic patients who received DES or BMS, despite the fact that the diabetic patients treated with DES had a longer and a narrower lesions (Table 1). Higher HbA1C levels were associated with higher death, MACE and TVR (p<0.05). Length of stent was a major predictor of MACE, TVR and restenosis. (p<0.05).

**Conclusions:** Both DES and BMS had similar long term outcome in diabetic patients. Smoking, HbA1C levels, and length of stent at discharge were the major predictors of adverse clinical outcomes.

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### 88 REDUCED INCIDENCE OF FOURTH HEART SOUND ASSOCIATED WITH ACUTE MYOCARDIAL INFARCTION IN THE RE-PERFUSION ERA

S. Nafisi¹, K. Desser¹, R. Gerkin², and N. Laufer¹. ¹Banner Good Samaritan Hospital, Phoenix, AZ and ²Banner Good Samaritan Hospital, Phoenix, AZ.

**Summary of Results:** Of the 149 pediatric heart transplant recipients followed at our institution, 4 underwent a total of 7 PCI procedures for CAV. All donor hearts had normal coronary anatomy documented in the records except case 4 who had pre-existing coronary artery disease. Patient demographics and PCI are summarized in the table. CAV was diagnosed angiographically in each patient. Risk factors for coronary artery disease were present in case 1 and 4. Both had morbid obesity, hyp...
Purpose of Study: To determine documentation a fourth heart sound (S-4) in patients (pts) with acute myocardial infarct (AMI) in the reperfusion era.

Methods Used: During a 6 month period, 86 pts were identified who presented at a major university affiliated medical center emergency department (ED) with symptoms suggesting AMI and were examined by the ED physicians and cardiologists. Charts were audited for presence or absence of a fourth heart sound (S-4).

Summary of Results: Only 5 patients (5.4%) had a documented S-4 in a group of 77/86 (89.5%) pt who were troponin positive; 37/77 (48%) having ST-elevation AMI. During the hospital course hospitalization there was not an increase in S-4 documentation and no S-4 was described after admission. 51/77 (66.2%) pts had systolic, diastolic, systolic/ diastolic dysfunction and/or left ventricular wall motion abnormalities. Treatment was percutaneous or surgical revascularization in 71%.

Conclusion: In this study group, with suspect and biomarker positive AMI, S-4 was rarely documented. This time-honored physical finding is either underemphasized in the current diagnostic guidelines, under-appreciated on auscultation, or its prevalence has markedly decreased due to early medical therapy and re-perfusion strategies for AMI.

89 FLAXSEED REDUCES TRIGLYCERIDE LEVELS IN HEALTHY SUBJECTS: A DOUBLE BLIND RANDOMIZED CONTROL TRIAL

A. Patenaude1,2, C. Dupasquier2, P. Cheung2, and G. Pierce2. 1LSU Internal Medicine, New Orleans, LA and 2St. Boniface Research Center, Winnipeg, MB, Canada.

Purpose of Study: The health benefits of dietary flaxseed are related to its high content of fibre and the omega-3 fatty acid alpha-linolenic acid (ALA). Our previous work examining the effects of flaxseed ingestion was carried out in healthy, young subjects. It is possible that the effects of flaxseed ingestion are variable dependent upon the age of the subject. Our current study investigates the effect of dietary flaxseed in reducing triglyceride (Tg) levels in healthy subjects between the ages of 18-29 and those from 45-69 years old.

Methods Used: The trial was conducted in a double-blind randomized control manner. Forty healthy volunteers from the age of 18-69 were recruited. They were separated into groups of subjects aged 18-29 and 45-69 years old. TG, total cholesterol, LDL and HDL levels were measured in plasma obtained at baseline and 4 weeks post ingestion. Flaxseed was delivered via muffins in one of two forms: 30g of ground flaxseed or 6g of flaxseed oil. The data was analyzed via the SPSS program using a one-way ANOVA test.

Summary of Results: Over a four-week period, ground but not oil flaxseed ingestion, reduced TG levels selectively in the 18-29 year old age group. Young female subjects (18-29) had a more significant reduction in their TG levels than the young male subjects.

Conclusion: Ingesting ground flaxseed is more effective in reducing TG levels than flaxseed oil. Younger subjects received this benefit more than older subjects. Female subjects appeared to be particularly sensitive to these effects. Our work suggests that a component other than ALA is responsible for the TG-lowering effects and this may be the fibre content. This study provides valuable information on the mechanism whereby flaxseed ingestion can reduce atherosclerotic risk in young and old consumers.

91 HEPATIC FUNCTION IN PATIENTS WITH AND WITHOUT DECOMPENSATED BIVENTRICULAR FAILURE


Purpose of Study: In patients with decompensated biventricular failure, an expanded intravascular volume with elevation in systemic venous pressure leads to an engorgement of centriflobular veins and stasis of blood in hepatic sinusoids. This could lead to endothelial dysfunction with impaired uptake of serum cobalamin, or vitamin B12, and/or to hepatocellular necrosis demarcated by elevated serum aspartate (AST) and/or alanine (ALT) transaminases. Elevations in these transaminases are found with the hepatocyte injury that accompanies arterial hypotension. Markers of hepatic dysfunction in heart failure, where hepatic congestion occurs without hypotension, would be valuable.

Methods Used: At the time of admission, we monitored serum AST, ALT, alkaline phosphatase (alk PO4ase) and bilirubin (Bili), and vitamin B12, in 56 hospitalized patients; 38 (32M; 52±2 yrs) with decompensated biventricular failure having clinical evidence of systemic venous distention and tricuspid regurgitation (TR) and echocardiographic evidence of inferior vena cava dilation, TR of moderate to marked severity, and reduced EF (26±2%); and 18 (11M; 55±2 yrs) with acute left heart failure having myocardial infarction, ischemic cardiomyopathy,
or hypertensive heart disease, and reduced EF (27±3%) without vena cava dilation.

**Summary of Results:** In both groups, serum AST, ALT, and alk PO4ase were normal; Bili, on the other hand, was significantly (p<0.05) increased with decompensated failure (1.8±0.2 mg/dL) compared to acute left heart failure, where it remained normal (<1 mg/dL). Serum B12 levels were increased (p=0.0001) with decompensated biventricular failure and hepatic congestion (861±53 pg/mL), compared to those with acute left heart failure (384±25 pg/mL) without systemic venous distention and vena cava dilation, where it fell within the normal range (180-600 pg/mL).

**Conclusions:** The hepatopathy that appears with decompensated biventricular failure and vena cava dilation includes a cholestatic profile with elevated circulating bilirubin and endothelial dysfunction with impaired uptake of vitamin B12, in the absence of hepatocellular injury. This contrasts to acute left heart failure, where hepatic dysfunction is absent.

### 92 GENE MANIPULATION AGAINST CYTOMEGALOVIRUS INFECTION FOR IMMUNOCOMPROMISED PATIENTS

P. Pilgrim¹, Y. Yu¹, R. Ferrari¹, M. Jenkins², E. Cobos³, and M. Chiriva-Internati¹. ¹TTUHSC, Lubbock, TX; ²TTUHSC, Amarillo, TX and ³TTUHSC, Lubbock, TX.

**Purpose of Study:** Arterial/heart disease is a source of major morbidity and mortality in the world today, particularly the Western world. Cytomegalovirus (CMV) infection is another risk factor that is traditionally linked to arterial/heart disease. In fact, a correlation has been observed between CMV’s infection of endothelial cells and the resulting inflammation of cardiac tissue. One line of attack which may have merit is to develop a protocol which can maximally stimulate anti-CMV Type 1 immune response and cytotoxic T lymphocytes (CTL). These anti-CMV CTL can then clear the body of infected cells and CMV.

**Methods Used:** First we generated the AAV/IE1 virus vector. The rAAV/IE1 vector was constructed by standard recombinant DNA methodologies. Secondly, we characterized the surface marker and compared the DC which resulted from rAAV/IE1 gene loading to the GST-protein loading DC. Finally, we compared the effectiveness of the above AAV/IE1 vectors with full-length IE1 protein loading (DOTAP lipofection) of DC for their ability to stimulate CTL response to antigen-containing target cells.

**Summary of Results:** In our preliminary results we have found that dendritic cells (DC) transduced with CMV antigens generate a specific and robust immune response via CD8+ T cell killing.

**Conclusions:** The data demonstrates the superiority of the AAV vector in generating a specific cell-mediated immune response against CMV/IE1 antigen compared to the standard procedure (lipofection). In the future we will secure an appropriate animal model on which to conduct the in vivo portion of this study.

### 93 DOES THE PRESENCE OF METABOLIC SYNDROME AFFECT PLATELET AGGREGATION INHIBITION IN PATIENTS RECEIVING CHRONIC ASPIRIN THERAPY?


**Purpose of Study:** Metabolic syndrome (MS) is a well established risk factor for coronary artery disease (CAD). Aspirin is an important antiplatelet therapy that has shown to reduce cardiovascular events in patients with CAD. Recent studies have demonstrated the presence of aspirin non-responsiveness from 15% to 35% of the patients receiving aspirin therapy, depending on the study. We sought to determine whether the presence of MS affects platelet aggregation inhibition (PAI) in patient receiving chronic aspirin therapy.

**Methods Used:** We evaluated PAI in 104 patients with and without MS, treated with aspirin prior to elective cardiac catheterization. MS was defined by the presence of at least three out of five components (hyperglycemia, abdominal obesity, hypertension, hypertriglyceridemia, and reduced HDL). PAI was measured by Platelet Works (Helena Laboratories ICHOR) using Arachidonic Acid as an agonist. Aspirin non-responsiveness was defined as a PAI less than 80%.

**Summary of Results:** Patients were classified in two groups based on the presence or absence of MS (Group 1 and 2 respectively). Aspirin non-responders were compared by chi-square. No significant statistical difference in aspirin non-responders was found between the two groups (Table 1).

**Conclusions:** In patients receiving chronic aspirin therapy the presence of MS is not associated with higher prevalence of aspirin non-responsiveness.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group 1 (41)</th>
<th>Group 2 (63)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>64.9</td>
<td>64.0</td>
<td>p=0.2</td>
</tr>
<tr>
<td>Sex (male)</td>
<td>76% (31)</td>
<td>63% (40)</td>
<td>p=0.20</td>
</tr>
<tr>
<td>Aspirin non-responders</td>
<td>29% (12)</td>
<td>22% (14)</td>
<td>p=0.42</td>
</tr>
</tbody>
</table>

### 94 PREVALENCE OF CORONARY DISEASE RISK FACTORS IN PATIENTS WITH DIASTOLIC DYSFUNCTION


**Purpose of Study:** Diastolic dysfunction (DD) is a common entity associated with advanced age and hypertension, often present in patients with ischemic heart disease. The correlation of DD and coronary artery disease (CAD) in asymptomatic young patients is not known. We sought to determine the prevalence of CAD risk factors in asymptomatic patients with DD.

**Methods Used:** The study was design as retrospective analysis of the CAD risk factors in asymptomatic patients diagnosed with DD during an echocardiographic examination. We screened all the patient that had an echocardiographic examination in our institution from January 2004 until July 2007. DD was diagnosed if an impaired filling pattern with an E/A ratio less than 1 was noted on the mitral inflow pulse wave Doppler. The charts of all these patients were reviewed retrospectively to determine the presence of CAD risk factors (sex, hypertension, hyperlipidemia, smoking, diabetes, peripheral artery disease, and family history of CAD).

**Summary of Results:** We reviewed the charts on 101 patients with mean age of 48±6 diagnosed with DD. 51 (50%) patients were male, 54 (53%) had history of hypertension, and 31 (31%) of them had hyperlipidemia. History of smoking was present in 19 (19%) patients, 23 (22%) patients were diabetics, and peripheral artery disease was present.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Presence</th>
<th>Absence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (male)</td>
<td>50% (51/101)</td>
<td>50% (50/101)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>53% (54/101)</td>
<td>47% (47/101)</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>31% (31/101)</td>
<td>69% (70/101)</td>
</tr>
<tr>
<td>Smoking</td>
<td>19% (19/101)</td>
<td>81% (82/101)</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>22% (23/101)</td>
<td>78% (78/101)</td>
</tr>
<tr>
<td>Peripheral Vascular</td>
<td>8% (8/101)</td>
<td>92% (93/101)</td>
</tr>
<tr>
<td>History</td>
<td>17% (17/101)</td>
<td>83% (84/101)</td>
</tr>
</tbody>
</table>
95 THE USE OF GENETIC TESTING IN THE EVALUATION OF PEDIATRIC CARDIAC DISORDERS

University of Alabama at Birmingham School of Medicine, Birmingham, AL.

**Purpose of Study:** New technologies provide the opportunity to apply genetic information to improve patient care. We conducted a survey-based study to determine the level of genetic knowledge among pediatric cardiologists.

**Methods Used:** We conducted a survey to determine pediatric cardiologists’ understanding of genetic evaluations and testing. Questions were tested for clarity and relevance by review by 3 pediatric cardiologists, converted to a web-based format and a link sent, via email, to all subscribers of the PediHeartNet listserv, a private, discussion group of professionals caring for children with heart disease. The questionnaire was available from July to September, 2007. The study was approved by the institutional review board of the University of Alabama at Birmingham.

**Summary of Results:** A total 84 questionnaires were completed, all by MD’s; 50% specified that they were pediatric cardiologists; none were geneticists. The majority (71%) said that they are currently in an academic practice or affiliated with a medical center; 31% affiliated with a children’s hospital.

Most (95%) of the respondents considered genetic testing indicated for pediatric cardiology patients, depending the lesion and circumstance: respondents were more likely to order a genetic test or refer to a genetics specialist if the patient’s condition involved a risk of heritability to future siblings or children (93%); a positive family history (90%); or if the patient had an unusual facial appearance (90%). Most, 70%, referred patients for genetic evaluations, 25% performed/ordered genetic testing, and 96% discussed test results with the patients themselves. When asked about whether genetics evaluations would reduce cost, 46% disagreed, 39% neither agreed nor disagreed, and 15% agreed; 28% agreed or strongly agreed that genetic testing would lead to insurance discrimination, and 48% cited cost as a potential factor in not offering referral or testing.

**Conclusions:** Genetic testing is important for patient care in pediatric cardiology, but perceived potential for limited insurance cost reimbursement and/or genetic discrimination are barriers to the utilization of genetics evaluation in the management of pediatric cardiac disorders.

96 ECHOCARDIOGRAPHIC ASSESSMENT OF INFERIOR VENA CAVA DILATION AND TRICUSPID REGURGITATION SEVERITY IN PATIENTS WITH AND WITHOUT DECOMPENSATED BIVENTRICULAR FAILURE

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**Purpose of Study:** The congestive heart failure syndrome arises from a neurohormonally mediated salt-avid state with an expansion of intravascular volume and resultant distention of systemic veins and elevation in venous pressure, together with enlarged intracardiac volume that favors functional tricuspid regurgitation (TR). Echocardiography offers a means by which dilation of the inferior vena cava (IVC) and the severity of TR can be determined. During the month of August, 2007, the presence or absence of IVC dilation and TR severity were assessed in patients admitted to the cardiology service at the Regional Medical Center in Memphis.

**Methods Used:** The presence of IVC dilation and TR severity by color-flow Doppler was obtained in 84 patients: 37 (33 M; 54±2 yrs) with decompensated biventricular failure due to a dilated (idiopathic) cardiomyopathy with reduced ejection fraction (EF <35%) having clinical evidence of systemic venous distention and tricuspid regurgitation; 24 (20 M; 56±2 yrs) with acute left heart failure and pulmonary congestion with acute myocardial infarction, ischemic cardiomyopathy, or hypertensive heart disease and reduced EF (<35%); and 23 (19 M; 54±2 yrs) without clinical evidence of heart failure despite myocardial infarction, pericarditis or atrial arrhythmia and normal EF.

**Summary of Results:** All patients with decompensated biventricular failure had echocardiographic evidence of IVC dilation and 90% had TR of moderate to marked severity; in patients with acute left heart failure, 5% had IVC dilation and 13% had mild TR while 87% had trace to absent TR; IVC dilation was not found in patients without clinical evidence of heart failure, where 5% had mild and 95% had trace to absent TR.

**Conclusions:** Dilation of the IVC and moderate to marked TR by echocardiography indicate the presence of biventricular decompensated failure and are infrequent in patients with acute left heart failure and are virtually absent without clinical evidence of heart failure. These noninvasive findings in patients with biventricular decompensated failure are in keeping with hepatic congestion and implicate the presence of splanchic congestion.

97 LOW SERUM POTASSIUM LEVELS AND INCREASED MORTALITY IN OLDER ADULTS WITH CHRONIC HEART FAILURE

R.G. Shenava1, A. Alper1, and A. Ahmed2. 1 Tulane, New Orleans, LA and 2 UAB, Birmingham, AL.

**Purpose of Study:** Potassium homeostasis is necessary for normal myocardial function, and low serum potassium may lead to serious cardiac complications including fatal arrhythmias. However, the association of low potassium and long-term mortality and morbidity in heart failure (HF) patients 65 years of age and older is largely unknown.

**Methods Used:** This study was based on a subset of patients from the Digitalis Investigation Group trial, which was a randomized clinical trial of digoxin in HF patients conducted in 302 centers. 3583 HF patients met inclusion criteria with serum potassium levels ≤5.5 mEq/L. 853 patients had low serum potassium (<4.1 mEq/L). Propensity scores for low potassium were calculated for each patient and were used to match 710 of the 853 patients with low-potassium patients with 2099 normal-potassium (4.1-5.5 mEq/L) patients. Effects of low potassium on outcomes were assessed using matched Cox regression analyses.

**Summary of Results:** All-cause mortality occurred in 789 (38%) of normal-potassium patients and 362 (43%) low-potassium patients, respectively during 5868 and 1928 years of follow-up. Mortality rates for normal and low potassium patients were respectively 1345 and 1566 per 10000 person-years of follow up (hazard ratio {HR}, 1.17; 95% confidence interval [CI], 1.03-1.41; P=0.03). Cardiovascular mortality occurred in 594 (1012/10000 person-years) normal-potassium and 224 (1162/10000 person-years) low-potassium patients (HR, 1.18, 95% CI, 1.00–1.39, P=0.05). Cardiovascular hospitalization occurred in 1107 (rate, 2738/10000 person-years) normal-potassium and 385 (rate, 2955/10000 person-years) low-potassium patients (HR, 1.06; 95% CI, 0.93–1.20; P=0.405). Subgroup analyses (including sex, race, severity of heart failure, presence of chronic kidney disease, use of potassium supplements, and
use of digoxin) were conducted to determine the homogeneity of the associations of low potassium with all-cause mortality. There were no significant interactions between low potassium and any of the subgroups, except for chronic kidney disease (p for interaction 0.001).

Conclusions: In a cohort of elderly ambulatory chronic systolic and diastolic HF patients who were balanced in all measured baseline covariates, serum potassium <4.1 mEq/L was associated with increased mortality, but no significant difference in hospitalization.

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**98 INFLAMMATORY MARKERS DO NOT PREDICT THE SEVERITY OF CORONARY ARTERY DISEASE OR PATIENT OUTCOME IN NON-ST ELEVATION ACUTE CORONARY SYNDROME**

R. Sukhija1,2, P. Kakar1,2, Z. Bursac1,2, and J.L. Mehta1,2. 1University of Arkansas for Medical Science, Little Rock, AR and 2Central Arkansas Veterans Healthcare System, Little Rock, AR.

**Purpose of Study:** Serum levels of high sensitive-C reactive protein (hs-CRP), interleukin-6 (IL-6) and tumor necrosis factor-α (TNF-α) have been shown to be predictors of adverse outcome in coronary artery disease (CAD) patients. We hypothesized that measurement of these inflammatory markers could be useful in predicting atherosclerotic burden and major adverse cardiac events (MACE).

**Methods Used:** We prospectively measured hs-CRP, IL-6 and TNF-α in 249 patients (mean age 60 ± 10 years, 89% males) admitted with acute coronary syndrome, who also underwent coronary angiography.

**Summary of Results:** In the unadjusted model, hs-CRP correlated with 50% stenosis (A\_G =0.138, SE=0.063, p=0.0296), and coronary segments with any stenosis (obstructive + non-obstructive) (A\_G =0.286, SE=0.124, p<0.001).

**Conclusions:** There was no association between inflammatory markers and angiographic severity of CAD (segments with luminal narrowing). Over a 6 month follow up period, occurrence of MACE, defined as myocardial infarction, any cause death, or coronary revascularization, was correlated with inflammatory markers.

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**100 REGULATION OF MITOGEN-ACTIVATED PROTEIN KINASE AND DOWN-STREAM SIGNALING BY GUANYLYL CYCLASE-A/ NTRIURETIC PEPTIDE RECEPTOR-A**

S. Tripathi1, P. Kumar2, and K.N. Pandey1,2. 1Tulane University Health Sciences Center, School of Medicine, New Orleans, LA and 2Tulane University Health Sciences Center, School of Medicine, New Orleans, LA.

**Purpose of Study:** Atrial natriuretic peptide (ANP) exhibits natriuretic, diuretic, and vasodilatory properties and exerts antiproliferative effects in a variety of cell types. ANP mediates its effects through interaction with guanylyl cyclase-A/natriuretic peptide receptor-A (GC-A/NPRA) and subsequent activation of cGMP-dependent protein kinase (PKG).

The objective of this study was to determine the effects of ANP-NPRA system on mitogen-activated protein kinases (MAPKs) and downstream proliferative transcription factors AP-1 and CREB in agonist-stimulated mouse mesangial cells (MMC).

**Methods Used:** MMCs were cultured in Dulbecco’s modified Eagle’s medium (DMEM) supplemented with 10% bovine serum and maintained at 37°C in an atmosphere of 5% CO\_2/95% O\_2. All hormonal treatments were carried out in serum-free medium containing 0.1% bovine serum albumin. Phosphorylated protein levels were measured by Western blot, and AP-1 and CREB transcriptional activity was measured using luciferase assay.

**Summary of Results:** The results demonstrated that vascular endothelial growth factor (VEGF) treatment caused a 3- to 4-fold increase in phosphorylation of the MAPKs Erk1, Erk2, JNK, and p38 in both untransfected MMCs and MMCs transfected with plasmid encoding NPRA cDNA. ANP treatment significantly inhibited VEGF-stimulated phosphorylation of MAPKs, to a greater extent in NPRA-transfected cells (50-60%) relative to untransfected cells (25-30%). Additionally, VEGF caused a 3- to 5-fold increase in c-jun, c-fos, and CREB protein levels, an effect which was significantly inhibited by almost 60% after ANP treatment. The treatment of cells with ANP also inhibited VEGF-
101 EXTRA-CARDIAC (CHEST WALL) STIMULATION DUE TO RV LEAD WITHOUT CARDIAC PERFORATION AFTER ICD/CRT-D IMPLANTATION

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Purpose of Study: To describe the presentation and management of patients with extra-cardiac stimulation from an active fixation RV lead after ICD/CRT-D device implantation.

Methods Used: From June 2004 to July 2006, 186 patients diagnosed with DCM at our institution received an ICD or CRT-D according to the ACC/HRS 2003 guidelines. Active fixation ventricular defibrillator leads were used in all patients. The RV lead was placed at the true apex (visible or palpable muscle contractions) intercostal muscle activity superjacent to the RV lead. Leads were used in all patients. The RV lead was placed at the true apex (2 of 6; 33%) in DCM. We postulate that transmyocardial stimulation of the RV apex can bring into more direct contact with the thoracic cage by chamber tension and cardiovascular disease states.

Conclusions: Thus, the findings of the present study indicate that ANP/NPRA signaling can exert inhibitory effects on downstream proliferative effector molecules and may play critical antimitogenic roles in hypertension and cardiovascular disease states.

103 EARLY PRESENTATION OF SINUS VENOSUS TYPE ATRIAL SEPTAL DEFECT (ASD) IN A PATIENT WITH RHEUMATIC MITRAL STENOSIS

D. Godkar, A. Patel, L. Gowda, C. Attoti, S. Simna, and S. Niranjan. Department of Cardiology, Coney Island Hospital, Brooklyn, NY.

Introduction: ASD is a deficiency of the atrial septum. ASDs account for about 10-15% of all congenital cardiac anomalies and are the most common congenital cardiac lesion presenting in adults. Sinus venous ASDs account for only 10% of ASDs. We present a case of a patient who presented with heart failure and was found to have Rheumatic Mitral Stenosis with Sinus Venosus type of ASD.

Case Report: 30 year old African-American gentleman from Haiti presented to the hospital with the progressively worsening shortness of breath and leg swelling with decreasing effort-tolerance since 6 months. Physical examination revealed jugular venous distension with prominent v wave, loud S1 and P2, ejection systolic and early diastolic murmur in the pulmonic area and mid diastolic murmur in the mitral area. Transesophageal echocardiography showed a large ASD communicating from superior vena cava to left atrium with right to left shunting, moderate mitral stenosis and pulmonary arterial hypertension.

Discussion: The sinus venosus type occurs high in the atrial septum near the entry of the superior vena cava and is associated frequently with anomalous connection of pulmonary veins from the right lung to the junction of the superior vena cava and right atrium. Beyond the fourth decade, a significant number of patients develop atrial arrhythmias, pulmonary arterial hypertension, bidirectional and then right-to-left shunting of blood, and cardiac failure. Our patient had all the above mentioned complications. Transesophageal echocardiography is indicated if the transthoracic echocardiogram is ambiguous, which is often the case with sinus venous defects. Sinus venosus defects do not close.
spontaneously. Excellent surgical results with a mortality rate near 0% can be expected. This is particularly true in patients who undergo repair when younger than 15 years. Untreated ASDs are associated with a significantly shortened life expectancy. After age 20 years, the mortality rate is approximately 5% per decade with 90% of patients dead by age 60 years.

104 CALCIFIC AORTIC STENOSIS CAUSING CENTRAL RETINAL ARTERY OCCLUSION
C.L. Daniels and P. Subramaniem. Louisiana State University Health Sciences Center, New Orleans, LA.
Case Report: Retinal artery occlusion can be the initial presentation of severe valvular disease. Calcific emboli to the retina are rare, however should be considered when there is lack of atherosclerotic disease and presence of severely calcified valves. A 62 yo AAF with a past medical history of hypertension and hyperlipidemia presented to the ED with acute left eye vision loss. The patient had no focal neurological findings with the exception of acute vision loss. The patient did have a significant IV/VI systolic murmur best heard at the right upper sternal border with radiation to the carotids and a palpable thrill. An echocardiogram showed severe aortic stenosis with aortic orifice of 0.5 cm². The aortic valve was heavily calcified as well as the presence of severe mitral annular calcification. A TEE showed similar findings mentioned, as well as no evidence of intracardiac thrombi or atherosclerotic plaque in the descending aorta. There was a normal bilateral carotid ultrasound and a normal coronary angiogram. Temporal artery biopsy was done due to elevated ESR and CRP, which was negative for temporal arteritis. Ophthalmology evaluation determined patient to have central retinal artery occlusion, most likely secondary to a thrombotic event due to the calcific valvular disease. The patient did subsequently undergo successful aortic valve replacement. While the most common cause of retinal emboli is cholesterol, there was no evidence of atheromatous plaques in the carotids or along the aorta making this less likely. Other potential causes of emboli such as coagulopathies and collagen vascular diseases were either unlikely or ruled out. According to the limited literature on the topic, the prevalence of calcific retinal emboli in comparison to all emboli to the eye ranges between 8 – 9.3%. One study evaluated 24 patients over a span of 22 years who presented with a calcific retinal embolism and showed that 83% had a calcific aortic valve, calcific mitral valve, or calcification on both valves. Of the 24 patients, 5 had hemodynamically severe stenosis, but only 1 had cardiac symptoms. This case shows a rare event of calcific central retinal artery occlusion who presented with undiagnosed severe calcific aortic stenosis and limited cardiac symptoms.

105 PROFOUN DNON-HYPOXIC BRADYCARDIA FOLLOWING DISCONNECTION FROM VENTILATOR WITH WEANING ATTEMPTS
S. Haq and G. Warta. University of Oklahoma, Oklahoma City, OK.
Introduction: During ventilator weaning, the disconnection of the patient from ventilation is usually followed by an increase in heart rate. If bradycardia occurs, it is usually due to hypoxemia or acute myocardial infarction (AMI). The following describes the case of a patient who had consistent episodes of severe bradycardia upon disconnection from respiratory ventilator. These bradycardias were not related to hypoxemia, hypercapnea or acidosis.

106 GIANT DUCTAL ANEURYSM IN AN ASYMPTOMATIC 4-YEAR-OLD GIRL
N.K. Meena¹, C.S. Smith², B.S. Greenberg³, R. Jaquiss⁴, and R. Sachdeva⁵. ¹University of Arkansas for Medical Sciences, Little Rock, AR; ²University of Mississippi, Jackson, AR; ³Arkansas Childrens Hospital, Little Rock, AR; ⁴Arkansas Childrens Hospital, Little Rock, AR; ⁵Arkansas Childrens Hospital, Little Rock, AR.
Purpose of Study: Ductal aneurysms (DA) have been reported mostly in neonates and infants and have the potential for compressing adjacent structures, thromboembolism, infection and rupture. We report a case of a giant DA that came to medical attention due to evaluation of murmur in an asymptomatic 4-year-old girl.
Methods Used: Retrospective review of medical record of a patient with a giant DA including the diagnostic imaging, surgical and pathology reports.
Summary of Results: A murmur was noted in a 4-year-old girl on routine examination by her Pediatrician. She was born at full term of uncomplicated delivery and never required any hospitalization. An echocardiogram performed to evaluate the murmur showed a giant aneurysm coming from the undersurface of aortic arch. Intra-cardiac anatomy was noted to be normal. A Computerized Tomographic angiogram showed a DA measuring 6.1 cm × 3.9 cm × 4.2 cm. The aneurysm wrapped around the ascending aorta and displaced the left pulmonary artery and slightly compressed the right pulmonary artery. The aneurysm reached anteriorly in close proximity to the sternum and was only 3 mm behind the posterior sternal wall. Genetic evaluation was negative for elastic tissue disorder such as Marfan and Ehler-Danlos, which may be associated with DA. At surgery, a giant saccular DA was seen with very thinned out anterolateral aorta. The aneurysm was carefully resected without causing injury to adjacent structures. The ascending aorta was reconstructed with a Dacron patch. The patient had an uneventful post operative course. Pathology of DA wall revealed thinning and atherosclerotic plaques.
Conclusions: Giant DA, a potentially lethal condition, may present with subtle clinical signs in children and can be associated with significant thinning of ascending aorta. Successful surgical resection of these aneurysm can be achieved keeping in mind that repair of adjacent adherent structures may complicated the repair.

107 AN UNUSUAL CASE OF SOB: COR TRIATRIATUM SINISTER IN 65-YEAR-OLD GENTLEMAN
D. Moll1, F. Wilklow2, and S. Wadaaonkar2. 1LSU Health Sciences Center, New Orleans, LA; 2Department of Medicine, LSU Health Sciences Center, New Orleans, LA.

Background: Cor Triatriatum is a rare cause of atrial fibrillation in adults. This condition is more prevalent in the pediatric population. Few individuals reach adulthood without having prior symptoms and treatment in childhood or infancy.

Aim: This report describes a case of Cor Triatriatum Sinister in a 65-year-old gentleman undergoing transesophageal echocardiogram and cardioversion for atrial fibrillation.

Case Report: 65-year-old gentleman presented to the hospital for a routine stress test prompted from a recent admission to the hospital for shortness of breath. The patient was found to be in atrial fibrillation when he arrived for his outpatient testing; and was admitted for evaluation with transesophageal echocardiogram and cardioversion. The patient had a past medical history of hyperlipidemia and childhood asthma, but led a very active lifestyle with daily running, membership in a running club, and frequent participation in local ten kilometer races. The patient had admitted and rate controlled overnight with calcium channel blockers. The left atrium seemed to be separated into two separate chambers, with the posterior-superior chamber including the pulmonary veins, and the anterior-inferior chamber containing the left atrial appendage and the mitral valve. There appeared to be spontaneous echo contrast in the posterior-superior chamber. The diagnosis of Cor Triatriatum Sinister was made and confirmed by cardiac computed tomography.

Conclusions: Not all cases of congenital anomalies can be ruled out in adult patients. Cor Triatriatum Sinister may be easily confused with Mitral Stenosis due to the obstructive properties of the trans-atrial membrane. An unconventional diagnosis for atrial fibrillation and shortness of breath may be required for an active adult with no previous symptoms.

Keywords: Cor Triatriatum Sinister; atrial fibrillation; Transesophageal echocardiography; cardiac computed tomography; Mitral Stenosis.

108 TAKOTSUBO CARDIOMYOPATHY MIMICING ACUTE CORONARY SYNDROME
S. Puttaswamy1, J. Hoo2, and A. Paramjeet1. 1Coney Island Hospital, Brooklyn, NY and 2Coney Island Hospital, Brooklyn, NY.

Case Report: A 74-year-old woman presented with epigastric pain, nausea and vomiting. The pain radiated to the back and to her left shoulder lasting for two hours associated with vomiting. The patient had past medical history of hypothyroidism, hypertension, and degenerative joint disease. Physical examination was normal with stable vitals. Total and differential counts were normal with normal chemistry profile. EKG initially showed 2:1 atrioventricular block (AVB); after 1 mg iv atropine, rate returned 34 beats/min, blood pressure 154/86 mmHg. There was no jugular venous distention or abnormal pulsations; lung fields were clear to auscultation; and a soft holosystolic murmur was heard at the apex, and conduction improved after which a Wenckebach pattern of second-degree AVB was noted.

On physical examination, the patient was afebrile with a regular pulse of 58 year old male admitted day after post coronary artery bypass graft in cardiothoracic surgical floor woke up at 4am with “vibrations” in his chest. Patient denied that his AICD had gone off. EKG rhythm strip on telemetry was read as artifact (figure 1). Interrogation of the device revealed that the pt had a run of ventricular tachycardia during his symptoms which the AICD sensed and shocked the patient (figure 2). The epicardial leads did not sense any rhythm and were pacing the patient at the 40 beats a minute which in the rhythm strip gives the tachycardia an appearance of a artifact.

109 VENTRICULAR TACHYCARDIA MASQUERADING AS ARTIFACT
A. Sahni, G. Bombino, Y. Greenberg, and J. Ghosh. Maimonides Medical Center, Brooklyn, NY.

Case Report: 58 year old male admitted day after post coronary artery bypass graft in cardiothoracic surgical floor woke up at 4am with “vibrations” in his chest. Patient denied that his AICD had gone off. EKG rhythm strip on telemetry was read as artifact (figure 1). Interrogation of the device revealed that the pt had a run of ventricular tachycardia during his symptoms which the AICD sensed and shocked the patient (figure 2). The epicardial leads did not sense any rhythm and were pacing the patient at the 40 beats a minute which in the rhythm strip gives the tachycardia an appearance of a artifact.
Echocardiography showed normal systolic function and ejection fraction (EF, 65%) with mild mitral (MR) and tricuspid (TR) regurgitation during diastole by color-flow Doppler. By continuous-wave Doppler, mild MR and TR were noted during diastole coincident with the pause associated with a non-conducted P wave. On tissue Doppler, E wave was absent during non-conducted P wave. Correspondingly, absence of E wave was noted on the mitral inflow pulse Doppler following a non-conducted P wave and the resulting pause. Patient underwent dual-chamber pacemaker implantation for symptomatic bradycardia and syncope. Repeat echocardiography during either paced rhythm or full conduction with atropine revealed an absence of MR and TR during diastole and tissue Doppler of mitral annulus and mitral inflow pattern had normalized with normal conduction.

MR and TR during diastole arise when an elevation in ventricular filling pressure exceeds atrial pressure. Each are considered to be benign phenomena in the absence of heart disease with normal EF. This contrasts to diastolic MR when reduced EF is associated with dysynchrony or with severe aortic regurgitation.

111 DEFINITIVE THERAPY OF A SAPHENOUS VEIN GRAFT ANEURYSM WITH COIL EMBOLIZATION
W.L. Wang, B. Makkena, E. Hanna, and R.D. Yount. LSUHSC-New Orleans, Baton Rouge, LA.
Purpose: To report a rare case of saphenous vein graft aneurysm and successful non-surgical treatment.
Methods: This is a case report of a 57-year-old woman referred for coronary angiogram for symptoms of shortness of breath, fatigue, and chest spasms. Noninvasive cardiac workup revealed an old inferior myocardial infarct by ECG, left ventricular systolic dysfunction noted on transthoracic echocardiography, and nuclear imaging revealing reversibility in the inferior and apical segments.
Results: Coronary angiography was performed and showed a large 3 cm aneurysmal dilatation of her saphenous vein graft to obtuse marginal artery with distal occlusion. She subsequently underwent coil embolization of the aneurysm without any immediate complications.
Conclusion: Seen in up to 5% of native coronary arteries, aneurysms in aortocoronary saphenous vein bypass grafts are exceedingly rare. Only 42 cases have been described since 1975. Most usually present five years after coronary artery bypass grafting and involve the body of the graft. Development of saphenous vein graft aneurysms are attributed to exposure of the vein graft to systemic arterial pressure and atherosclerosis. Approximately one half of aneurysms are thrombosed leading to underestimation of actual size as well as distal embolization. Most cases usually require surgical intervention; however, this report describes the successful treatment of a saphenous vein graft aneurysm with coil embolization.

Joint Poster Session
Clinical Epidemiology and Preventive Medicine
5:00 PM
February 21, 2008

112 NITROSOAMINE HEMOGLOBIN ADDUCTS IN MATERNAL AND FETAL CORD BLOOD SAMPLES
M.Y. Ali1, S.R. Myers1, and D. Adamkin2. 1 University of Louisville School of Medicine, Louisville, KY and 2 University of Louisville School of Medicine, Louisville, KY.
Purpose of Study: Cigarette smoke contains more than 40 known carcinogens. The tobacco specific nitrosamines are the most potent carcinogens in tobacco smoke. Nitrosamines induce tumors of the lung, liver, nasal cavity, and pancreas in the rat. Nitrosamines are metabolically activated to reactive species that binds to hemoglobin, which can be used as a biomarker of exposure assessment. The measurement of nitrosoamine-hemoglobin adducts in whole blood is important to investigate a link between tobacco exposure of mothers and fetal exposure and disease.
Methods Used: A sensitive GC/MS method was developed to measure nitrosoamine-hemoglobin adducts at trace level in red blood cells of pregnant mothers and their newborn babies. Derivatization of nitrosamines with BSTFA and PFBC were studied to obtain highest sensitivity.
Summary of Results: Maternal blood as well as cord blood samples were obtained and isolated red cells lysed in ice cold water. The lysed HPB-hemoglobin adducts were incubated with 0.15 N NaOH to cleave the covalent bond between the adduct and hemoglobin. The Hb solution was acidified with 1 N HC and extracted with dichloromethane and evaporated under nitrogen. A GC temperature programming was employed with selective mass spectrometric data acquisition of 238 and 242 ions with a retention time 7.82 and 7.81 min. for analyte and internal standard (IS) respectively. Standard calibration curves were generated to quantify samples. The detection limit of the instrument was 30 femtomole per microliter injection. Increasing levels of nitrosamine adducts were found in both maternal and cord blood samples at maternal smoking increased, suggesting that tobacco smoking during pregnancy allows the passage of tobacco related nitrosamines to the developing fetus.
Conclusions: These results strongly suggest that tobacco related carcinogens cross the placenta during pregnancy and enter into the fetal circulation. These tobacco carcinogens are readily detected by analysis of cord blood samples taken at delivery. The results suggest that the presence of these carcinogens in the fetal circulation may play a role in subsequent etiology of disease and cancers in the neonate.

113 CHARACTERIZATION OF COLLAGEN TURNOVER PATHWAYS IN HUMAN AGING GINGIVAL FIBROBLASTS
N. Gagliano1,2, C. Moscheni1, G. Annovi2, F. Grizzi1, G.M. Tartaglia1, M. Chiriva-Internati1,2, E. Cobos1,5, F. Costa1, and M. Gioia1.
1 University of Milan, Segrate, Milan, Italy; 2 University of Milan-Bicocca, Milan, Italy; 1 Istituto Clinico Humanitas IRCCS, Rozzano, Milan, Italy; 3 Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX; 4 Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX.
Purpose of Study: A disturbance in connective tissue homeostasis is a prominent feature of periodontal diseases and has been suggested as one of the most relevant events characterizing drug-induced gingival overgrowth. We aimed at characterizing the aging gingiva analyzing collagen content and turnover in human gingival fibroblasts obtained from healthy subjects.
Methods Used: Morphological analysis was performed on hematoxylin-eosin and Sirius red stained paraffin-embedded gingival fragments.
mRNA levels of collagen type I, matrix metalloproteinase (MMP)-1, tissue inhibitor of MMP-1 (TIMP-1), lysyl hydroxylase 2b (LH2b), transforming growth factor-β1, SPARC were determined by real time RT-PCR on cultured young and aging human gingival fibroblasts. Interstitial collagen and MMP-1 content in the supernatants were assessed by dot blot and SDS-zymography.

**Summary of Results:** Our results suggest that in healthy aged people gingival connective tissue is characterized by a similar collagen content and extracellular matrix remodelling, and by the increased LH2b/collagen type I mRNA ratio.

**Conclusions:** The elderly are more susceptible to adverse drug effects and use a high number of medications. Since collagen is the main target of drugs affecting collagen turnover, we suggest that the tendency to increased collagen cross-linking of the new synthesized collagen in aging gingival fibroblasts might act as a relevant molecular mechanism in the development of periodontal diseases during aging. The characterization of the metabolic processes of periodontal connective tissue during aging might contribute to a better understanding of some of the modifications which gingiva undergoes with aging, and could have considerable clinical and therapeutic impact.

### 114 COMPARING MEASURES OF CARDIOVASCULAR RISK FOR WOMEN

T.M. Jones¹, P. Munro², and K.B. DeSalvo¹. ¹Tulane University School of Medicine, New Orleans, LA and ²Mount Sinai School of Medicine, New York, NY.

**Purpose of Study:** Pharmacologic treatment for cardiac risk factors often relies on a patient’s global coronary heart disease (CHD) risk. The Reynolds risk score was recently developed to refine CHD risk among women and enhance therapeutic decision-making.

**Methods Used:** Using data from the National Health and Nutrition Examination Surveys (NHANES) 1999–2004, we compared 10-year CHD risk using the Reynolds risk score and the Framingham 10-year risk algorithm for US women aged 20 years and older without history of myocardial infarction, stroke, or self-reported diabetes (n=6,841).

**Summary of Results:** According to the Reynolds risk score, 78%, 11%, 8%, and 3% of US women had a 10-year CHD risk of <5%, 5 to <10%, 10 to <20%, and ≥20%, respectively. The Reynolds risk score and the Framingham risk equation were concordant for 99% of women with a 10-year risk of CHD <5%. However, 83%, 77%, and 74% of US women with 5 to <10%, 10 to <20%, and ≥20% 10-year risk of CHD according to the Framingham risk equation, respectively, were reclassified into lower risk groupings using the Reynolds 10-year risk formula. When compared to the Reynolds risk score, the Framingham risk category over-estimated the 10-year CHD risk for 4.3%, 21.4% and 62.4% of women aged <50 years, 50–64 years, and ≥65 years, respectively, and 20.0%, 14.3%, and 6.3% of non-Hispanic Whites, non-Hispanic blacks, and Mexican-Americans, respectively.

**Conclusions:** The Reynolds risk score provides a lower estimate of 10-year CHD risk relative to the Framingham 10-year risk equation. Use of the Reynolds risk score to better define a women’s CHD risk may prevent unnecessary treatment for women with low CHD risk.

### 115 RESOURCES FOR HEALTHY LIVING: PERCEPTIONS OF OLDER RESIDENTS IN A LOW INCOME NEIGHBORHOOD

J.B. Landry¹,², and M.I. Arrieta¹,². ¹University of South Alabama, Mobile, AL and ²University of South Alabama, Mobile, AL.

**Purpose of Study:** Risk for chronic disease is partly based on behaviors such as physical activity and diet. Limited availability of healthy food outlets may affect nutritional choices. We sought to identify perceived resources for healthy living of individuals age 50 and older in a low income neighborhood.

**Methods Used:** Purposeful sampling was determined by age (>50yrs) and residence in two zip codes with 30% and 28% of residents living at or below poverty level, 99% and 58% of African American (AA) descent. The neighborhood was divided into 6 areas for recruitment of residents to focus groups (FGs). FG discussion illuminated perceptions of neighborhood environment and resources. In addition, the NEWS “walkability” survey - querying estimated walking distance to 18 living resources: fruit and vegetable stores, fast food and non-fast food restaurants, supermarkets, etc. was completed by all FG participants. Analysis was conducted using the constant comparison method for FG data and frequency counts of survey data.

**Summary of Results:** 38 people participated in 8 FGs. The majority of participants were AA females, ages 51–60, with at least a high school education, who had lived in their neighborhood for 30 years or more. Within each area, the most accessible food resource was the convenience/small grocery store. Most areas had easy access to fast food restaurants, but limited access to non-fast food restaurants. In 2 of 6 areas, supermarkets were accessible at >20 min. walking distance. Only 3 areas had access to fruit/vegetable stores within 10 min. walking distance. At each FG, participants stated a desire for a reasonably priced healthy food cafeteria in their neighborhood, and their wish for a health promotion and exercise facility in the area. Safety and crime issues as well as the lack of sidewalks and street lighting were major deterrents to walking.

**Conclusions:** WITH limited access to appropriate food resources, sustainable healthy dietary choices for this aging population could prove challenging. The perception of an unsafe neighborhood and the absence of sidewalks and proper lighting discourage health behaviors such as walking. Neighborhood environment may be a contributing factor in health disparities.

### 116 PATIENTS DEMOGRAPHICS AND SOCIOECONOMIC CHARACTERISTICS OF AN AMBULATORY CARE CLINIC SERVED BY THE UNIVERSITY OF TENNESSEE PULMONARY AND CRITICAL CARE MEDICINE TRAINING PROGRAM


**Purpose of Study:** Describe demographics, socioeconomic characteristics, and frequency of pulmonary diagnosis of the outpatient population served by our training program.

**Methods Used:** A descriptive study of administrative data of consecutive patient visits to the MED ambulatory clinic (Medplex) between 01/2000 – 08/2006. Continuous data was described by mean ± SD while categorical data was described by percents.

**Summary of Results:** Dataset included 2549 patients, 81% were African-American with mean age 48.7 ± 13.7, 64.4% were female. Female/male BMI was 34.6 ± 11.6 vs. 29.2 ± 10.3. Tenncare covered 59.6 % of patients while 11.1 % were uninsured.

**Conclusions:** Most of our patients were AA, young and obese. We found also 70% of them were Medicaid covered or self paid. Understanding of this information will be used to improve health care among our patients.
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AROMATIC HYDROCARBONS IN BREAST MILK FROM SMOKERS AND NON-SMOKERS
S.R. Myers1, P. Radmacher2, D. Adamkin2, M.Y. Ali1, and B. Barnes1,2.
1University of Louisville School of Medicine, Louisville, KY and
2University of Louisville School of Medicine, Louisville, KY.

Purpose of Study: The purpose of this study was to determine whether or not qualitative and quantitative assessment of environmental carcinogens can be accomplished utilizing breast milk obtained smokers and non-smokers.

Methods Used: Breast milk samples from smokers and non-smokers were extracted using a combination of liquid extraction as well as solid phase extraction techniques. Organic extracts were analyzed by liquid chromatography as well as mass spectrometry. Identities of carcinogens found in breast milk samples was accomplished by comparison of UV absorbing materials in breast milk with standards of both environmental carcinogens either environmentally, or through tobacco usage. The study is partially supported by the AAP CATCH Program.

Summary of Results: Breast milk extracts obtained from non-smoking populations exhibited low levels of all environmental carcinogens analyzed. Samples from smokers indicated approximately a 10 fold elevation of carcinogenic aromatic hydrocarbons when compared to a non-smoker.

Conclusions: These results demonstrate that lipophilic environmental carcinogens, such as the polycyclic aromatic hydrocarbons, can be found in isolated breast milk samples obtained from individuals exposed to carcinogens either environmentally, or through tobacco usage. The study is partially supported by the AAP CATCH Program.

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VALIDITY OF A MODIFIED PARTNER VIOLENCE SCREEN FOR MEASURING INTIMATE PARTNER VIOLENCE IN FEMALE TRAUMA PATIENTS
A. Parada1, L. Halinka Malcoe2, and C. Schermer3, 1University of New Mexico School of Medicine, Albuquerque, NM; 2Simon Fraser University, Burnaby, BC, Canada and 3Stritch School of Medicine, Loyola University Chicago, Chicago, IL.

Purpose of Study: To assess the validity of a modified Partner Violence Screen (PVS) for measuring severe lifetime and past-year intimate partner violence (IPV) victimization among female trauma patients.

Methods Used: A cross-sectional study was conducted at the University of New Mexico Hospital Trauma Center. Face-to-face interviews were conducted with a racially/ethnically diverse sample of 197 women who were admitted to the level 1 regional trauma service from April 2003 through June 2005. Statistical analyses were performed to assess the sensitivity and specificity of the PVS for measuring severe lifetime and past-year IPV, using the severe items of the revised Conflict Tactics Scale (CTS2) as the gold standard. Validity of the PVS for measuring severe lifetime IPV was also assessed separately for Hispanics, Native Americans, and White non-Hispanics.

Summary of Results: In the entire study sample, the PVS had a sensitivity of 80.6% (95% confidence interval [CI]: 70.9–87.8%) and a specificity of 95.1% (95% CI: 88.5–98.2%) for detecting any lifetime severe IPV, and a sensitivity of 70.3% (95% CI: 52.8–83.6%) and a specificity of 97.4% (95% CI: 92.1–99.3%) for detecting any past-year severe IPV. The PVS had sensitivity of 77.8% and a specificity of 99.3% when examining Hispanic, Native American, and White non-Hispanic women individually.

Conclusions: The PVS is a valid screening tool for measuring severe lifetime IPV in Hispanic, Native American, and White, non-Hispanic female trauma patients. The PVS had lower sensitivity for measuring severe IPV in the past year and thus may not be as valid for measuring recently experienced IPV. More research needs to be conducted with larger samples to determine appropriate screening tools to further prevent and help victims of IPV.
Florida Academy of Family Physicians electronic newsletter. Over the span of three months, four reminder e-mails were sent. The survey collected demographic data, oral health training data and practice patterns. 

**Summary of Results:** Sixty four percent of respondents were PCPs, 20% are in academic, and 47% have been in practice > 15 years, and 36% were residents. Among all respondents, only 25% had an oral health curriculum in residency, 89% in the form of didactics. PCPs routinely ask about brushing habits (59%), fluoride exposure (52%), and the availability of a dental home (77%). However, only 3-15% routinely assess mother/caregiver’s oral health in any way. A significant number reported routine dental inspection of all groups of children 0-3 as part of the PE particularly those with visible cavities but only around 7% perform fluoride varnish application if needed. Respondents expressed interest in learning more about oral health (83%), and feel they need more training particularly in the form of hands-on workshop.

**Conclusions:** Overall, most PCPs and residents, despite inadequate oral health training, include oral health risk assessment (OHRA) as part of health maintenance visits. However, the oral health scope of practice could be improved with more needed training. Fluoride varnish application, and increased awareness of the role parent/caregiver oral health plays among others.

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**Joint Poster Session**  
**Endocrinology and Metabolism**  
**5:00 PM**  
**Thursday, February 21, 2008**

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**ORAL DDAVP RESCUE OF CENTRAL DIABETES INSIPIDUS RESISTANT TO INTRANASAL THERAPY IN A HIV PATIENT**  
S.V. Bartakke. University of Tennessee Health Science Center, Memphis, TN.  
**Case Report:** A 47-year-old Caucasian man with a 12-year history of HIV infection (diagnosed in 1992) and post-surgical hypothyroidism was referred for management of central diabetes insipidus (CDI) in 2004. Patient was initially worked up by a nephrologist for severe polyuria, nocturia and thirst in 2002 and CDI was confirmed following a water deprivation test. At the time of diagnosis, he was on several antiretroviral medications and synthroid. MRI studies showed no lesions in the hypothalamic-pituitary region, and anterior pituitary hormone levels were reportedly normal. Plasma vasopressin level was not documented. His symptoms initially responded to intranasal DDAVP therapy, under the care of his nephrologist. However, after approximately 2 years, the symptoms of polyuria, nocturia and thirst recurred and became progressively severe, despite increasing doses of intranasal DDAVP. On evaluation in the Endocrine clinic in 2004, he had complaints of hourly polyuria throughout the day and night, severe thirst and weight loss. At that time, he was on intranasal DDAVP (2 puffs/20 mg BID). He was not on any medications that could cause DI. Physical examination was unremarkable except for dry mucus membranes and sinus tachycardia. Serum electrolytes were normal. Recent CD4 count was 410 cells/µl with undetectable viral load. Suspecting resistance to intranasal DDAVP, the patient was started on oral DDAVP 0.1 mg BID, which was gradually titrated upward based on symptoms. The intranasal DDAVP was tapered and discontinued over 6 weeks. Treatment effectiveness was monitored using a patient-kept log of daily weights, urine frequency and periodic measurement of serum electrolytes. Upon attaining oral DDAVP doses of 1.2 mg AM and 1.8 mg PM, polyuria and nocturia resolved, hydration status improved, and electrolytes remained normal. The patient’s CDI has now been stable for nearly 3 years, without the need for further dose escalation of oral DDAVP.  
**Conclusion:** This patient’s need for supra-physiological doses of DDAVP was unusual, and the differential response to oral (vs. intranasal) route is puzzling. We hypothesize that interfering antibodies from the B lymphocyte hyperactivity associated with HIV disease may have been a factor. In that case, we may have succeeded in inducing oral tolerance.

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**PRE-HYPERTENSION AND DYSGLYCEMIA IN A BI-RACIAL COHORT OF NONDIABETIC OFFSPRING OF DIABETIC PARENTS**  
C. Edeoga¹, G. Walker², N. Ionica³, J. Wan⁴, and S. Dagogo-Jack⁵.  
¹University Of Tennessee, Memphis, TN; ²University of Tennessee, Memphis, TN; ³University of Tennessee, Memphis, TN; ⁴University of Tennessee, Memphis, TN and ⁵University Of Tennessee, Memphis, TN.  
**Purpose of Study:** Hypertension, a recognized risk factor for type 2 diabetes, is more prevalent in blacks than whites, but the ethnic pattern in prehypertension is unclear. We assessed the frequencies and relationships between prehypertension and dysglycemia among nondiabetic African American and Caucasian offspring of type 2 diabetic parents.  
**Methods Used:** Using the Joint National Committee criteria, subjects were subdivided into normal blood pressure and prehypertension. Using Oral Glucose Tolerance Tests, subjects were categorized as normoglycemic or prediabetic. Fasting and 2-hour post-challenge plasma glucose levels were then analyzed in relation to blood pressure. The cohort of 127 subjects comprised 54 Whites (42%) and 73 Blacks (50%).  
**Summary of Results:** Mean blood pressures were similar in Whites vs Blacks (SBP of 115 +/- 9.39 mmHg vs 119 +/- 11.5; diastolic of 73 +/- 7.5 vs 70 +/- 7.7 mmHg respectively). Among normoglycemic subjects, the prevalence of prehypertension was 32% among Caucasians and 34% among African Americans (p=0.06). Among the prediabetic group, the prevalence of prehypertension was 38% in Caucasians and 33% in African Americans (p=0.06). Women showed lower rates of prehypertension than men (27% vs 50%, p=0.0085). For the entire cohort, fasting plasma glucose level was correlated with systolic blood pressure (SBP) (r=0.26, p=0.0031) but not diastolic blood pressure (DBP). SBP but not DBP correlated with body mass index (BMI) in the prediabetic group (r=0.038, p=0.0084). Adiposity (BMI) significantly predicted SBP in Blacks (r=0.5, p=0.012) and Whites (r=0.42, p=0.0034).  
**Conclusions:** In our biracial cohort of nondiabetic offspring of diabetic parents we found no evidence of ethnic disparities in mean blood pressures or prevalence of prehypertension. We also observed that fasting glycemia correlated with SBP.

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**VITAMIN D REPLACEMENT: A CAUTIONARY TALE**  
A. Jafari Mehr, J. Ahmed, and J.N. Fisher. University of Tennessee, Memphis, TN.  
**Purpose of Study:** To present a case of sarcoidosis with vitamin D deficiency.  
**Methods Used:** A 42 year-old African-American female with diabetes mellitus, hypertension, heart failure and sarcoidosis, was admitted for two weeks history of abdominal pain, nausea, vomiting and reduced appetite. Physical examination was significant for heart rate of 100 bpm, BP of 112/76 mmHg, dried mucus membranes, mild abdominal tenderness, and
a violaceous discoloration of the forehead and scalp. Laboratory result revealed a total corrected calcium level of 17.2 mg/dL (baseline 8.6–9.6 mg/dL). Five weeks prior, she had been started on vitamin D replacement with 50,000 IU/week due to undetectable 25-hydroxyvitamin D (calcidiol) levels (< 7 ng/mL) on 3 different occasions in the past 6 months. Her other medications did not contribute to hypercalcemia.

**Summary of Results:** Further laboratory results were as follows: Phosphorus 5.6 mg/dL, magnesium 1.9 mg/dL, and ionized calcium 2.08 mmol/L (1.12–1.32 mmol/L), PTH was 5 pg/mL, calcidiol 10.4 ng/mL and 1,25-dihydroxyvitamin D (calcitriol) 36.8 pg/mL. Creatinine was 2.5 mg/dL (baseline 1.1 mg/dL), liver and thyroid panels were normal. She was treated with aggressive hydration using normal saline; furosemide was added after rehydration. She was also given IV steroids for sarcoidosis. Her calcium level corrected within a few days, and remained stable on follow up visits.

**Conclusions:** Vitamin D deficiency is common, with estimates of up to one billion people worldwide. It is higher among African-Americans, post-menopausal women, and the elderly. Supplementation prevents secondary hyperparathyroidism, osteoporosis and hip fractures. There may also be a role in risk reduction of cancer, cardiovascular diseases and autoimmune diseases. In normal subjects, conversion of calcidiol to calcitriol occurs via 1α-hydroxylase in kidneys that is under physiologic control of PTH. Hypercalcemia can occur in sarcoidosis. This is via increased intestinal calcium absorption, due to PTH-independent (extrarenal) production of calcitriol from calcidiol, by activated macrophages which produce 1α-hydroxylase in lungs and lymph nodes. Hence, treatment with pharmacological doses of vitamin D in patients with granulomatous diseases should be closely monitored, in order to prevent potential iatrogenic complications.

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**123 Efficacy of ACE inhibitors versus ARBs in the Reduction of Microalbuminuria in Patients with Nephropathy**

S. Jayawardena1,2, E. Volozhanina1, N. Jiang1, and S. Niranjan1. 1Coney Island Hospital, Brooklyn, NY and 2Maimonides Medical Center, Brooklyn, NY.

**Purpose of Study:** Diabetes Mellitus and hypertension are the leading causes of chronic renal failure in the United States. Drug therapy that focuses on glycemic control and blood pressure control reduces the progression of nephropathy. Microalbuminuria has been used to monitor the progression of renal failure in these patients. Angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs) have been shown to reduce the microalbuminuria compared with placebo, thus renal disease in patients with diabetes and hypertension. Our goal was to compare the effects of ACE inhibitors, ARBs and patients not on either of these medications in reducing microalbuminuria in type II diabetes patients.

**Methods Used:** Retrospective analysis was done in a community based hospital out patient department. Over all 290 diabetic patients were selected by chart review, 96 of these patients were on Monopril (ACE inhibitor) doses of 10mg, 20mg and 40mg once a day 98 were on Losartan (ARB) 50 and 100mg once daily and 96 were not treated with either medication due to intolerance of medication or hyperkalemia. Microalbumin levels were done before the start of treatment and one year later and compared between these three groups.

**Summary of Results:** The ACE inhibitor group had at least 40–50% drop in the microalbumin levels. ARB group showed an average drop in about 20–25% drop and the patients without either medication had persistent unchanged or a rising microalbumin levels, which was statistically significant (p < 0.05). The dosage of medication did not have statistical relationship to the reduction of microalbumin levels.

**Conclusions:** Patients with type II diabetes should be on ACE inhibitors or ARBs to prevent or reduce the level of microalbuminuria there by reducing the incidence of nephropathy on the long run. If given a choice ACE inhibitors should be tried as first line treatment as they show more efficiency in reducing microalbuminuria than ARBs or no treatment.

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**124 Systemic Antimicrobial Peptide, Cathelicidin after Vitamin D Repletion in Cystic Fibrosis Patients with Vitamin D Deficiency**

L. Jeng, N. Khazai, W. Wang, and V. Tangpricha. EMORY, Decatur, GA.

**Purpose of Study:** Cathelicidins are a family of antimicrobial peptides predominantly found in neutrophils. Recently, human cathelicidin (hCAP-18 and it’s active form, LL-37) has been found in other cells, including macrophages. When macrophages are incubated in the presence of 25-hydroxyvitamin D (25(OH)D), the production of LL-37 increases in vitro. Thus, vitamin D may play an important role in the innate immune system. We sought to determine whether correction of vitamin D deficiency would improve systemic levels of LL-37 in cystic fibrosis (CF) patients who are known to suffer from vitamin D deficiency and chronic respiratory infections.

**Methods Used:** Our study was approved by the Emory University IRB. Twelve subjects with CF and serum 25(OH)D < 40 gave informed consent and were randomized to three different treatment modalities for vitamin D deficiency. Subjects were given either ergocalciferol or cholecalciferol 50,000 IU once a week for 12 weeks or used a portable tanning device 5 times a week for a week. Serum was collected for 25(OH)D and LL-37 before and after treatment.

**Summary of Results:** All intervention groups showed a significant increase in 25(OH)D. Mean initial 25(OH)D was 22.8 ± 4.6 ng/mL, and the mean final 25(OH)D was 38.1 ± 10.5 ng/mL with a p-value of 0.0001. LL-37 did not have a significant change before and after vitamin D repletion regardless of the intervention. The mean initial LL-37 levels was 29.7 ± 14 ng/mL, and the final mean LL-37 levels was 32.9 ± 22 ng/mL with a p-value of 0.44. No significant trend was found when LL-37 levels were plotted against 25(OH)D levels as well as when change in LL-37 levels were plotted against change in 25(OH)D levels for each subject.

**Conclusions:** This pilot study demonstrates that correction of vitamin D deficiency in subjects with CF does not result in increases in serum LL-37 levels. This may reflect that cathelicidin expression is induced locally rather than systemically after vitamin D repletion. Specific barrier sites that produce cathelicidin should be evaluated for changes in response to vitamin D therapy particularly in sites that are commonly infected in patients with CF.

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**125 Osteoporotic Fracture in a Young Woman Treated with Depot Medroxyprogesterone Acetate**

A.N. Khan, E.A. Nyenwe, and B. Williams-Cleaves. University of Tennessee, Memphis, TN.

**Case Report:** DMPA (Depot Medroxyprogesterone Acetate), a widely used hormonal contraceptive agent has been associated with bone loss. However, this bone loss is thought to be small and reversible such that it should not increase the risk of fracture in young women. Review of available literature revealed one observational study, which reported a fracture rate of 3.8% in women with developmental disability treated with DMPA and two case reports of DMPA associated fracture. The first
case was a young woman with osteoporosis and tibial stress fracture, while the second case was vertebral fragility fracture in a young woman with normal bone mineral density. Here we report a case of a vertebral fracture in a young woman after 3 years of DMPA use. A 37-year-old Caucasian woman was referred to our clinic for osteoporosis. She had developed chronic low back pain after sustaining compression fracture of the 7th thoracic vertebra in a motor vehicle accident 10 years previously at age 25. She had been using DMPA for 3 years prior to the accident. She denied smoking or use of alcohol. Her medications included calcium, multivitamins, Acetaminophen/hydrocodone. She had used risperidone for 4 months before it was replaced with teriparatide prior to seeing us. There was no known history of osteoporosis or fracture. She had been ammenorrheic for several years before presentation, but had normal menstrual cycles before the use of DMPA. Radiographs of the axial skeleton showed osteopenia, BMD by DEXA scan showed T-score of -3.4 in the lumbar spine, -3.7 in the left femoral neck and -3.1 in the left hip. Blood chemistry was normal with 25-OH Vit D of 68.3 ng/ml, 1,25-OH Vit. D of 56 pg/ml, intact PTH of 50 pg/ml, normal thyroid function tests, 24 hours urine calcium of 196 mg/24 hrs, Estradiol of 28 pg/ml. DMPA was discontinued and treatment was commenced with risperidone 35 mg weekly. She resumed regular menstruation after 12 months of discontinuing DMPA. Estradiol level normalized at 170 pg/ml. This case demonstrates that severe osteoporosis with fracture can occur, contrary to widely held view that DMPA induced bone loss is small and reversible. Thus, it would be prudent to avoid prolonged usage of DMPA. It may also be worthwhile to consider surveillance DXA scan in long-term users.

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UNUSUAL CASE OF POST RADIATION HYPERTHYROIDISM AN INTERESTING CASE REPORT

M. Soni, C. Lopez, S. Bercovici, and S. Niranjan. Department Of Medicine, Coney Island Hospital, Brooklyn, NY.

Background: The thyroid gland is largest pure endocrine gland in the body and most likely to produce clinically significant abnormalities after external radiation. Direct or incidental radiation to thyroid produce hyperthyroidism, grave’s disease, silent thyroiditis, cystic degeneration, benign adenoma and thyroid cancer.

Case Report: 87 year old female with history of hypertension, squamous cell carcinoma of tongue on chemotherapy and radiotherapy last radiotherapy was four days prior to admission, was transferred from nursing home due to bleeding from oral cavity for 2 days. Positive physical findings are hypotension, blood stain over tongue and in oral cavity and radiation dermatitis over lower face and neck. Patient also found to have TSH<0.02 with Free T4 2.35 and Total T3 185.8. Differential diagnosis on admission included post radiation thyrotoxicosis,grave’s disease,toxic multinodular goiter and toxic adenoma.

Thyroid peroxidase antibodies,Thyroid microsomal antibody, thyroid stimulating immunoglobulin,thyroglobulin antibody were negative with increase thyroglobulin level.

Thyroid function test repeated after seven days showed TSH 0.008, Free T4 1.55 and Total T3 192.3 and again repeated after seventeen days of admission showed TSH 0.03, Free T4 1.16 and Total T3 133.6. This showed improvement in thyroid function test without any treatment.

Discussion: Radiotherapy induced thyroid abnormalities remain underestimated and underreported.

Postradiation thyrotoxicosis is part of destructive thyroiditis in which increased concentration of thyroid hormone suppresses serum TSH. The etiology of radiation induced thyroid injury includes vascular damage, parenchymal cell damage and auto-immune reactions.

The duration of hyperthyroidism is depending upon amount of thyroid hormone present. It is generally no more then two to three months in duration. The ratio of T3: T4 is lower in destructive thyroiditis. The diagnostic approach to thyroid radiation injury includes baseline thyroid function assay before radiation and frequent measurement of thyroid function test. In post radiation thyroiditis Beta blocker and glucocorticoids is often helpful.

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INTRA-RETINAL LEAKAGE AND OXIDATION OF LDL IN DIABETIC RETINOPATHY

M. Wu1, Y. Chen1, K. Wilson1, A. Chirindel1, M.A. Ihnar2, Y. Yu1, M.E. Boulton1, S.X. Zhang3, J. Ma1,2, and T.J. Lyons1,4. 1University of Oklahoma Health Sciences Center, Oklahoma City, OK. 2University of Oklahoma Health Sciences Center, Oklahoma City, OK. 3University of Texas Medical Branch, Galveston, TX and 4Veterans Affairs Medical Center, Oklahoma City, OK.

Purpose of Study: The pathogenesis of diabetic retinopathy (DR) is not fully understood. Clinical studies suggest that dyslipidemia is associated with the initiation and progression of DR. However, no direct evidence supports this theory.

Methods Used: In the present study, immunostaining of apolipoprotein B 100 (ApoB100), macrophages, and oxidized low density lipoprotein (oxidized LDL) was performed in retinal sections from four different groups of subjects: non-diabetic; diabetic (Type 2) without clinical retinopathy; diabetic with moderate nonproliferative diabetic retinopathy (NPDR); diabetic with proliferative diabetic retinopathy (PDR).

Summary of Results: The results showed that intra-retinal immunofluorescence of ApoB100 increased with severity of retinopathy. Macrophages were prominent only in sections from diabetic patients with PDR. Merged images revealed that ApoB100 partially colocalized with macrophages. Intra-retinal oxidized LDL was also observed in all three diabetic groups, becoming more severe with DR, but was absent in non-diabetic subjects. This study provides direct evidence that intra-retinal oxidized LDL is associated with the severity of DR. The injurious effects of oxidized LDL are believed to affect retinal blood vessels. Therefore, we further testified the effects of heavily oxidized-glycated LDL (HOG-LDL) on human retinal capillary pericytes (HRCP). HOG-LDL significantly induced activation of caspase, mitochondrial dysfunction, and apoptosis in HRCP, consistent with the clinical observation of “pericyte loss” at the early stage of DR.

Conclusions: These findings implicate extravasated, oxidized LDL in pericyte loss in diabetic retinopathy.

Joint Poster Session
Gastroenterology and Clinical Nutrition
5:00 PM
Thursday, February 21, 2008

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MUSCARINIC RECEPTORS STIMULATION AND THE ELECTROPHYSIOLOGY OF THE ESOPHAGEAL EPITHELIUM

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Purpose of Study: The esophageal tissue from the pig, like the human, bears submucosal glands that secrete bicarbonate and mucus into the esophageal lumen. Bicarbonate secretion from the esophageal submucosal glands is stimulated by the cholinergic agonist carbachol and
inhibited by atropine. We have previously shown that M1 and M3 muscarinic receptors are present in the glands’ ducts. However the effect of cholinergic receptor stimulation on the electrophysiological parameters of esophageal tissue has not been fully investigated. In the pig tissue the glands are numerous in the cephalic part of the esophagus and lacking in the caudal part, which allowed us to compare the effect of cholinergic receptor stimulation in gland-bearing and gland-devoid mucosas from the same animal.

Methods Used: Sections of esophageal tissue from the pig were mounted in Ussing chambers and bathed in bicarbonate Ringers. Other sections were processed for immunohistochemical staining with antibodies against the muscarinic receptor M5.

Summary of Results: The transepithelial potential difference (Vte), short circuit current (Isc) and tissue resistance were monitored. In gland-bearing sections, addition of carbachol to the serosal side of the tissue caused a quick transient hyperpolarization of Vte from −4.4 mV to −5.2 mV followed by a depolarization to −3.2 mV, while Isc increased from 1.9 to 2.4 μA/cm². The tissue resistance dropped from 1739 to 1282 Ω·cm². In the gland-devoid sections, addition of carbachol did not cause significant changes in Vte, Isc or R. The staining to the muscarinic receptor M5 was positive in the myoeipithelial cells surrounding the glands acini, while it was mostly negative in the squamous epithelium.

Conclusions: The electrical effects observed upon stimulation by carbachol are more pronounced in the gland-bearing mucosa where muscarinic receptors were immunolocalized. These effects are likely mediated by an action on the muscarinic receptors in the submucosal glands. The contribution of different ions to the observed currents remains to be determined.

129 MECKEL’S DIVERTICULUM: A DILEMMA IN DIAGNOSIS
Y. Alishahi, M. Bahr, and C. Sands. University of Tennessee, Memphis, TN.

Purpose of Study: Meckel’s diverticulum is the most common congenital anomaly of the small intestine. It can mimic other diseases such as Crohn’s disease and acute appendicitis. Despite the availability of modern imaging, the diagnosis remains challenging. We present a patient with a complicated Meckel’s diverticulum requiring surgery for a definite diagnosis.

Methods Used: A 19-year old male with poly-substance abuse presented with nausea, non-bloody vomiting, and abdominal pain. On physical exam, he was afebrile, blood pressure 112/79 mmHg, pulse 76/min, and respiratory rate 25/min. Peritoneal signs, masses or organomegaly were not appreciated on abdominal exam. Rectal exam was normal and guaiac-negative.

Summary of Results: On presentation, laboratory data including complete blood count, amylase, lipase, electrolytes, and urine drug screen were within normal range. CT of abdomen and pelvis revealed no small bowel obstruction but it did note on inflammatory stranding of the right lower quadrant anterior to the terminal ileum. On day two, patient’s WBC count increased to 25,000. The physical exam changed revealing a distended abdomen with positive peritoneal signs. Radiograph of the abdomen was consistent with mechanical obstruction. Exploratory surgery revealed peritoneal fluid in the abdomen. On further exploration, the appendix was intact but perforated Meckel’s diverticulum was revealed. The Meckel’s diverticulum was removed and patient’s postoperative course was uneventful.

Conclusions: Meckel’s diverticulum results from incomplete invagination of the vitelline duct into the midgut during embryonic development. This anomaly occurs in 2% of population, located 2 feet from the ileocecal valve, and symptomatic in 2% of population. Most common symptom is bleeding due to chronic, acid-induced ulcer in the ileum adjacent to a Meckel’s diverticulum that contains gastric mucosa. Complications of the Meckel’s diverticulum include diverticulitis, ulceration and hemorrhage, and obstruction from volvulus around the fibrous attachments. Symptomatic Meckel’s diverticulum is treated with operative interventions. The patient presented demonstrates that Meckel’s diverticulum remains a challenging diagnosis and the importance of serial abdominal exam in management of these patients.

130 PSEUDOMYXOMA PERITONEI: A CASE OF ADENOCARCINOMA PRESENTING WITH ASCITES AND BOWEL OBSTRUCTION
A.P. Fieker1, M. Ali1, M. Asim2, and F. Farooq2. 1University of Tennessee, Memphis, TN and 2University of Tennessee, Memphis, TN.

Case Report: A 34 y/o white male with a history of a Wilms’ Tumor with left nephrectomy at age of 6 months presented with a one-month history of RUQ abdominal pain, constipation, nausea, vomiting, increasing abdominal distention, and a 25-pound weight loss. Exam showed a distended abdomen with ascites. Labs were remarkable for a hematocrit of 26%, MCV of 63, and elevated CEA and CA-19-9. Paracentesis was nondiagnostic. CT scan of the abdomen and pelvis revealed cecal wall thickening. Colonoscopy showed luminal collapse at 65 cm from the anus from external compression. On exploratory lapotomy there was gross evidence of tumor throughout the abdomen, involving the omentum, the stomach, and the ascending and descending colon. Expanded right hemicolectomy, omentectomy and gross debulking of the intraperitoneal tumor were performed. Pathology revealed poorly differentiated mucinous adenocarcinoma.

Pseudomyxoma peritonei is an uncommon condition characterized by an abundance of extracellular mucinous material and tumor implants in the peritoneum that gives the characteristic finding of “jelly belly.” Ruptured appendiceal mucinous adenomas tend to be the most common origin, but this can be associated with ovarian malignancies. The most common presentation is increasing abdominal girth, followed by inguinal hernia in men and a palpable ovarian mass in women. This condition is discovered in 2 of every 10,000 laprotomies. It has a typical appearance on CT scan of the abdomen. The mucinous material is a similar density to fat and calcifications are common. Tumor markers such as CEA and/or CA-19-9 may be elevated. The treatment options are limited and include repeated surgical debulking to improve symptoms. The goal is to leave the patient locally disease free. With recurrence of the disease, other treatment options include external beam radiation, intraperitoneal radioisotopes, intraperitoneal chemotherapy, and systemic chemotherapy. The exact role of these additional therapies is less defined. The 5-year survival rate varies from 53-75 percent.

131 HYDRALAZINE INDUCED CHOLESTATIC HEPATITIS

Introduction: Hydralazine is being used for treatment of hypertension. Rarely, it causes abnormal liver function. We report a case on a patient in whom we believe the drug was implicated in otherwise unexplained disturbance of liver function.

Case: 63 yr old black female with history of hypertension & end stage renal disease was admitted with epigastric pain & jaundice. Initial laboratory tests showed abnormal liver enzymes with elevated bilirubin, suggestive of cholestatic jaundice. Abdominal ultrasound showed normal caliber common bile duct without evidence obstruction. Abdominal CT scan with contrast does not show any evidence of intra...
or extraperitoneal biliary ductal dilatation. No mass lesions were seen in the pancreas. Further, blood chemistry showed worsening liver enzymes and increasing bilirubin over the next 2-3 days. Magnetic resonance Cholangiopancreatography failed to show any evidence of intra or extra hepatic biliary ductal dilatation. No other laboratory evidence of cholestatic jaundice was found. Before proceeding for invasive diagnostic procedure i.e. Endoscopic Retrograde Cholangiopancreatography, patient’s drug history was reviewed. She was on Hydralazine 100mg three times per day, started five months ago because of uncontrolled hypertension. At that time, her liver function tests were normal. A trial was given by stopping the Hydralazine. It was seen that there is significant improvement in liver function tests over the next week. Complete clinical & biochemical recovery occurred over the next four weeks. Liver biopsy was not done. 

Discussion: Liver injury after long term therapy with hydralazine and after short term therapy with hydralazine (2-10 days) has been described. Hydralazine induced hepatotoxicity may manifest as hypersensitivity type injury, mixed hepatocellular injury (non hypersensitivity), acute hepatitis, cholestatic jaundice or centriflobular necrosis. More studies are required to elucidate the mechanism of action in liver injury with Hydralazine. The Hydralazine induced cholestatic liver injury appears to be fully reversible. Complete clinical & biochemical recovery occurs after discontinuation of the drug. Also, the differential diagnosis of any patient with hepatocellular injury should include medications. This will prevent unnecessary diagnostic tests.

132 INVASIVE PROSTATE CANCER MASQUERADING AS A T4 RECTAL CARCINOMA IN A PATIENT WITH MULTIPLE COLON POLYPS

S. Kale, B. Komolafe, M. Asim, and F. Farooq. University of Tennessee Health Science Center, Memphis, TN.

Case Report: A 77-year-old male with benign prostatic hypertrophy presented with a 6-week history of hematochezia, hematuria and a 25 lb. weight loss. He reported a family history of colon cancer. On exam, he was cachectic with marked temporal wasting. A firm anterior rectal mass was palpable. Laboratory studies revealed iron deficiency anemia. Urine analysis showed numerous red blood cells; urine cytology was negative. On colonoscopy, more than 15 adenomatous polyps were seen, up to 2-3 cm in size. A large, ulcerated mass was seen along the anterior rectal wall just proximal to dentate line. A staging CT scan showed pelvic lymphadenopathy but no evidence of metastases. Endoscopic ultrasound demonstrated a rectal mass with disruption of the muscularis propria and loss of sonographic interface between the rectal wall and prostate consistent with a T4 rectal cancer. Histopathology revealed a poorly differentiated adenocarcinoma, but surprisingly with morphology suggestive of prostate primary. Immunohistochemical stains for PSA and pan-keratin were strongly positive. The serum PSA was elevated at 320 ng/ml. The patient declined surgery and instead opted for androgen blockade only.

Discussion: The Denovillier’s fascia serves as an effective barrier to posterior extension of prostate cancer, and hence rectal involvement from prostatic cancer is relatively uncommon. It occurs in only 10% of cases and carries a poor prognosis. When prostate cancer does appear as a rectal mass, it can easily be confused with primary rectal cancer. Immunohistochemical staining is absolutely essential in distinguishing these two entities, since each condition warrants a completely different management strategy. The principle management of primary T4 rectal cancer is neoadjuvant chemo-radiation followed by surgery. This is not true for secondary rectal cancer, which often requires a multimodality approach including androgen ablation, chemotherapy and radiation. Surgery only has a palliative role.

Conclusion: The presentation of primary and secondary rectal cancers can be quite similar; hence histology and immunohistochemistry are needed for distinction. Rectal extension from a prostate cancer should be included in the differential diagnosis of mass lesions of the rectum in males.

133 ISOLATED DUODENAL VARICES. AN UNUSUAL COMPLICATION OF POST TRAUMATIC PANCREATITIS

B.O. Komolafe, M. Asim, S. Kale, S. Vera, and C. Tombazzi. University of Tennessee Memphis, Memphis, TN.

Case Report: Upper gastrointestinal bleeding secondary to isolated duodenal varices is a rare entity that usually represents a challenge in diagnosis and treatment. We are presenting a patient with severe acute isolated duodenal variceal bleeding secondary to post-traumatic pancreatitis. Previously healthy 23 year old male who presented with Melanic stools and severe anemia. No significant past medical history, denies alcohol and habitual use of analgesics. Reported that a week prior to onset of symptoms he had an auto accident. Physical examination was notable for Pallor and left upper quadrant tenderness. Laboratory findings showed a hematocrit of 15 of which he received several units of blood transfusion and also elevated lipase of 308. Meckels scan was negative and also an initial esophagogastroduodenoscopy (EGD) which was negative. An enteroscopy was added and was found that he had large duodenal varices at the second portion of the duodenum. This was injected with epinephrine, with partial control of the bleeding. Computerized tomography scan of the abdomen was negative while a magnetic resonance imaging of the abdomen revealed a thrombosis of the superior mesenteric vein (SMV). Mesenteric angiography also revealed the thrombosis and a 50% stenosis of the SMV. Hypercoagulable work up done was negative. Re evaluation by enteroscopy still showed persistent duodenal varices with bleeding and as a last resort patient had to have a surgical treatment with splenorenal shunting and ligation of the varices with stent placement in the SMV. Subsequent endoscopy showed resolution of the varices and the dark stools were a thing of the past. Patient tolerated the procedures and is currently doing well with no complications.

Conclusion: In a patient with no apparent hypercoagulable state, it appeared patient developed portal hypertension from acute pancreatitis, sequel to trauma. This is important to the medical community given the high number of trauma victims and bad outcomes of severe Gastrointestinal bleeding without prompt and effective intervention.

134 EARLY AMINO ACIDS: ESSENTIAL FOR THE ELBW INFANT

S. Lewis, P. Radmacher, D. Adamkin, M. Adamkin, and Y. Assidon. University of Louisville, Louisville, KY and University of Louisville Hospital, Louisville, KY.

Purpose of Study: In 2000, standardized amino acid (AA) solutions were introduced as first intravenous fluids for ELBW infants (BW ≤ 1000 g). The initial solutions contained 1.5 or 2% AA in 5–10% dextrose. In 2004, the AA content was increased to 4%, which, with 10% dextrose at 80 cc/kg/d, provides 40 kcal/kg energy and 3 g/kg AA. This study compares lab parameters and clinical characteristics of ELBW neonates that received 2% or 4% intravenous AA within the first hours of life.

Methods Used: This was a retrospective chart review. Eligibility included weight ≤1000 g, admission to one of two Louisville level 3 NICUs within 24 hr of birth, survival >7 days and free from serious
congenital anomalies. Data included demographics, daily nutritional intakes from all sources, high and low values of specified labs. Significant medical events during hospitalization were also captured. Cohort 1 included 99 infants from 2002–2004 admitted to Kosair Children’s Hospital. Cohort 2 included 20 infants between 6/1/2006–5/31/2007 and admitted to University of Louisville Hospital.

Summary of Results: BW, GA, size for GA, and illness scores were similar in the two groups. Age at TPN initiation was 9.5±12.2 hr in cohort 1 compared to 4.6±6.3 hr in cohort 2 (p=0.011). Total volume intake (cc/k/d) was significantly higher in cohort 1 compared to cohort 2 (150.1±31.3 vs. 129.3±31.3, p=0.008). Caloric intake was lower (45.5±9.7 vs. 56.5±13.4 kcal/k/d, NS) as was protein intake (1.8±0.6 vs. 3.0±0.7 g/k/d, p<0.001) in cohort 1 when compared to cohort 2. Weight nadir was reached later in cohort 1 compared to cohort 2 (4±3.2 vs. 2±2.2 days, p=0.047). Cohort 1 lost more weight postnatally than cohort 2 (10.6±6.2% vs. 8.8±5.9%), although not statistically significant. Mean daily BUN, creatinine, sodium, potassium concentrations were not different between cohorts and remained within normal ranges. Mean serum glucose values in cohort 1 were slightly above the upper normal limit.

Conclusions: Standardized initial TPN solutions appear to be safe and efficacious. With this approach, ELBW infants can receive adequate energy and protein intakes in the first days of life to prevent lean body catabolism and to minimize growth faltering.

135 DO GGTP LEVELS IN BLOOD CORRELATE WITH LIVER BIOPSY RESULTS?

H.Q. Ngo, M. Bernstein, R.P. Sapkota, and R. Yaqub. Coney Island Hospital, Brooklyn, NY.

Purpose of Study: Patients with chronic hepatitis C can be broken down into two distinct populations based on GGTP value. Some will have normal GGTP values and others do not. It has been established that GGTP in combination with other markers in tests like Fibroscan Hepatitis is predictive of fibrosis. In this small, non-randomized, retrospective review we are looking to see the sensitivity, specificity, positive and negative predictive value of GGTP for fibrosis. We hypothesize that the reason GGTP may predict fibrosis, is due to the fibrosis process mediated by stellate cell, causing direct or cytokine mediated damage to small intrahepatic bile duct. GGTP would represent a simpler and more cost effective alternative as non-invasive test for fibrosis.

Methods Used: Electronic medical records were reviewed for liver biopsy result and simultaneous GGTP blood test results. All of the GGTP testing was done by King County Hospital Center Chemistry Lab. All of the liver biopsies were analyzed by the Coney Island Pathology Department using a standardized Metavir scoring system for each biopsy. Patient were excluded for alcohol consumption, alcohol related liver disease, drugs like Dilantin which induce GGTP, gall bladder or common bile duct stones, other forms of hepatitis, invasive liver disease such as MTB, space occupying liver disease, HIV infection. All other patient with documented chronic hepatitis C by positive PCR and genotype were included.

Summary of Results: 130 liver biopsies were reviewed. Of those 73 met inclusion criteria. It was found that GGTP values correlated with >or = to F1 Metavir score on liver biopsy with a Sensitivity of 63%, a specificity of 71% and a positive predictive value of 95%. In the case of >or = F2 fibrosis or advanced fibrosis GGTP had a Sensitivity of 67%, a specificity of 59 %, a positive predictive value of 76%.

Due to a small sample size, a negative predictive value could not be calculated.

Conclusions: GGTP correlates strongly with liver fibrosis and active chronic hepatitis C. If a chronic Hepatitis C patient refuses liver biopsy prior treatment, we can use GGTP value as alternative. As we know, GGTP is a low cost and no risk test. So, if the patient refuse liver biopsy or biopsy is contraindicated, GGTP value can help the clinician to make a decision relating to starting chronic hepatitis C treatment.

136 (Withdraw)

137 HEMOLYSIS INDUCED ACUTE PANCREATITIS

A.R. Seyal1, S. Sarwar1, and C. Marino1. 1 University of Tennessee Memphis, TN and 2 VA Medical Centre, Memphis, TN.

Case Report: We describe a patient who developed severe hemolysis during hemodialysis followed by acute pancreatitis presumably due to release of free heme.

Case Report: 53 years old African American male with past medical history of hypertension and end stage renal disease on hemodialysis developed chest tightness and shortness of breath during routine hemodialysis. A kink was noticed in the dialysis tubing after the patient was symptomatic. Examination showed temperature 98.9 F, pulse of 88, and blood pressure of 228/114 mm of Hg. Other than mild icterus rest of the examination was unremarkable. Hemoglobin dropped from 15.2 g/dL to 8.2 g/dL with a hematocrit of 15.2 %. Total bilirubin was 17.9 mg/dL and unconjugated bilirubin was 15 mg/dL. Aspartate aminotransferase and alanine aminotransferase were 723 U/L and 34 U/L respectively, lactate dehydrogenase of 16,231 U/L, and serum haptoglobin was low indicating intravascular hemolysis. Next day he started experiencing escalating epigastric pain. Serum amylase was 960 U/L and serum lipase was 3600 U/L consistent with acute pancreatitis. CT scan did not show gallstones or changes consistent with chronic pancreatitis. Serum calcium level was 7.4 mg/dL and triglycerides were 265 mg/dL. Patient was not on any medication known to cause pancreatitis. Diagnosis of hemolysis induced pancreatitis was made. He was kept nothing per oral and given intravenous fluids, blood transfusions and proton pump inhibitors with resolution of symptoms.

Discussion: Acute pancreatitis is an acute inflammatory condition of the pancreas. Etiologies include alcoholism, gallstones, hypertriglyceridemia, hypercalcemia, drugs, and trauma. Although mechanism of hemolysis induced pancreatitis is not well understood, massive intra-vascular hemolysis leads to release of large amounts of free heme exceeding the binding capacity of hemopexin and overwhelming heme oxygenase system. Free heme causes increase in vascular permeability, formation of reactive oxygen radicals, adhesion molecule expression and leukocyte recruitment. Massive hemolysis also leads to activation of coagulation cascade forming microthrombi and damaging vascular integrity of pancreatic microvasculature. Some or all of these mechanisms can potentially cause pancreatitis. Management is largely conservative for acute pancreatitis.

138 MATERNAL LEWIS PHENOTYPE IS ASSOCIATED WITH HUMAN MILK MONOSACCHARIDE CONTENT

J.S. Szabo1,2, A. Eberendu3, and R.T. Pivik1,2. 1 Univ of AR for Med Sci, Little Rock, AR; 2 Arkansas Children’s Nutrition Center, Little Rock, AR and 3 Mannatech, Inc, Coppell, TX.

Purpose of Study: Human milk oligosaccharides (HMOs), unique to breast milk, vary in content in term (T) vs. preterm (P) milks. Previous studies have shown that HMO content is related to mother’s ABO and Lewis blood-group phenotypes. We have found, in a related study, that P delivery is significantly increased among mothers with Lewis recessive phenotype.
Methods Used: We studied 35 breast-feeding mothers to determine if differences in mother’s blood-group phenotypes correlate with monosaccharide content of expressed breast milk for P (30–37 wks, n=23) and T infants (≥38 wks, n=12). Maternal ABO and Lewis blood-group phenotype [secretor (a–b+), non-secretor (a+b–), and recessive (a–b–)] were determined using standard lab techniques. Mothers expressed and collected a d 1–6 sample of breast milk, which was frozen and stored until HPLC monosaccharide analysis.

Summary of Results: Regardless of mother’s Lewis phenotype, glucose and sialic acid levels were significantly higher (p<0.05), while glucosamine and galactosamine levels were significantly lower (p≤0.02) in P vs. T breast milk. At term-adjusted age, glucose and galactose levels were significantly higher (p<0.03) and glucosamine, sialic acid, and galactosamine were significantly lower in P milk (p<0.007). In Lewis secretor mothers, sialic acid was significantly higher (p<0.03); while at term-adjusted age, glucosamine and galactosamine were significantly lower in P breast milk (p<0.03). In Lewis non-secretor type mothers (a+/--, b–), breast milk glucosamine and galactosamine were significantly lower for P infants (p<0.005). At term-adjusted age, glucose was significantly higher (p=0.04); while glucosamine, sialic acid, and galactosamine were significantly lower in P breast milk (p<0.01). Analysis of breast milk obtained at term-adjusted age showed that fucose levels were significantly less in breast milk of non-secretor type mothers for all infants in the study (p<0.002), and specifically P infants (p=0.006).

Conclusions: Preterm human milk monosaccharide content is significantly different from breast milk at term or term-adjusted age. Maternal Lewis phenotype is significantly associated with preterm human milk monosaccharide content, suggesting a genetic/dietary link. USDA CRIS 6251-51000-002-035.

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Conclusions: Preterm human milk monosaccharide content is significantly different from breast milk at term or term-adjusted age. Maternal Lewis phenotype is significantly associated with preterm human milk monosaccharide content, suggesting a genetic/dietary link. USDA CRIS 6251-51000-002-035.
AFMR Southern Regional Meeting Abstracts

K. Burns, P. Casey, T.M. Bird, J. Robbins, J. Fussell, and J.A. Reading Meyer, University of Arkansas for Medical Sciences, Little Rock, AR.

**Purpose of Study:** Medically complex children seem to have increased over the past 15 – 20 years. Although there is not a universal definition of this population, one should include children with some of the following characteristics: technology dependence, multi-systemic disease, multiple medications, multiple sub-specialists, and frequent admissions. Feudtner developed a method of identifying children with complex conditions with 30 sub-categories of diseases. The purpose of this study was to use national data to determine changes in the proportion of hospital admissions for children with medically complex conditions over a 14 year period.

**Methods Used:** The Healthcare Cost and Utilization Project (HCUP) is a family of hospital and ambulatory care discharge databases sponsored by the Agency for Healthcare Research and Quality (AHRQ). The Nationwide Inpatient Sample (NIS) is a nationally representative inpatient discharge database that can be used for healthcare research from 1988 to the present. The NIS data was analyzed in three years increments from 1991–2005 to determine national trends in rates of hospitalization and in-hospital management of children ages 8 days to 4 years with medically complex conditions using the Feudtner method.

**Summary of Results:** From the 1991–1993 period to the 2003–2005 period, the hospitalization rates of children with four or more chronic conditions increased from 13.28 per 100,000 to 30.24 per 100,000. However, the length of stay decreased from 4.3 days in the 1991–1993 period to 3.2 days in the 2003–2005 period. Interestingly, the greatest increase came between the 2000–2002 period and the 2003–2005 period.

**Conclusions:** Hospitalization rates of children with four or more chronic conditions has increased from 1991–2005 although the average length of stay has decreased. The greatest increases seem to have been in the recent past, raising questions about the reasons behind this.

**142 THE ECONOMIC BURDEN OF SYSTEMIC LUPUS ERYTHEMATOSUS AMONG PATIENTS OF THE CAROLINA LUPUS STUDY EARLY IN THE COURSE OF DISEASE**

R. Campbell1, G.S. Cooper2, and G.S. Gilkeson1,3. 1Medical University of South Carolina, Charleston, SC; 2US Environmental Protection Agency, Washington, DC and 3Ralph H.. Johnson Veterans Administration Medical Center, Charleston, SC.

**Purpose of Study:** Our primary objective was to determine differences in direct and indirect costs between SLE patients in the course of disease and controls and identify predictors of total cost based upon data provided at the follow-up assessment.

**Methods Used:** The Carolina Lupus Study is a population-based case-control study of SLE conducted in eastern and central North Carolina and South Carolina. Community and university-based rheumatology practices referred recently diagnosed patients to the study, with approximately 50% of cases coming from each source. Controls were identified through driver’s license records and frequency matched to cases by age, sex, and state. In 2001, a follow-up study was conducted. The median time since diagnosis was 4 years at time of follow-up interview. The 2001 follow-up study included sections pertaining to health care utilization in the past 12 months, current work status and changes in work status since diagnosis, health care utilization per-unit annual costs and loss wages (converted to 2001 US dollars using the consumer price index) of 198 SLE patients and 390 controls. The natural logarithm was taken of health care services, which were used in linear regression to predict factors associated with an increase or decrease in the magnitude of total annual cost for cases and controls.

**Summary of Results:** Annual mean direct costs for health care was $12,375 (sd 13723) $3,718 (sd 6135) in controls (p<.0001); differences were also seen in the median costs ($8,008 compared with $2,207 in cases and controls, respectively). Predictors of higher costs among cases were lower education level (less than high school), renal disease, and serositis.

**Conclusions:** Health utilization costs between cases and controls were significantly different for 9 out of the 10 health services used. Predictors of increased cost included lower education level, renal disease and serositis, thus elucidating the economic burden of SLE patients.

**143 EFFECTS OF ROSUVASTATIN ON EARLY RENAL INJURY IN OBESE ZUCKER RATS ON A HIGH FAT DIET**

B. Lee1, P. Ebenezer2, J. Liao1, M. Larroque1, L. Hu1, E. Aguilar1, S. Morse1, J. Francis2, and E. Reisin1. 1LSU Health Sciences Center, New Orleans, LA; 2LSU School of Veterinary Medicine, Baton Rouge, LA and Tulane University School of Medicine, New Orleans, LA.

**Purpose of Study:** Metabolic syndrome increases the risk of developing diabetes, cardiovascular and renal disease. We previously showed that early intervention with statins improve metabolic derangements and confer glomerular protection in a small number of young obese Zucker rats (OZR) fed with a high fat diet. In this study, we increased the power of the study by evaluating 56 rats and further studied the effects of rosuvastatin (RS) on direct tissue inflammatory markers.

**Methods Used:** Lean (LZR) and OZR were divided into 7 groups with 8 rats in each group: 1) LZR normal diet (LZR-ND); 2) LZR high fat diet (LZR-HF); 3) LZR-HF-VR high-dose RS (20mg/kg HR); 4) OZR-ND; 5) OZR-HF; 6) OZR-HF-VR; 7) OZR-HF-LR low dose RS (5mg/kg LR). RS was started at week 5 and was continued to week 15. Metabolic parameters were obtained at 15 weeks, before the rats were sacrificed and the kidneys harvested. Each kidney was divided into 4 sections and 10 glomeruli per section were measured. Histology was evaluated under light microscopy with 2 μ thick sections stained with H&E. The glomeruli were examined at 20X magnification and measurements of glomerular circumference (GC), area (GA) as well as mesangial area (MA) and perimeter (MP) were done. Expression of inflammatory markers were determined by total RNA extracted from the kidney cortex using a Tri-Zol reagent (Invitrogen) and reverse transcribed with oligo(dT).

**Summary of Results:** OZR-HF showed 3,8, 2, 2, 3 and 7 fold increase in desmin, ICAM-1, TGF-β and TNF-α in the kidney cortex respectively. RS treatment significantly (p<0.05) reduced the expression of these mRNA subunits in kidney cortex. There were no detectable changes in the mRNA expression in LZR-HF-HR. Both OZR-HF-HR and OZR-HF-LR significantly improve diastolic blood pressure (BP), urea, creatinine, microalbuminuria, cholesterol, GA, MA, and MP compared to OZR-HF. Also, OZR-HF-HR had decreased systolic BP, and GC compared to the OZ-HF group.

**Conclusions:** RS improves the metabolic profile as well as attenuates the inflammatory expression in kidney cortex tissues stimulated by high fat diets in OZR.

**144 THE IMPACT OF PRACTICE POLICIES ON PEDIATRIC IMMUNIZATION RATES**

S. Mennito1,2 and P.M. Darden1,2. 1Medical University of South Carolina, Charleston, SC and 2Medical University of South Carolina, Charleston, SC.

**Purpose of Study:** Provider and practice characteristics exert substantial influence on the likelihood of being fully vaccinated. We examined the impact of provider practices on the likelihood of a child being fully vaccinated.

**Methods Used:** The public use files of the 2005 National Immunization Survey, a nationally validated measure vaccination rates, were used. For
this analysis we used data facility type, vaccine registry participation, Vaccines for Children program (VFC) participation and Hep B administration at birth. The outcome was provider record of up to date (UTD) defined as 4:3:1:3:3 (4 DTP, 3 Polio, 1 Measles, 3 Hib, and 3 Hepatitis B). Other variables examined to be confounders in vaccination completion including race/ethnicity, number of vaccine providers, and poverty level. Summary of Results: In 2005 the overall UTD rate was 80.8%. The characteristics of vaccine providers are commonly missing including 36% of facility type, registry participation, VFC participation and Hep B given at birth. Facilities reporting providing vaccines are; all public (11.9%), all hospital (7.5%), all private (59%), all military/other (2.5%), mixed facility (5.9%) and unknown (12.4%). UTD varied with the type of facility, all public at 75.9% (95% CI 71.9–79.8), all hospital 79.4% (76.0–82.8), all private 82.3% (81.1–83.6) and mixed 87.4% (84.1–90.6). Among children whose provider characteristics are known, children receiving Hep B at births are more likely to be UTD (83.6 vs. 79.9, P<.01), however, neither VFC or registry participation was associated with being UTD. Logistic regression controlling for race/ethnicity, maternal education, language, number of providers; shows that having a mix of providers increases UTD when compared to all private (OR 2.0, 95% CI 1.4–2.8), children not receiving Hep B at birth were less likely to be UTD (0.74, CI .55–.64) however registry participation was associated with UTD. Conclusions: Practices differ in their ability to deliver vaccines. Beyond facility type, hepatitis B vaccination at birth and participation in VFC improve immunization rates. These results must be treated cautiously, with 1/3 missing any conclusion is tentative.

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THE EFFECT OF GESTATIONAL AGE, TRANSFUSIONS, AND DIETARY SUPPLEMENTATION WITH MEDIUM CHAIN TRIGLYCERIDE ON MS/MS PROFILES OF PRESumptive positive patients for medium chain acyl coA dehydrogenase deficiency
T.M. Narumanchi1,2, C.T. Dvorak1,2, A. Cunningham1, K. Weisbecker1, M. Jenkins1, J. Smith1, D. Werling-Baye1, C. Meyers3, J. Thoene1,2, and H.C. Andersson1,2. 1 Tulane University School of Medicine, New Orleans, LA; 2 Tulane University School of Medicine, New Orleans, LA and 3 Louisiana DHH, New Orleans, LA. Purpose of Study: To determine if gestational age, transfusions with packed red blood cells (PRBCs), or dietary supplementation affects tandem mass spectrometry newborn screening for MCADD. Methods Used: Dual-armed case review of newborns reported as “presumptive positives” for MCADD by the Louisiana Newborn Screening Program. Because Louisiana’s NBS lab was damaged by Hurricane Katrina, newborn screening is being performed in Iowa, with final diagnosis being done following confirmatory testing by clinicians in LA. Summary of Results: The single greatest predictor of a false positive for MCADD was gestational age. Only one patient under 32 weeks gestation proved to truly have MCADD. Also, these patients were more likely to receive PRBCs, and MCT-containing nutritional supplementation. Conclusions: While our study numbers were small, we have seen that most of our premature patients are false positives. Also, there is a strong correlation between TPN/MCT supplementation and False Positives. One way to address this issue would be to do a study of MS/MS MCADD results in patients with blood draws prior to the start of TPN/MCT and blood obtained 24 hours afterwards.

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Admission Rates Correlate With Length of Stay in a Pediatric Emergency Department
S. Shirm, M.E. Aitken, and J. Graham. University of Arkansas, Little Rock, AR. Purpose of Study: Emergency department (ED) overcrowding is an increasingly serious problem. ED overcrowding can lead to poor patient and staff satisfaction, ED diversion, and poor patient outcomes. The purpose of this study was to examine ED length of stay (LOS) in relation to ED census measures to determine if correlations exist. Methods Used: Census measures (total census, number of admissions from the ED, and ED admission rate) along with ED LOS were plotted and correlation coefficients calculated for the years 1998–2006 at Arkansas Children’s Hospital. Summary of Results: Total annual ED census varied between 35,415 and 40,711 during the 9 year study period. The number of admissions increased from 4161 to 6545 and admission rate from 11.5% to 16.2% in the study period. The mean ED LOS increased from 141 minutes to 198 minutes. When total annual ED census was plotted vs. ED LOS, poor correlation (R2 = 0.241) was found. However, strong correlation was found for number of annual ED admissions vs. ED LOS (R2 = 0.828) and for ED admission rate vs. ED LOS (R2 = 0.847). Conclusions: There is a strong correlation between number of admissions as well as admission rate with ED length of stay in a pediatric emergency department. In contrast, there is poor correlation between total annual census and ED LOS. Process improvement measures to improve ED overcrowding should focus on sicker, admitted patients.

Joint Poster Session
Hematology and Oncology
5:00 PM
Thursday, February 21, 2008

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ATYPICAL DISSEMINATED BURKITT LYMPHOMA PRESENTING AS ACUTE PROPTOSIS
S.J. Ayirookuzhi1, M.L. Nordberg2, D.L. Lilien3,4, D.M. Veillon2, S. Kaimoottil5, and G.M. Mills1. 1 LSUHSC-S, Shreveport, LA; 2 LSUHSC-S, Shreveport, LA; 3 LSUHSC-S, Shreveport, LA; 4 BRF, Shreveport, LA and 5 Centenary College of Louisiana, Shreveport, LA. Case Report: A 49 year old African American lady with no significant medical history presented with complaints of a toothache, numbness of lips and chin and progressively worsening proptosis of 3 weeks duration. Her vital signs were unremarkable, except for an elevated blood pressure. Physical examination was within normal limits except for right sided proptosis. She was initially diagnosed with orbital cellulitis and given intravenous antibiotics and steroids while in hospital but was readmitted for a biopsy of the orbital tissue after symptoms failed to improve. Steroids were stopped secondary to hyperglycemia. A biopsy confirmed the diagnosis of Burkitt lymphoma. An MRI showed the right sided intra-orbital mass. CT and PET scans demonstrated that the tumor was disseminated. Fluorescence in-situ hybridization (FISH) analysis revealed a CMYC rearrangement consistent with Burkitt lymphoma. FISH analysis on the orbital mass from the patient did not exhibit a classic t(8;14)(q24;q32). Copy number of chromosome 8, the 8q24 CMYC locus, and the 14q32 IgH locus were within normal limits. FISH analysis using an alternate probe for segregation of CMYC, showed positive results in the majority of the cells analyzed. In addition
to fission of the CMYC locus, additional, aberrant copies of CMYC were noted. Immunophenotyping by flow cytometric analysis, demonstrated that tumor cells were positive for CD19 and CD79A but negative for CD3, CD10, CD20 and TDT. Bilateral bone marrow biopsies and cerebrospinal fluid examination failed to reveal any malignant cells. Serologic tests for HIV1 and 2 were negative. Serum LDH was elevated at 826 IU/dL. The patient also tested negative for Epstein Barr virus by stain on the tumor cells. A PET scan done after 3 days of radiation showed a marked reduction of the intra-orbital mass. The patient responded to radiation and chemotherapy with HyperCVAD regimen including methotrexate and cytarabine. The detection of a CMYC translocation does not prove but confirms the diagnosis of Burkitt lymphoma in a patient presenting unusually with proptosis.

147 RASBURICASE INDUCED METHEMOGLOBINEMIA
K.W. Boyd and S. Elkins. University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: To present a case of rasburicase induced methemoglobinemia.

Methods Used: A forty year old black male with a history of schizophrenia, mental retardation and biphenotypic AML which had transformed to ALL presented to the emergency department with a three day history of fever, mental status changes and lethargy. The patient had been receiving maintenance chemotherapy as an outpatient per SWOG 8417 protocol. He had missed his most recent appointment one month prior to this admission. On admission patient was found to have relapsed ALL. Over the next several days, he developed tumor lysis syndrome. The patient received aggressive hydration and Allopurinol with continued decline in his renal function. He was then given a dose of rasburicase.

Summary of Results: Several hours after receiving rasburicase, his oxygen saturation decreased. Oxygen supplementation was increased with no improvement in saturation. ABG revealed PaO2 of 178. Methemoglobin level was 30.2%. Rasburicase was discontinued. The following morning the patient was found to be in cardiopulmonary arrest. He was revived and transferred to the intensive care unit. Repeat laboratory evaluation revealed hemolysis and declining methemoglobin level. The patient received aggressive supportive care, but continued to decline. The patient expired ten days after admission.

Conclusions: Rasburicase has been studied for the prevention and treatment of tumor lysis syndrome. It is a recombinant urate oxidase enzyme approved for use in pediatric patients for prevention and treatment of tumor lysis syndrome. Rare side effects attributed to rasburicase are methemoglobinemia and hemolysis. Methemoglobin is an altered state of hemoglobin in which the ferrous iron of heme are oxidized to the ferric state. Oxygen delivery to the tissues is impaired. Methemoglobin should be suspected in any patient with cyanosis, but normal arterial PO2. For acquired methemoglobinemia the offending agent should be stopped. Further treatment depends on the clinical setting. Treatment options include methylene blue or ascorbic acid. Rasburicase has also been noted to cause hemolysis. Hemolysis occurs in patients who are glucose-6-phosphate dehydrogenase deficient because these patients cannot break down hydrogen peroxide, a by product of rasburicase, which can lead to hemolysis.

149 UNUSUAL PRESENTATION OF APLASTIC CRISIS SECONDARY TO PARVOVIRUS B19 IN A CHILD WITH T-CELL LYMPHOBLASTIC LYMPHOMA

S. Chandra1, K. Patterson2, and A. Rao1.1University of South Alabama, Mobile, AL and 2University of South Alabama, Mobile, AL.

Introduction: Children receiving chemotherapy are at risk for infectious complications secondary to immunocompromised state. We report a case of T-cell lymphoblastic lymphoma (TLL) on maintenance chemotherapy with an unusual presentation of Parvovirus B19 aplastic crisis, the clinical course and outcome.

Case: 8 year male with history of TLL presented with new onset cervical lymphadenopathy while on maintenance chemotherapy. Physical examination revealed marked pallor, bilateral cervical lymphadenopathy and splenomegaly. Laboratory examination was significant for hemoglobin of 5.2g/dl, WBC 900/mm3, ANC 560/mm3, platelets 151000/mm3 and severe reticulocytopenia (retic count 0%). Peripheral blood smear did not reveal blasts or atypical lymphocytes. LDH and uric acid were normal. Serology was negative for parvovirus B19, cytomegalovirus and mycoplasma. EBV serology was suggestive of past infection. Bone marrow evaluation showed marked erythroid hypoplasia without excess blasts. In the rare erythroid cells glassy inclusions were present which stained positively with the parvovirus immunohistochemical stain. Bone marrow and serum were PCR positive for parvovirus B19. Bone marrow PCR was negative for EBV and CMV. He was treated with intravenous immunoglobulin (IVIG). Lymphadenopathy and splenomegaly resolved following IVIG therapy; however, he continued to need transfusions for anemia associated with marked reticulocytopenia (9%). Two weeks after IVIG, reticulocyte count increased to 3.84% and hemoglobin has since remained stable. He continues to receive monthly IVIG and his Parvovirus B19 PCR remains positive. Parvovirus B19 IgG was detected 2 months after diagnosis, however IgM titers remain negative.

Conclusion: A high index of suspicion for Parvovirus B19 is warranted when unexplained lymphadenopathy or splenomegaly accompany cytopenia, especially reticulocytopenia during chemotherapy. Serology is not reliable in diagnosing infection with Parvovirus B19 due to attenuated immune responses in these patients. Parvovirus PCR is helpful in detecting infection and in surveillance for resolution of infection. Prolonged IVIG therapy is often warranted due to persistent parvovirus B19 infection in the immunocompromised state secondary to chemotherapy.
expression of 9 distinct miRNAs between the two pediatric cancer cell lines by real-time qPCR. We observed five miRNAs (Let-7a, Let-7b, miR-27b, miR29b and miR-29c) were expressed at high levels in hepatoblastoma. Similarly, miR-27b, miR29b and miR-29c were also highly expressed in medulloblastoma, suggesting that they may have a common role between these two pediatric cancers.

Conclusions: We are now extending these studies of miRNA expression profiling using a miRNA array platform developed by Exiqon, Inc (Woburn, MA). The Exiqon array contains all the known human miRNAs (~1000) from the miRBASE sequence database release 9.2. The goal of this work is to characterize the miRNAs present in the CSCs of these two embryonal pediatric cancers.

151 A CASE OF ACUTE SMALL BOWEL OBSTRUCTION WITH PLASMABLASTIC LYMPHOMA

B.D. Cheeran, D. Anandacoomaraswamy, G. Bansal, and V. Rupanagudi. Coney Island Hospital, Brooklyn, NY.

Purpose of Study: Plasmablastic lymphoma (PBL) is a very rare variant of diffuse large B-cell lymphoma. The plasmablastic differentiation of lymphoma implies an aggressive behavior and poor prognosis. Usually these tumors present in the oral cavity and jaws, although extension to distant sites frequently occurs at a later stage. Here we describe an unusual presentation of plasmablastic lymphoma with acute small bowel obstruction.

Methods Used: Case report.

Summary of Results: 54 yr African American female was admitted with complaints of abdominal pain, nausea, vomiting and loose stools for 2 days. The abdominal pain was moderate in intensity, intermittent and crampy in nature associated with couple of episodes of non bloody diarrhea. She was a known hypertensive, asthmatic and a smoker. At presentation to the emergency room she was in moderate distress but was alert awake oriented and hemodynamically stable. On examination, there was diffuse abdominal tenderness without any surgical scars, rebound tenderness or mass. The bowel sounds were present and the stool test was negative for occult blood. Physical examination was otherwise unremarkable and the laboratory studies were with in normal limits. The initial abdominal x-ray showed multiple dilated small bowel loops and the CT scan showed small bowel obstruction. An emergency laparotomy was performed and a 9cm of small bowel was resected. Biopsy specimen of the small bowel revealed plasmablastic lymphoma (insert-1). The neoplastic cells are positive for CD45, MUM 1 and there were Kappa excess. Also positive for EBV.

Conclusions: Plasmablastic lymphoma can present in sites other than oral cavity and jaw. These tumors are very aggressive in nature. This is a rare presentation of plasmablastic lymphoma of small bowel with acute bowel obstruction.

152 MULTIPLE MYELOMA AND ITS PREDOMINANCE IN THE MISSISSIPPI DELTA: FACT OR FICTION?

N.D. Cleveland, S.L. Elkins, and J.C. Files. University of Mississippi Medical Health Care Center and Clinics Jackson, Jackson, MS.

Purpose of Study: Clinicians at the University of Mississippi Health Care Center have often held the perception that there is a heightened incidence of multiple myeloma arising from the Mississippi Delta. It is felt that patients often present at an earlier age with more aggressive disease. However, could this be a reflection of the Mississippi Delta’s predominately African American population rather than true disease clustering?

Methods Used: Retrospective chart review of patient treated for multiple myeloma at UMMC Health Care Center has been conducted to identify patients, their age at diagnoses, sex, ethnicity, county of residence at diagnoses, disease phenotype and survival. Patients originating from the area considered the Mississippi Delta will be grouped together and compared to other patients from different regions in our state. It is acknowledged that this will be a single institution review and will not account for patients treated at other cancer centers.

Summary of Results: Pending and to be presented at SSCI.

Conclusions: Previous studies have linked environmental exposures to the development of hematological malignancies. Multiple Myeloma is noted to have specific chromosomal lesions thought to be associated with drug and chemical exposure. Interestingly, the Mississippi Delta is defined by its rich fertile soil making agriculture its largest economic activity. It is further characterized by its lower economic status and predominately African American population that could easily account for an increased perception of disease.

153 MULTIPLE MYELOMA PRESENTING AS A RECURRENT IN THE CENTRAL NERVOUS SYSTEM

B.S. Craft, M. Cassell, S. Elkins, and J. Files. University of Mississippi Medical Center, Jackson, MS.

Case Report: Introduction: To present a case of multiple myeloma presenting as a central nervous system (CNS) recurrence in a patient previously treated with autologous bone marrow transplant.

Case Presentation: A forty-six year old white female with multiple myeloma was treated initially with bortezomib/dexamethasone and achieved a pathologic complete remission for eight months. At that time, she underwent autologous bone marrow transplant and remained disease free for an additional four months until she acutely developed mental status changes including somnolence, irritability, and seizures. Laboratory studies were significant for a serum sodium of 126 mmol/L. Lumbar puncture performed revealed a cerebrospinal fluid white blood cell count of 69/ccm with 98% malignant cells. Further evaluation of these cells by flow cytometry showed surface markers consistent with a plasma cell dyscrasia. After reviewing the literature, treatment was initiated with a combination of intrathecal methotrexate (12 mg) and hydrocortisone (100 mg) administered every three days. After two doses, microscopic examination of the CSF showed persistence of plasma cells, and clinically the patient’s status remained unchanged. The decision was made to add intrathecal cytarabine (45mg) in the hopes of improving response. With the second dose of the three drug combination (methotrexate, dexamethasone, and cytarabine), CSF examination showed a mild response with decreased numbers of plasma cells. Continued treatment with this regimen resulted in a clearing of her CSF, but with only mild improvement in her mental status. Treatment was continued with both intrathecal and systemic chemotherapy, but unfortunately this patient died of her disease.

Discussion: Multiple myeloma involving the central nervous system as defined by the presence of neurologic symptoms and plasma cells in the cerebrospinal fluid is uncommon. This manifestation, however, remains heterogeneous, with a poor prognosis. While there are treatment modalities in place, they remain anecdotal consisting of intrathecal chemotherapy and radiation.

154 CASE REPORT OF MULTIPLE MYELOMA PRESENTING AS ASCITES
and Research Center, Lubbock, TX; Tech University Health Sciences Center, Southwest Cancer Treatment
Hyari1, J. Moreno1, N. D'Cunha2, F. Hardwicke2, N. Gagliano2,3, F. Grizzi4,2, E. Frezza5, E. Cobos1,2, and M. Chiriva-Internati1,2. 1

Prostate cancer (PC) is the second most common cancer in older men, after skin cancer. About 218,890 new cases are estimated and 27,050 deaths are expected in the United States during 2007. PC is difficult to diagnose because prostate specific antigen (PSA) is generally unresponsive to therapy and rapidly fatal.

Introduction: 72 year old male with multiple medical problems was admitted with ten day history of abdominal pain and distension, bilateral pedal edema, early satiety, constipation and nausea. Physical examination revealed ascites with a fluid thrill, no scleral icterus, decreased bilateral breath sounds, bilateral pedal pitting edema. There was no lymphadenopathy. Laboratory analysis showed normal PSA and HbA1c of 6.4 %. White cell count 9000 cells/ cmm, hemoglobin 12 gm /dl, platelet count 160,000 per cmm. Renal function was normal, total protein 7 gm/dl, albumin 2.9 gm/dl with globulin fraction of 4.1 gm/ dl, alkaline phosphatase 43 U/L, total bilirubin 0.99 mg/dl, ALT 25 U/L, and AST 60 U/L.

Results: Cytology of ascitic fluid showed malignant plasma cells. There was no evidence of portal hypertension or spontaneous bacterial peritonitis. Bone marrow showed 15 % plasma cells. Serum protein electrophoresis showed a monoclonal spike in the gamma region. Serum immunofixation electrophoresis showed Immunoglobulin G lambda monoclonal gammapathy. Monoclonal free lambda light chains were seen on urine electrophoresis. On flow cytometry, cells were positive for CD 38, CD 56 and negative for CD 19 and CD 20. On osseous survey no lytic lesions were identified. Immunoglobulin G levels were 2000 mg /dl. Pathology slides were sent to University of Mexico for second opinion and diagnosis of "malignant plasma cell neoplasm" with peritoneal involvement was made.

He was started on melphalan, prednisone and thalidomide and received 2 cycles with partial response- IgG decreased to 1300 and Beta 2 microglobulin decreased to 6.03 mg/L from peak of 8.15 mg/L. The patient was hospitalized for worsening ascites; and his second stay was complicated with multi organ failure which led to his death, 4 months after the diagnosis was made. The family declined autopsy.

Conclusion: Cytological examination and immunoelectrophoresis are necessary for diagnosis of multiple myeloma with peritoneal involvement. This rare extramedullary presentation of plasma cell neoplasia is generally unresponsive to therapy and rapidly fatal.

155 AKAP-4 AS BIOMARKER FOR PROSTATE CANCER
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Purpose of Study: Prostate cancer (PC) is the second most common cancer in older men, after skin cancer. About 218,890 new cases are estimated and 27,050 deaths are expected in the United States during 2007. PC is difficult to diagnose because prostate specific antigen (PSA) screening method is associated with many false positives. Therefore there is a need to discover new screening targets for the detection of PC. Cancer tests antigens are a class of tumor associated antigens, showing a restricted expression in cancer, a strong immunogenicity and weak expression or absence in normal tissues. AKAP proteins are a growing family of scaffolding proteins involved in signal transduction control.

AKAP-4 was previously investigated in multiple myeloma in a pool of 19 patients showing a 42% of positive band signals by PCR. Our aim in here was to investigate the expression of AKAP-4 in different staged PC patients.

Methods Used: We analyzed normal prostate tissues, 20 patients with PC and an LnCaP human prostate cancer cell line by immunohistochemical methods.

Summary of Results: AKAP-4 was highly expressed in the PC patients. The positive brown staining was present throughout the prostate tissue. Our results give evidence of a 65% rate of expression for AKAP-4 in PC. In the case of the LnCaP cell line, AKAP-4 was shown both at the cytoplasmic and at the surface level of the cells.

Conclusions: This study demonstrates the high aberrant expression of AKAP-4 in PC cases. Further studies are necessary to elucidate the relevance of AKAP-4 as biomarker in PC and its reliability as screening target vs. the common used PSA, as well as its use as potential immunotherapeutic target antigen for PC treatment.

156 UNUSUAL PATHOLOGY FOR A PALPABLE BREAST MASS
J. Frost and S. Elkins. University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: To present an unusual pathology case for an enlarging breast mass.

Methods Used: A fifty-two year old white female with past medical history significant for Graves Disease, migraines and anxiety disorder presented as referral to hematology clinic from general surgery service for treatment of an enlarging breast mass. She complained of a mass involving the left breast for the past 2 to 3 weeks. She had no associated fever, chills, night sweats, weight loss, or fatigue. She was referred to breast surgeon for this palpable mass after initial fine needle aspiration was non-diagnostic. She underwent excisional biopsy that revealed 6.5 X 5.0 X 5.0 cm mass of diffuse, small non-cleaved cell lymphoma with a background of reactive ‘starry-sky’ histocytes and numerous apoptotic cells. Flow cytometry returned with an abnormal lymphocyte population that expressed HLA-DR, CD19, CD79a, CD20, CD10 with lambda light chain restriction, CD38, CD71 and CD23. The population was negative for CD5, FM7, CD34, myeloid markers and T cell antigens. The patient was determined to be HIV negative. With the above combined results of microscopy along with flow cytometry, the patient was diagnosed with extranodal Burkitt’s lymphoma of the left breast.

Summary of Results: After diagnosing this patient with Burkitt’s lymphoma, a MUGA scan was collected with a left ventricular ejection fraction determined to be 61%. She also had CT staging of her chest/ abdomen/pelvis that revealed no adenosity involving the chest/abdo- men/pelvis. Bone marrow biopsy and aspiration was performed that revealed no evidence of lymphoma. She also had lumber puncture that by cytopsin analysis had no abnormal cells to suggest Burkitt’s involvement of the central nervous system. She was admitted to the hospital for administration of chemotherapy with CAE- Cytoxan 187.5 mg/m2, Adriamycin 12.5 mg/m2, Etoposide 60 mg/m2 along with prophylactic intrathecal methotrexate.

Conclusions: When evaluating the female patient with a palpable breast mass, lymphoma should be considered in the differential diagnosis. The characteristic morphology of Burkitt’s is medium sized monomorphic cells with multiple nucleoli and abundant basophilic cytoplasm. With the initiation of combination chemotherapy, patients have an excellent long term remission and survival rates. Radiation therapy plays no role in the treatment of Burkitt’s lymphoma.

157 INVESTIGATING THE EFFECT OF B CELL-ACTIVATING FACTOR ON REGULATORY T CELLS IN HEMOPHILIA A PATIENTS
Further studies will be performed to determine if the receptor is expressed on a subset of T cells. Initial studies have indicated that the BAFF subsets, including the phenotypic Treg, effector, and naïve cytometry and will compare levels of FoxP3 mRNA expression in T cell the expression of BAFF receptor on T cells and Tregs using flow expansion of Tregs can promote immune tolerance, allowing recombi- that BAFF may stimulate other types of cells in the immune system, including T-cells. CD25hi, CD127lo, FoxP3+ regulatory T cells (Tregs), play an important role in establishing peripheral tolerance to recombinant FVIII in those patients who undergo successful ITT. A consequence of rituximab treatment and subsequent B-cell depletion is increased levels of B-cell activation factor (BAFF), which is released by macrophages to aid in replenishing B cell populations. We suspect that BAFF may stimulate other types of cells in the immune system, including T-cells. CD25hi, CD127lo, FoxP3+ regulatory T cells (Tregs), play an important role in immune regulation. We hypothesize that expansion of Tregs can promote immune tolerance, allowing recombi- nant FVIII to function properly in the clotting cascade.

Methods Used: We have begun preliminary experiments to investigate the expression of BAFF receptor on T cells and Tregs using flow cytometry and will compare levels of FoxP3 mRNA expression in T cell subsets, including the phenotypic Treg, effector, and naïve CD4 populations. We will also look for expansion of these cells in vitro via BAFF. We will also look for the relative expression of the BAFF receptor on T cell subsets in Hemophilia A patients and healthy controls.

Summary of Results: Initial studies have indicated that the BAFF receptor is expressed on a subset of T cells.

Conclusions: Further studies will be performed to determine if the subset of T cells expressing the BAFF receptor is indeed Tregs.

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KIKUCHI-FUJIMOTO DISEASE MIMICKING MALIGNANT LYMPHOMA

S. Haq and S. Saghier. University of Oklahoma, Oklahoma City, OK.

Introduction: Kikuchi-fujimoto disease (KD), a necrotizing histiocytic lymphadenitis is a rare cause of fever of unknown origin with lymphadenopathy which clinically and microscopically mimics malignant lymphoma. We review the characteristic features of this benign disorder with emphasis on differential diagnosis with malignant lymphoma.

Case Presentation: A 25-year-old Asian female presented with three- month history of slowly progressive right sided neck mass associated with fever, night sweats and fatigue. Physical examination revealed an enlarged right cervical lymph node, measuring 5 x 5 cm, mildly tender and mobile. Laboratory investigations revealed mild neutropenia and negative serology tests for Brucella, HIV, Lupus, PPD/TB, Toxoplasma and Epstein-Barr virus. CT scan of the neck showed cervical lymphadenopathy. Excisional biopsy of the lymph node gave impression of histiocytic necrotizing lymphadenitis. Flow cytometric studies provided no evidence of lymphoma and special stains for microorganisms were negative. No specific treatment was given to that patient and her symptoms resolved within three months.

Discussion: Kikuchi-fujimoto disease is a benign self limited disorder which presents with fever, lymphadenopathy, night sweats, weight loss, leukopenia etc. Initially described in 1972, it is most prevalent in females in late 20s or 30s. Approximately 30% of KD patients are mistaken for malignant lymphoma which results in unnecessary expensive evaluations and cytotoxic treatments. Histologic changes in KD suggest an immune response. Excised lymph nodes in KD show pale areas of necrosis surrounded by histiocytes and activated lymphocytes with the absence of neutrophils. In contrast, lymph node necrosis associated with lymphoma (e.g. Hodgkin’s) includes neutrophils and large atypical cells (Reed Sternberg cell variants). Treatment of Kikuchi Disease is symptomatic and usually the disorder resolves itself spontaneously within few months.

Conclusion: Kikuchi disease should be considered in differential diagnosis of young patients presenting with lymphadenopathy and fever of unknown origin. It is important for clinicians and pathologists to be aware of this benign and self-limited entity and to not confuse it with malignant lymphoma with its worse prognosis and treatment.
Case Report: Paraneoplastic leukocytosis in bladder cancer is rare and is often associated with paraneoplastic hypercalcemia and appears to represent a particularly aggressive form of the disease. We describe the clinical, biochemical and pathological findings in a patient with urothelial anaplastic carcinoma accompanied by marked leukocytosis as high as 238,000/mm3. A 42 year old African American with hematuria, fifty pound weight loss, and altered mental status was admitted to the hospital. The patient was found to be in acute renal failure secondary to tumor lysis. The patient was intubated for ARDS and hypoxemia. CT scan of the pelvis revealed very extensive bladder mass and bilateral inguinal lymphadenopathy. X-ray revealed bilateral interstitial shadow. The patient underwent cystoscopy with biopsy of the mass. Cystoscopy revealed large mass approximately 4 cms x 6 cms involving half of the left side of the bladder, prostatic tissue and urethra. Immunohistochemical staining of the biopsy specimen revealed tissue positive for Pan keratin, CK-7, CK-34, beta E12 and p53 and negative for CK-20, PSA, and HMB-45. Blood examination revealed leukocyte alkaline phosphates score 278, uric acid 11.6 mg%, creatinine 5.8 and corrected calcium 15mg%. The PTH-related protein was normal at 3.1. The patient was treated with leukoperesis, dialysis and chemotherapy with gemcitabine and cisplatinum. The serum cytokine granulocyte colony stimulating factor (G-CSF) concentration was increased to 2440 (normal: 0.0-39 pg/ml) and cytokine granulocyte macrophage colony stimulating factor (GM-CSF) was 11.5 (normal: 0.0-7.8 pg/ml) which paralleled to the elevation of white blood cell (WBC) count. The patient’s leukocytosis responded well to treatment with leukopheresis and chemotherapy. Tumor lysis and renal failure responded to dialysis. We suggest that the G-CSF production by the tumor participates in the mechanisms of the paraneoplastic leukemoid reaction. It responds well to chemotherapy and leukopheresis if symptomatic and evidence of organ damage. Dialysis is indicated for renal failure due to tumor lysis.

161 CASE PRESENTATION OF MALIGNANT EXTRARENAL RHABDOID TUMOR OF THE LIVER
J.R. Jones and R.D. Hamilton. University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: To present a case of malignant extrarenal rhabdoid tumor of the liver in an adult.

Methods Used: A forty-two year old white male presented with a two month history of increasing low back pain. CT spine revealed a pathologic burst fracture of the 2nd lumbar vertebra with narrowing of the spinal canal. Further scans showed hepatosplenomegaly with multiple hypodensities within the liver and spleen. Fine needle aspiration of the liver was performed but was non-diagnostic. The patient was noted to be pancytopenic, so bone marrow aspiration and biopsy was done for further diagnostic purposes.

Summary of Results: The marrow was extensively infiltrated by a poorly differentiated neoplasm which stained positive for vimentin. The final diagnosis was malignant extrarenal rhabdoid tumor. Spinal irradiation was initially given. Despite five cycles of Etoposide and Cisplatin along with aggressive blood product and growth factor support, blood counts only minimally improved. Shortly after the last cycle of chemotherapy, the patient presented with hypercapnic respiratory failure, acute renal failure, and new-onset ascites. The ascitic fluid was positive for rhabdoid tumor. Despite aggressive supportive care, the patient died approximately one week after admission.

Conclusions: Malignant rhabdoid tumor was originally described as a distinct malignant tumor of the infant kidney. Subsequently, similar lesions were noted in other anatomic sites. With more refined immunohistochemistry and cytogenetic analysis, malignant extrarenal rhabdoid tumor has now been accepted as a distinct clinicopathological entity. Rhabdoid tumors are composed of cells with cytoplasmic inclusions that contain whorls of intermediate filaments. These intermediate filaments are typically comprised of vimentin and cytokeratin, which variably stain on immunohistochemistry. Mutation or deletion of the hSNF5/INI1 tumor suppressor gene located on chromosome 22q11 is common in these tumors. The long-term survival of malignant extrarenal rhabdoid tumor is <10% in most reports despite aggressive chemotherapy regimens. Therefore, the only chance for long-term survival in malignant extrarenal rhabdoid tumors appears to be with aggressive surgical excision and radiation therapy in the setting of localized disease.

162 A CASE REPORT OF IgE MULTIPLE MYELOMA
B.E. Persing, S.L. Elkins, and V.E. Herrin. University of Mississippi Medical Center, Jackson, MS.

Introduction: Multiple myeloma is a common hematologic malignancy comprising 1% of all malignancies and over 10% of hematologic malignancies. Myeloma is diagnosed by several criteria with the basis for these criteria confirming a plasma cell dyscrasia with associated monoclonal serum paraprotein. Median age of diagnosis is 66 years of age with the most common paraproteins of myeloma being IgG, IgA, and Bence Jones Proteins. IgM, IgD, and IgE account for less than 3% of myeloma cases, with the least common being IgE.

Case Presentation: We present a case of a 48-year-old man who presented with back pain, progressive weakness, and altered mental status. He had hypercalcemia and elevated serum creatinine on presentation along with pleural based plasmacytomas and osteolytic lesions of the lumbar spine. Serum protein electrophoresis revealed a monoclonal IgE lambda protein, urine protein electrophoresis revealed free lambda light chains, and marrow evaluation showed 90% cellularity with 80% plasma cells that were atypical in appearance. Flow cytometric analysis of the bone marrow was consistent with myeloma and chromosomal studies of the bone marrow were normal. Peripheral blood evaluation revealed no evidence of circulating plasma cells. The patient underwent treatment with Vincristine, Doxorubicin, and Dexamethasone (VAD) with improvement in his paraprotein and resolution of his pleural based masses.

Conclusion: IgE multiple myeloma is uncommon disease representing approximately 0.01% of all diagnosed cases of myeloma. To date just over 40 cases of IgE myeloma have been described. Approximately half of the cases were IgE kappa and half of the cases were associated with plasma cell leukemia. Treatment results have varied with some patients alive at ten years and others with very limited survival secondary to rapidly progressing disease followed by death. Individual case review will be required for further characterization of IgE myeloma given the rarity of this disease.

163 FACTORS INFLUENCING UTILIZATION OF HOSPICE CARE VERSUS AGGRESSIVE TREATMENT OPTIONS IN PANCREATIC CANCER PATIENTS

Purpose of Study: Approximately 50% of newly diagnosed pancreatic cancers are metastatic; hence palliative therapy and hospice care are important aspects of care. The present study looks into factors influencing the utilization of hospice versus aggressive therapies (surgery, chemotherapy, radiotherapy) in patients with pancreatic cancer.
Methods Used: A retrospective chart review of all pancreatic cancer patients in tumor registry admitted to University of Florida, Shands Hospital, Jacksonville from Jan 2000 to Dec 2005. Each patients chart was reviewed for stage, demographics, treatments offered and use of hospice care.

Summary of Results: 82 patients were identified. Mean age at diagnosis was 66.4 years. Male: female distribution was 1.1:1.0. African-Americans (65%) were more common that Caucasians (35%). 41% patients were smokers. 17% patients had diabetes at the time of diagnosis. 60% patients were in Stage 4, 17% Stage 3, 16% stage 2 and 7% were Stage 1. 65% had unresectable disease at the time of diagnosis. 57% patients had Charlson Co-morbidity index(CMI) of 0–1. 43% had CMI of greater than 1. 84% patients had Eastern Co-Operative Oncology Group (ECOG) Performance status of 0. 57% patients had Charlson Co-morbidity index(CMI) of greater than 1. 84% patients had Eastern Co-Operative Oncology Group (ECOG) Performance status of 0–1 and 16% ECOG status greater than 1. After diagnosis a total of 52% patients elected for hospice care over aggressive chemotherapy, radiotherapy or surgery. 37 (60%) African American patients elected for hospice care over aggressive therapy as compared to only 7 (24%) Caucasian patients who chose hospice. On analysis African Americans were more likely to elect for hospice over aggressive therapy compared to Caucasians (p=0.008, OR -5.6, 95% CI- 1.9–16.1). Using a multivariate probability model; increasing age (p<0.02), higher Stage at presentation (p<0.001) and lower socioeconomic (SE) status (p<0.002) were also associated with choice of hospice care.

Conclusions: African American patients are more likely to elect for hospice compared to Caucasian patients with similar stage of the disease. The factors influencing choice of hospice versus aggressive therapy were advanced age, African American race, a higher ECOG functional status score, advanced stage at presentation, lower SE status and lack of health insurance.

164 LENALIDOMIDE STOPS PROGRESSION OF MULTIFOCAL EPITHELIOID HEMANGIOENDOTHELIOMA
A.L. Sumrall1, R. Fredericks1, and G. Shumaker2. 1University MS Medical Center, Jackson, MS and 2Jackson Oncology Associates, Jackson, MS.

Case Report: Epithelioid Hemangioendothelioma (EH) is a rare soft-tissue tumor which develops from vascular endothelium. The course of EH varies, based on the tissue of origin. Mortality has been estimated at 13% in soft tissue, 35% in liver, and 65% in lung disease. A previously healthy 32-year-old white female began experiencing frontal headaches during the last trimester of her first pregnancy. She also developed multiple nodules on her scalp. An MRI of her brain was completed, revealing multiple lytic lesions of the skull as well as an intracranial mass. She underwent a right parieto-occipital craniotomy with resection of the intracranial mass and excision of the involved scalp and skull lesions. Pathology identified the lesions as epithelioid hemangioendothelioma. She was referred to Duke University Medical Center in November 1997 for resection of the posterior one-third of the skull and scalp reconstruction. By April 1998, she developed recurrent scalp nodularity (each less than 1 cm) and bilateral occipital masses. Chest CT at that time revealed multiple small pulmonary nodules. The patient underwent treatment with adriamycin, ifosfamide, thalidomide, interleunin alfa-2b, cisplatin, and radiation, but her disease progressed. In March 2003, she was enrolled in a study at the Comprehensive Cancer Center at Wake Forest University Baptist Medical Center and started on agent CDC-5013 (lenalidomide) at a dosage of 25mg daily by mouth for 28 days every 6 weeks from March 2003 to March 2004. Scans remained stable during this therapy. By October 2004, lenalidomide was provided on a compassionate use basis. The patient began a new protocol dose of 25mg daily on days 1–21 every 28 days. This updated protocol was adopted which allowed for indefinite use of lenalidomide as long as there was no disease progression and the patient tolerated the medication. Per the patient’s wishes, all care was transferred back to Mississippi. As of September 2007, both MRI brain and CT scans remain stable with no progression of disease.

165 USE OF PERI-TRANSPLANT RITUXIMAB IMPROVES OUTCOME IN NON-HODGKIN LYMPHOMA AND AUTOLOGOUS STEM CELL TRANSPLANT
J.D. Voss and S. Elkins. University of Mississippi, Jackson, MS.

Purpose of Study: To determine if the addition of rituximab improves progression free survival (PFS) in patients with non-Hodgkin lymphoma undergoing autologous stem cell transplant (ASCT).

Methods Used: A retrospective review was done for patients at our transplant center for non-Hodgkin lymphoma and ASCT from January 2004 through September 2006.

Summary of Results: 20 patients were eligible for review. 9 patients comprised the control arm with no rituximab given at the time of ASCT. 11 patients comprised the experimental arm, each receiving at least one dose of peri-transplant rituximab, most commonly administered 7 days prior to and the day of ABMT. 17 patients had received prior rituximab as either initial or salvage therapy with a mean of 6 doses. All patients had high-grade lymphoma subtypes. Median PFS was 13 months in the rituximab arm compared to 8 months in the control arm. More deaths occurred in the control arm (5) versus the experimental arm (2). One patient was lost to follow-up at three months and another remains alive with progressive disease. The most important prognostic factor appeared to be the chemosensitivity of the tumor to initial or salvage chemotherapy regimens. All patients who died had either primary refractory or chemoresistant relapsed disease.

Conclusions: Long term survival rates of approximately 35% are seen with ASCT in the setting of chemosensitive aggressive NHL. Advances in supportive care and conditioning regimens have reduced peri-transplant mortality to less than 10%. Disease relapse post transplant remains the major cause of mortality. Novel approaches with radioimmunotherapy and monoclonal antibodies have shown promise with disease-free survival rates above 75%, albeit with short follow-up. Rituximab exerts anti-tumor effects through the CD20 antigen, which is widely expressed in B cell malignancies. Human stem cells are CD20 negative. Rituximab given pre-mobilization and again at the time of transplant selects for a CD20 negative cell population. The risk of infusion and engraftment of a malignant clone is therefore reduced. While this review lacks sample size to reach statistical power, it demonstrates a clear trend toward improved progression free survival.

Joint Poster Session
Infectious Disease, HIV, and AIDS
5:00 PM Thursday, February 21, 2008
Ativan. Head CT and EEG were negative on day 5 and 6. She had fever and cough, and was treated for possible aspiration pneumonia as evident on chest x-ray. The next day she was found to have new onset left hemiparesis, aphasia and isolated left sixth cranial nerve palsy. MRI revealed bilateral temporal lobe hyperintense lesions suggestive of HSV encephalitis. LP was deferred because of patient’s obtunded status. Intravenous acyclovir was started and patient transferred to MICU where from day 2 she became more arousable, able to talk and move her extremities. Patient completed 3 weeks of acyclovir, underwent acute rehabilitation and was discharged with full recovery.

Most cases of encephalitis are due to HSV-1 and 10% due to HSV-2. The mortality rate is up to 70%. Empiric therapy with acyclovir should be initiated to prevent long term motor, visual, auditory, intellectual nerve palsy. MRI revealed bilateral temporal lobe hyperintense lesions and most cases of encephalitis are due to HSV-1 and 10% due to HSV-2. The mortality rate is up to 70%. Empiric therapy with acyclovir should be initiated to prevent long term motor, visual, auditory, intellectual abnormalities. Diagnosis is by CSF PCR with a sensitivity of 98%. When LP cannot be performed MRI can be relied. MRI has 85% sensitivity and 60% specificity. Hyperintense bilateral temporal lesions are pathognomonic of HSV encephalitis. The objective of this case report is to emphasise on high index of suspicion and treatment to reduce morbidity and mortality in HSV encephalitis.

Methods Used: Case report.

Summary of Results: A 62-year-old African American male was referred to ER from dialysis center after found to have positive culture. Patient has end stage renal disease on hemodialysis using permcath on right upper chest. Found to have bacillus bacteremia on blood culture done after he was complaining of tiredness and very lethargic. Patient has Diabetes mellitus, hypertension, ESRD on dialysis, BPH, Anemia, CVA with full recovery. On examination, alert, awake and oriented x3 afibrile. Permacath is seen on right upper chest. Site of catheter is not showing any signs of infection. Left arm cephalic vein is palpable. Distal pulses felt. AV fistula is on left arm which is patent. Chest and cvx examination unremarkable. No neurological findings. Laboratory showed blood cultures were positive for bacillus species (blood cultures were done on April 18, 19, 22, 24, 26, 27, 30). Permacath was removed on the second day itself and dialysis was started on AV fistula on left arm which was placed few weeks ago. Permacath tip grew bacillus. Blood culture was persistently positive even after removing the permacath. Later left upper arm sonogram revealed cephalic vein thrombosis with patent AV fistula. Antibiotics (vancomycin and zithromax) were continued for 2 weeks. Last blood cultures done on May 2nd were negative for any growth. Patient was discharged on oral antibiotics.

Conclusions: Persistent bacillus bacteremia is very rare presentation and patient was asymptomatic other than some lethargy and tiredness. Initially permacath was blamed for bacteremia. But the persistent bacteremia even after removing catheter and aggressive iv antibiotic treatment showing that source was the thrombosed and infected cephalic vein. Referred to interventional radiologist after the cultures turned out negative.

167 A CASE OF CEPHALIC VEIN THROMBOPLEBITIS AND PERSISTENT BACILLUS BACTEREMIA

B.D. Cheeran and M. Zaman. Coney Island Hospital, Brooklyn, NY.

Purpose of Study: In clinical practice it is uncommon to come across a patient with persistent bacillus bacteremia due to cephalic vein thrombophlebitis. Usually bacteremia is cleared on appropriate antibiotic treatment or removing the source of bacteremia if any. We present a rare case of bacillus bacteremia with cephalic vein thrombophlebitis.

Methods Used: Case report.

Summary of Results: A 62-year-old African American male was referred to ER from dialysis center after found to have positive culture. Patient has end stage renal disease on hemodialysis using permcath on right upper chest. Found to have bacillus bacteremia on blood culture done after he was complaining of tiredness and very lethargic. Patient has Diabetes mellitus, hypertension, ESRD on dialysis, BPH, Anemia, CVA with full recovery. On examination, alert, awake and oriented x3 afibrile. Permacath is seen on right upper chest. Site of catheter is not showing any signs of infection. Left arm cephalic vein is palpable. Distal pulses felt. AV fistula is on left arm which is patent. Chest and cvx examination unremarkable. No neurological findings. Laboratory showed blood cultures were positive for bacillus species (blood cultures were done on April 18, 19, 22, 24, 26, 27, 30). Permacath was removed on the second day itself and dialysis was started on AV fistula on left arm which was placed few weeks ago. Permacath tip grew bacillus. Blood culture was persistently positive even after removing the permacath. Later left upper arm sonogram revealed cephalic vein thrombosis with patent AV fistula. Antibiotics (vancomycin and zithromax) were continued for 2 weeks. Last blood cultures done on May 2nd were negative for any growth. Patient was discharged on oral antibiotics.

Conclusions: Persistent bacillus bacteremia is very rare presentation and patient was asymptomatic other than some lethargy and tiredness. Initially permacath was blamed for bacteremia. But the persistent bacteremia even after removing catheter and aggressive iv antibiotic treatment showing that source was the thrombosed and infected cephalic vein. Referred to interventional radiologist after the cultures turned out negative.

168 (Withdrawn)

169 SEVERE ACUTE HEPATOTOXICITY RELATED TO DAPTOMYCIN THERAPY WITHOUT RHABDOMYOLYSIS

D.S. Dharmasena. Coney Island Hospital, Brooklyn, NY.

Case Report: Sanath Dharmasena MD*, Shahajahan Molla MD, Marina Margulis MD, Elena Frolova MD, Coney Island Hospital, Brooklyn, New York

Introduction: Vancomycin has been the cornerstone of therapy for serious MRSA infections including bacteremia and endocarditis. Prolonged MRSA bacteremia with failed vancomycin therapy has led to the treatment of these infections by other agents including Daptomycin. Daptomycin is approved in 2003 for the treatment of complicated infections caused by aerobic gram-positive bacteria, including those caused by methicillin-resistant and methicillin-susceptible Staphylococcus aureus. The pharmacokinetics of Daptomycin suggested no obvious hepatic impairment except few cases of severe myopathy with very high elevation of CPK and marginal hepatic functions. According to the published data there has been no case reported with acute hepatic failure due to Daptomycin. It was accepted that moderate liver impairment has no influence on daptomycin pharmacokinetics. We present an interesting case of MRSA endocarditis, a 40-year-old female with a history of intravenous drug abuse and recently detected hepatitis C, treated with Daptomycin following failed Vancomycin therapy ended up with severe elevation of hepatic functions without a rise of CPK or an evidence of myopathy. Theoretically pharmacokinetics of Daptomycin is not significantly altered in patients with hepatic impairment; therefore, no dosage adjustments are necessary. In conclusion, subjects
with moderate hepatic impairment receiving Daptomycin did not require an adjustment in Daptomycin dose or dose regimen. But in this case the acute rise in hepatic functions without a rise in CPK in the presence of Daptomycin therapy compelled us to think twice before starting the medication. Clinicians using Daptomycin for treatment of MRSA bacteremia should be aware of the potential for the development of significant hepatic failure with or without known implication of rhabdomyolysis. Transparency declaration: No specific financial support was obtained for the preparation of this article. The authors have no potential conflicts of interest to declare with respect to this paper.

170 TREATMENT OF SEVERE COMMUNITY-ACQUIRED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS INFECTIONS IN A PEDIATRIC INTENSIVE CARE UNIT
S.H. Durhan1, K.W. Bernter, A.M. Crecel, and M.K. Winkleo 1Children’s Health System, Birmingham, AL; 2Sanford University, Birmingham, AL and 3University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: In recent years, there has been an increase in the incidence of community-acquired methicillin-resistant Staphylococcus aureus (CA-MRSA) infections. Our institution has seen a rise in severe CA-MRSA infections in otherwise healthy children that resulted in admission to the pediatric intensive care unit (PICU). The purpose of this study is to examine the initial antibiotic regimens prescribed, subsequent antibiotic alterations in response to culture results, and time to attain negative cultures.

Methods Used: A retrospective chart review was conducted to identify otherwise healthy patients who were admitted to the PICU with severe CA-MRSA infections during the past 6 years.

Summary of Results: 9 patients were identified for this study, all admitted to the PICU between March 2006 and September 2007. The initial antibiotics prescribed were vancomycin (n=8), cephapirin (n=6), pip/tazo (n=2), azithromycin (n=2), clindamycin (n=2), gentamicin (n=2), and ceftriaxone (n=1). One patient was treated successfully with ceftriaxone and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor.

Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor.

171 AN UNUSUAL CAUSE OF CHORIOAMNIONITIS
L. Engel and C.E. Raasch. LSU Health Science Center, New Orleans, LA.

Case Report: We report the first case of chorioamnionitis due to Sphingomonas paucimobilis. Chorioamnionitis, an infection that involves the amniotic cavity and chorionic membranes, is associated with up to 40% of febrile morbidity during the peripartum period. Chorioamnionitis can result in maternal bacteremia, serious post partum pelvic infections, and is associated with an increase in maternal death. A 25-year-old G5P4 woman with twin intrauterine pregnancy at 31 weeks gestation was admitted to the hospital with vaginal discharge, urinary frequency, lower back pain and fever. At admission, she was febrile 101°F and had uterine contractions occurring every 5 minutes, causing physical discomfort. She had mild costovertebral tenderness but benign abdominal exam findings. Gynecological exam revealed a 3cm dilated cervix. Wet prep was unremarkable. Pre-term labor was arrested with intravenous magnesium sulfate. Neisseria gonorrhoea was isolated from cervical culture, for which the patient received ceftriaxone intramuscularly. The patient’s fever and abdominal pain continued and amniocentesis was performed. Sphingomonas was identified from amniotic fluid cultures and confirmed to be S. paucimobilis by DNA sequencing. The patient’s fever persisted and a low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor. Pathological evaluation demonstrated early chorioamnionitis. The patient was treated successfully with cefazolin and gentamicin. Risk factors for chorioamnionitis include cervical colonization with gonorrhea, preterm labor, ruptured membranes before labor, and low transverse C-section was performed after failed induction of labor.
Conclusions: The association of the other genes with DVT formation.

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S. Kale, S. Bani-Hani, and D. Lancaster.

JUST ANOTHER CASE OF PNEUMONIA?

Discussion: Those incubated at 37°C temperature grew septate hyphae bearing pear-shaped conidia, whereas those incubated at 37°C showed diffuse alveolar infiltrates and a 2-cm cavitary lesion in left upper lobe. White count, ESR and CRP were elevated. HIV and AFBs x 3 were negative. Biopsy from the ulcer revealed thick-walled broad-based budding yeasts with PAS-D and GMS stains. Fungal cultures on Sabouraud dextrose agar at room temperature grew septate hyphae bearing pear-shaped conidia, whereas those incubated at 37°C grew yeast cells with broad-based buds consistent with Blastomyces dermatitidis.

Discussion: Blastomycosis is a chronic pyogranulomatous infection caused by inhalation of conidia of the dimorphic fungus Blastomyces dermatitidis. Lungs are primarily involved, but extrapulmonary disease of skin and bones is common. It is endemic in North America, especially southeastern and south-central states bordering Mississippi and Ohio River basins. Close contact with warm, moist soil rich in organic debris is a known risk factor. Clinically, blastomycosis can be mistaken for bacterial pneumonia. Alveolar infiltrates and cavitary lesions can mimic tuberculosis. 40% exhibit cutaneous lesions manifesting papulopustular, healed-up, violaceous nodules or ulcerated plaque-like lesions resembling pyoderma gangrenosum. Diffuse pulmonary infiltrates can cause ARDS and CNS involvement is common among immunocompromised, both associated with high mortality. Visualization of broad-based budding yeast is helpful, but definitive diagnosis requires growth of B. dermatitidis from a clinical specimen. Drug of choice is itraconazole, whereas amphotericin B is recommended for CNS involvement.

Conclusion: Blastomycosis can masquerade as numerous other diseases and should be suspected while evaluating unexplained granulomatous pulmonary or cutaneous disease.

Staphylococcal osteomyelitis since 2006, 10 were caused by MRSA, and 8 by MSSA. Three cases were complicated by DVTs in this time period, one associated with MSSA osteomyelitis, and 2 associated with MRSA. Isolates associated with staphylococcal osteomyelitis were tested using PCR for the presence of genes encoding PVL, cna, sarT, FnBPB, CifA, CifB, and Eap. All isolates, whether MSSA or MRSA, were found to be PVL positive.

Summary of Results: To date, there has been no clear pattern of association of the other genes with DVT formation.

Conclusions: Testing of additional clinical isolates is ongoing.

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AN UNUSUAL CAUSE OF UNILATERAL CUTANEOUS ULCERS

S. Kale and R. Morrison. University of Tennessee Health Science Center, Memphis, TN.

Case Report: A 20-year old African American male from Mississippi was admitted with unilateral non-healing cutaneous ulcers on right side of his body and cough productive of yellow-white sputum since one year. He also had exertional dyspnea and a ten-pound weight loss. He used to work outdoors in a shipyard in close proximity to water and soil. Examination revealed diffuse rhonchi and five distinct ulcers limited to the right side of his body; the largest on right knee measuring 10x5 cm. All ulcers had pink, healthy granulation tissue and friable, erythematous, violaceous borders. Chest CT showed diffuse alveolar infiltrates and a 2-cm cavitary lesion in left upper lobe. White count, ESR and CRP were elevated. HIV and AFBs x 3 were negative. Biopsy from the ulcer revealed thick-walled broad-based budding yeasts with PAS-D and GMS stains. Fungal cultures on Sabouraud dextrose agar at room temperature grew septate hyphae bearing pear-shaped conidia, whereas those incubated at 37°C grew yeast cells with broad-based buds consistent with Blastomyces dermatitidis.

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Discussion: Mycoplasma pneumoniae is one of the most common causes of atypical pneumonia. It is transmitted by infected respiratory droplets and is common among institutionalized individuals. It tends to be more fulminating among children and young adults. Non-productive cough, dyspnea and fevers are common, however serious complications like hemolytic anemia, Stevens-Johnson syndrome and encephalitis can occur. Chest radiology often reveals a bronchopneumonia-like pattern with diffuse interstitial infiltrates and less commonly nodular infiltrates and hilar lymphadenopathy. Unfortunately, none of the current diagnostic tests can diagnose M. pneumoniae rapidly. There are no distinguishing clinical or radiological features to differentiate from other atypical pneumonias, mycobacterial and mycotic infections. Hence a high degree of clinical suspicion is essential. EIA as have recently become the mainstay in diagnosing acute Mycoplasma infections with a high sensitivity and specificity (both > 95%). Treatment is empiric with macrolides forming the first line of therapy followed by levquin and doxycycline.

Conclusion: Physicians should be aware that mycoplasma can cause fulminating pneumonia and empiric treatment with a suitable antibiotic should be initiated immediately to avoid serious complications, while awaiting immunoassays.

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JUST ANOTHER CASE OF PNEUMONIA?

S. Kale, S. Bani-Hani, and D. Lancaster. University of Tennessee Health Science Center, Memphis, TN.

Case Report: A 19-year-old Hispanic female presented with progressively worsening dyspnea and non-productive cough for 3 days. She suffered from bipolar depression requiring a recent 2-week institutionalization. She also complained of malaise and subjective fevers but no sick contacts. On examination, she was febrile, tachypneic and hypoxic with scattered rales. Chest CT showed peribronchial thickening, staphylococcal osteomyelitis since 2006, 10 were caused by MRSA, and 8 by MSSA. Three cases were complicated by DVTs in this time period, one associated with MSSA osteomyelitis, and 2 associated with MRSA. Isolates associated with staphylococcal osteomyelitis were tested using PCR for the presence of genes encoding PVL, cna, sarT, FnBPB, CifA, CifB, and Eap. All isolates, whether MSSA or MRSA, were found to be PVL positive.

Summary of Results: To date, there has been no clear pattern of association of the other genes with DVT formation.

Conclusions: Testing of additional clinical isolates is ongoing.

175

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Conclusion: Blastomycosis can masquerade as numerous other diseases and should be suspected while evaluating unexplained granulomatous pulmonary or cutaneous disease.
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**Conclusion:** Blastomycosis can masquerade as numerous other diseases and should be suspected while evaluating unexplained granulomatous pulmonary or cutaneous disease.

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**SERONEGATIVITY IN AN HIV POSITIVE INFANT**

C.M. Laos, A. Mirza, and L. Aigbivbalu. University of Florida, College of Medicine, Jacksonville, FL.

**Purpose of Study:** Despite the considerable success in elimination of mother to child human immunodeficiency virus (HIV) transmission, several challenges remain. We present a case of a perinatally HIV infected infant whose mother had a negative HIV test initially. Repeat testing later in pregnancy was undocumented. The baby was negative by HIV immunosorbent assay (ELISA) upon initial screening.

**Methods Used:** Descriptive Case Report.

**Summary of Results:** A 4-month-old African American female presented to a county emergency room (ER) with increased work of breathing. Past history was significant for premature birth at 33 weeks. The mother’s prenatal tests were negative and she had good prenatal care. She reported two negative HIV screenings: at sixteen weeks and five months of gestation. The baby had been doing well except for poor weight gain. She had been exclusively bottle fed. A chest radiograph (CXR) was obtained at the county ER, and a single dose of ceftriaxone was given. The patient was transferred to the local children’s hospital. On arrival, the patient was hypoxic, with an oxygen saturation of 40% on room air. A respiratory syncytial virus (RSV) test was sent and was positive. Her respiratory status deteriorated rapidly requiring transfer to the pediatric intensive care unit (PICU). CXR showed a persistent abnormal diffuse parenchymal process bilaterally, with air bronchograms. A bronchoscopy was done and samples sent for standard respiratory cultures as well as Pneumocystis jiroveci pneumonia (PJP). The PJP test returned positive. The patient was placed on trimethoprim-sulfamethoxazole along with corticosteroid therapy. An ELISA screen for HIV1 and HIV2 was sent on the baby and came back negative. Index of suspicion for HIV infection remained high and repeat HIV tests were sent. The HIV deoxyribonucleic acid (DNA) polymerase chain reaction (PCR) was positive. The mother was also tested and her HIV ELISA and Western Blot were positive.

**Conclusions:** Our case emphasizes several important points. Adherence to current testing guidelines including the use of rapid HIV tests to minimize opportunities for prevention, particularly in areas with high HIV/AIDS prevalence. In addition, all health care providers need to maintain a high index of suspicion for HIV infection in the face of HIV related illnesses and test infants with HIV DNA PCR if initial ELISA tests are negative.

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**EXTENSIVE VARIATION AND RAPID SHIFT OF THE MG192 SEQUENCE IN MYCOPLASMA GENITALIUM STRAINS FROM PATIENTS WITH CHRONIC INFECTION**

M. Mancuso, L. Ma, J.A. Williams, B.J. Van Der Pol, J.D. Fortenberry, and D.H. Martin. Louisiana State University Health Sciences Center, New Orleans, LA and Indiana University School of Medicine, Indianapolis, IN.

**Purpose of Study:** Mycoplasma genitalium (MG) causes persistent urogenital tract infection in humans. The mechanism for persistence is undetermined. The MG192 gene undergoes rapid sequence change over time. Our specific aims were to determine MG192 sequence variation in patients with chronic MG infection and to analyze the sequence structural features of the MG192 gene.

**Methods Used:** Urogenital specimens were obtained from 13 patients who were followed for 10 days to 14 months. The variable region of the MG192 gene was PCR amplified, subcloned into plasmids and sequenced. Analysis of the nucleotide, deduced amino acid sequences and potential protein structure were performed.

**Summary of Results:** Sequencing of 220 plasmid clones (5–18 clones/specimen) yielded 106 unique MG192 variant sequences. All variants when compared to the G37 type strain contained nonsynonymous base changes, insertions and/or deletions. Alignment analysis revealed 11 subvariable regions (V1 to V11) with different degrees of variability within and among MG strains. Subvariable region V9 was the least variable region (2 sequence types) and V6 the most variable region (46 sequence types). MG192 sequences were more related within individual patients than between patients. Analysis of the V6 region of sequential specimens obtained from one patient showed increased sequence diversity over time. Transmembrane topology analysis showed that the full-length MG192 sequence consisted of a cleavable signal peptide at the N-terminus and a transmembrane domain at the C-terminus. The entire variable region was topologically located in the outer membrane of the bacterium.

**Conclusions:** The MG192 gene is highly variable among and within MG clinical strains. The portion encoded by the MG192 variable region is hypothesized to be exposed on the surface of the organism resulting in epitopes exposed to the host immune system. Rapid diversification of MG192 during genital tract mucosal infection may allow MG to evade the host immune response, thus facilitating persistent infection.

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**ACUTE HEPATITIS E INFECTION IN VISITOR TO USA**

M. Soni, K. Sheth, and S. Niranjan. Department of Medicine, Coney Island Hospital, Brooklyn, NY.

**Background:** A man from Bangladesh had been visiting USA when he was diagnosed with acute hepatitis E. Hepatitis E remained relatively uncommon in this country. With growing foreign travel and an ever-increasing number of cases reported nationally, hepatitis E infection should be considered more frequently in the differential diagnosis of acute hepatitis.

**Case Report:** A 22-year-old man from Bangladesh on a visit to the USA for a week developed sudden onset of nausea, fatigue and yellowish discoloration of eyes for 5 days. Upon physical examination, the patient was deeply jaundiced and had mild right upper quadrant tenderness. The metabolic panel and complete blood count were normal, but the total bilirubin was 27.4 mg/dL, alanine aminotransferase was 182, and aspartate aminotransferase was 1709. Hepatitis profile for A, B and C were negative. Toxicology screen including levels of acetaminophen and salicylate were negative. He denied alcohol abuse. Serology for antihepatitis antibody and anti smooth muscle antibody titer was normal. Abdominal showed normal liver size and normal flow patterns. Supportive treatment was given, and the hospital course was uneventful, with a rapid improvement in both symptoms and liver enzymes.

**Discussion:** Hepatitis E virus, a single stranded RNA virus, is the primary cause of enterically transmitted non-A non-B hepatitis worldwide. Most countries where hepatitis E outbreaks have not been documented hepatitis E accounts for less than 1% of reported cases of acute viral hepatitis. In 90% of cases the likely etiology will become apparent from the history and results of blood tests, such as serology for
hepatitis A, B, and C and autoantibodies. In cases of suspected acute viral hepatitis when patients test negative for the above agents it is important to exclude unsuspected idiosyncratic drug reactions and seronegative hepatitis, as these diagnoses have important implications for prognosis and further management. Acute hepatitis E should be considered in the investigation of seronegative hepatitis, even in the absence of specific risk factors.

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AN UNUSUAL PRESENTATION OF PNEUMOCOCCAL ENDOCARDITIS OF THE TRICUSPID VALVE
M. Soni, A. Sethi, and S. Niranjan. Department of Medicine, Coney Island Hospital, Brooklyn, NY.

Background: Streptococcus pneumoniae is well known cause of bacteremia in both immunocompetent and immunosuppressed individuals. Streptococcus pneumoniae is an uncommon cause of infective endocarditis. We present a patient who was admitted with fever who found to have pneumococcal endocarditis.

Case Report: 61-year-old male without any past medical history was admitted with history of shoulder pain for 2 weeks followed by fever, rigors, chills and yellowish discoloration of skin for 3 days. Patient given history of smoking and alcohol abuse but denied intravenous drug use. Positive physical finding on admission included hypotension and icterus. Initial laboratory data was significant for leukocytosis and bandemia, acute renal failure, hepatitis and coagulopathy. Toxicology screen was negative. Work up for abdominal source of sepsis including ultrasound and CT scan of abdomen and pelvis failed to identify a source. Hepatitis profiles for both infectious and autoimmune hepatitis were negative. Rheumatologic screening was also negative. During the hospital course patient continued to spike fever despite 2 days of broad spectrum antibiotic therapy. Blood cultures done on admission grew gram positive diplococi 4/4 bottles later identified as pneumococcus sensitive to vancomycin. Patient underwent transesophageal echocardiography which showed 1 cm Tricuspid vegetation. Hospital course was complicated by septic arthritis, septic pulmonary emboli and pleural effusion. Overall patient received 6 weeks of antibiotic therapy with Vancomycin with ceftriaxone for the first 2 weeks. He was discharged home with complete recovery.

Conclusion: Conclusion: Infective endocarditis is a serious illness which may be difficult to diagnose. Isolated native nonrheumatic tricuspid valve endocarditis is rarely described in the absence of intravenous drug use, intracardiac catheters, or cardiac anomalies. In this patient hepatic and renal injury was secondary to systemic inflammatory response and immune complex deposition. Blood cultures and echocardiography remain the key diagnostic tools; antibiotics and surgical interventions are the mainstays of treatment. Despite advances in medical and surgical care, mortality remains high.

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DERMATOLOGIC SIDE EFFECTS DURING INTERFERON AND RIBAVIRIN TREATMENT OF CHRONIC HEPATITIS C
S. Tavakoli Tabasi1, A. Bagree1, and K. Dehghan1. 1MEDVAMC, Houston, TX and 2Baylor College of Medicine, Houston, TX.

Purpose of Study: Studies looking at the cutaneous side effects of Interferon and Ribavirin therapy for hepatitis C are limited, both in term of the number of the studies done, as well as the number of patients evaluated. Here we report the dermatologic reactions that occurred during the treatment of hepatitis C in a large population of veterans who were treated with different Interferon-alpha formulation, plus ribavirin during a 5-years period.

Methods Used: The study population consisted of all the patients who were treated for chronic hepatitis C infection at the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC), from September 2000 to October 2005. At each visit side effects of the treatment were carefully recorded. The diagnoses were reviewed by the department of dermatology in MEDVAMC in all cases. We retrospectively reviewed the charts, looking for dermatological reactions that occurred during Interferon/Ribavirin therapy.

Summary of Results: From September 2000 to May 2005 we treated 215 patients with combination therapy consisting of Interferon alpha and Ribavirin. One hundred and twenty patients recieved Interferon alpha-2b; 39 patients received pegylated Interferon alpha-2b; 56 patients received pegylated Interferon alpha-2a). Two hundred eleven were male and 4 were female. Thirty two patients (15%) complaint of dermatologic reactions related to antiviral therapy. The most common skin conditions were seborrheic dermatitis (7 cases), followed by Tinea versicolor (4 cases) and eczema (4 cases). There were 3 patients with Xerosis that required medical treatment. There were 2 cases of lichen planus. One of the patients with lichen planus also developed seborrheic dermatitis and psoriasis during treatment. There were 3 cases of atopic dermatitis. There were 2 cases of morbilliform rash. There was one case of hypermelanosis of tongue. There was one case of urticaria. There was one case of herpetiform dermatitis. There was one case of nummular eczema. There were 2 cases of diffuse folliculitis. There was one case of dermatophyte folliculitis. There was one case of Rosacea.

Conclusions: Clinicians who treat chronic hepatitis C need to be familiar with these conditions to be able to recognize them early and initiate appropriate treatments.

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ORGANISMS CAUSING URINARY TRACT INFECTION AND THEIR ANTIBIOTIC SENSITIVITY PATTERN TO ORALLY ACTIVE ANTIBIOTICS IN A NEW YORK CITY HOSPITAL IN 2006
M.M. Zaman, F. Shilpee, and L. Ilyas. Coney Island Hospital, Brooklyn, NY.

Purpose of Study: The organisms causing Urinary Tract Infection (UTI) and their antibiotic sensitivity is changing. The recommended antibiotics to treat UTI by the national organizations and societies are more than 5 year old, and may not be appropriate today. The objective of this study was to find out the common organisms causing UTI in a NY City hospital and their antibiotic sensitivity in 2006.

Methods Used: This was a retrospective computer record analysis of all positive urine culture in one month. Only the first urine culture was included in the study for those patients with more than one positive urine culture during the month. Patient population consisted of both outpatient and in-patient, male and female, and all age groups. The medical record was evaluated for age, gender, organism type, and antibiotic sensitivity.

Summary of Results: A total of 262 positive urine culture for which all the information was available is included in the study. E.coli was the most common organism (43.5 %), followed by klebsiella (17%), enterococci (13.5%), coagulase negative staphylococci (10%), proteus (5%), Staphylococcus aureus (5%), and pseudomonas (2%). 4 % were other gram negative organisms. The percentage of E. Coli sensitive to orally active agents were 55% to ampicillin, 71% to trimethoprim-sulfamethoxazole, 78% to ciprofloxacin, 87% to cephalaxin, and 98% to nitrofurantoin. While the percentage of klebsiella sensitive to orally active agents were 0% to ampicillin, 56% to trimethoprim-sulfamethoxazole, 50% to ciprofloxacin, 45% to cephalaxin, and 25% to nitrofurantoin. Only 66% of the pseudomonas was sensitive to ciprofloxacin. Among the gram positive organisms, approximately half
of the staphylococcus (both coagulase positive and negative) were methicillin sensitive, while all of the E. fecalis were penicillin sensitive. **Conclusions:** The choice of orally active antibiotic to treat UTI caused by organisms other than E. Coli seems to be limited. Even for E. Coli, antibiotic resistance is rapidly growing. There is an urgent need to develop new orally active agents.

**182 ALCOHOL INTOXICATION INHIBITS THE HEMATOPOIETIC STEM CELL RESPONSE TO E. COLI BACTEREMIA**

P. Zhang, S. Nelson, D.A. Welsh, G.J. Bagby, and P. Zhang. LSU Health Sciences Center, New Orleans, LA.

**Purpose of Study:** Alcohol abuse impairs the immune system and predisposes the host to bacterial infections. Hematopoietic stem cells (HSCs), common ancestors to all blood cell types, are responsible for the constant renewal of blood cells, including granulocytes that make up the largest population of phagocytes in the circulation. Previous studies from our group have shown that the bone marrow stem cell pool is increased following E. coli infection, which supports the enhancement of granulocyte production. This experiment investigated the effects of alcohol intoxication on the stem cell response to E. coli bacteremia.

**Methods Used:** Acute alcohol intoxication was induced in male Balb/c mice by an intraperitoneal injection of 20% alcohol in saline at a dose of 5g of alcohol/kg. Control mice received saline. Thirty minutes later, bacteremia was induced in mice via a penile vein injection of E. coli (1 x 10^6 CFUs/mouse). Control animals were injected with saline. In a subgroup of mice, bromodeoxyuridine (BrdU, 1 mg/mouse) was administered along with the intravenous injection of E. coli or saline. HSCs and hematopoietic progenitor cells (HPCs) in nucleated bone marrow cell and peripheral blood mononuclear cell populations were analyzed by flow cytometry.

**Summary of Results:** HSCs bearing lin-ckit+Sca-1+ markers were significantly increased in the bone marrow (19885 ± 1931 vs. 1562 ± 205 HSCs/10^6 bone marrow cells, p<0.05) following bacteremia. This increase in marrow HSCs was inhibited in alcohol intoxicated animals (10776 ± 1151 HSCs/10^6 bone marrow cells, p<0.05). In contrast to the increase in the marrow HSCs, the number of HPCs bearing lin-ckit+Sca-1- markers in the bone marrow was reduced following bacteremia (2235 ± 2023 vs. 37443 ± 1077 HPCs/10^6 bone marrow cells, p<0.05). Alcohol intoxication attenuated this reduction in the number of HPCs (27430 ± 476 HPCs/10^6 bone marrow cells, p<0.05). BrdU incorporation into bone marrow lin-ckit+Sca-1+ cells was increased following E. coli infection. Alcohol intoxication inhibited this increase in BrdU incorporation into HSCs.

**Conclusions:** These data indicate that alcohol inhibits the expansion of bone marrow hematopoietic stem cell pool, which may serve as one mechanism underlying the impairment of granulocyte production in alcohol abusers with severe bacterial infections.

**Joint Poster Session**

**Medical Education and Medical Ethics**

5:00 PM

Thursday, February 21, 2008

**183 HOW TO LOOK AT THE NEWBORN: A 50-YEAR ROMANCE**

B.F. Andrews. ¹Kosair Children’s Hospital, Louisville, KY and ²University of Louisville, Louisville, KY.

**Purpose of Study:** In 1958, at a monthly Obstetric and Pediatric Morbidity and Mortality Conference, cartoons to represent “Neonatology: A Six Finger Exercise” (emphasis on Iatrogenesis as the sixth finger) and “The Small for Date Baby” were first introduced at Walter Reed General Hospital in Washington, DC.

**Methods Used:** Colonel Ogden C. Bruton immediately appreciated their teaching value for medical students and residents. Dr. Harry Gordon mentioned that great importance would come from the “The Small for Date Concept” and it could become a worthwhile life’s work for its originator. Dr. Virginia Apgar first paid attention to the value of the iatrogenic appendage as a purposeful direction of ethical and clinical care and “The Small for Date Baby” to help with classification and future research in pre-maturity, the major cause of morbidity and mortality in the newborn. Infants under 29 weeks gestation were not likely to live in 1958, the ones who lived were small for date. At Dr. Warren Wheeler’s persistence, “Neonatology, The Six Finger Exercise” was published in Am. J. Dis. of Child. 1968;116:334 and through Dr. Virginia Apgar’s persuasion W.B. Saunders published “The Small For Date Infant” as the Pediatric Clinics of North America, Vol. 17., No. 1, in February 1970 (also in German and Portuguese).

**Summary of Results:** The repeated use of the cartoons in presentations, articles and books in perinatology, neonatology, pediatrics, medicine, obstetrics, nursing and ethics are evidence of the role of cartoons in teaching. The author will tell why, how, when and where the concepts originated.

**Conclusions:** Now many infants may survive even at 22 weeks gestation. Most modern technologies, diagnostic and therapeutic, have truly made their survival possible and provided great challenge, effort, cost and necessary research to determine outcome, especially quality of life. No matter how much technology is available, the physician’s attention is still absolutely necessary along with eternal vigilance!

**184 USING HEALTH LITERACY STRATEGIES TO IMPROVE PEDIATRIC PROVIDERS’ COMMUNICATION SKILLS**

R. Connelly¹, A. Giardino², T. Turner, and X. Tran. ¹Baylor College of Medicine, Houston, TX and ²Texas Children’s Health Plan, Houston, TX.

**Purpose of Study:** We hypothesized that an interactive workshop on HL strategies for improved communication would (1) increase providers’ knowledge of HL strategies that facilitate communication with patients and (2) increase the proportion of providers who reported always using HL strategies when communicating with patients.

**Methods Used:** This was a pilot/feasibility study over a 3-month period. Subjects were pediatric providers affiliated with the Texas Children’s Health Plan (TCHP), a managed care organization that provides healthcare coverage for over 130,000 low-income children in Houston through Medicaid and SCHIP. The study intervention was designed as a high-impact educational activity to improve providers’ communication skills. It consisted of an interactive workshop based on HL strategies from the American Medical Association (AMA) Foundation’s educational tool ‘Health Literacy: help your patients understand’ and the Partnership for Clear Health Communication’s Ask Me 3™. Providers completed a pre-test questionnaire before and after the intervention, with follow up questionnaires at one month and three months after the intervention.

**Summary of Results:** Thirteen people participated in two offerings of the workshop (response rate 6.6% and 1.7% respectively); 92% were pediatricians, and 8% family practitioners. Mean age of participants was 56.6 years. Mean number of years in practice was 23.8. In general, 60% of participants reported being somewhat aware of the literacy problem. Of those, 75% planned to use HL strategies for improved communication; 65% of providers reported being somewhat aware of the literacy problem. Of those, 75% planned to use HL strategies for improved communication.

**Conclusions:** The author will tell why, how, when and where the concepts originated.
effects in health (p=0.001); increased awareness of the low health literacy problem (p=0.003); increased expectations for change in practice (p=0.002), and intent to use health literacy strategies for communication immediately following the intervention (p=0.001). Attrition rate at one and three months was over 50% and follow up effects of the intervention could not be ascertained.

Conclusions: A short, focused intervention utilizing health literacy strategies for communication appeared effective in increasing knowledge and intentions for change in a small group of pediatric providers.

185 KNOWLEDGE AND AWARENESS OF CURRENT GUIDELINES IN PREVENTION AND TREATMENT OF HYPERTENSION

D. Fotino1, A. Makeen2, U. Pogribna3, and L.A. Bazzano2. 1Tulane University Health Sciences Center, New Orleans, LA; 2Tulane University School of Public Health and Tropical Medicine, New Orleans, LA and 3University of Texas Medical Center, Houston, TX

Purpose of Study: The aim of this study was to assess the knowledge and attitudes of medical students, residents, fellows and practicing physicians in an academic setting toward prevention of hypertension and lifestyle modification strategies, particularly the role of potassium in hypertension.

Methods Used: We used a cross-sectional design with a survey instrument consisting of 19 items that included questions relating to hypertension, attitudes toward prevention and lifestyle modifications, knowledge of current guidelines for prevention, and hypertension risk factors. A convenience sample of 69 medical students, residents, fellows and practicing physicians at Tulane School Health Science Center completed the survey.

Summary of Results: Of the study respondents 33.3% (23) were medical students, 47.8% (33) were residents, and 18.8% (13) were fellows or physicians in practice, 65.2% (45) were male, and 34.8% (24) were female. Overall, less than 50% of respondents, regardless of their level of training, knew the current recommendations regarding dietary potassium. Only 40.9% (27) recognized that low dietary potassium intake increases risk of hypertension. In addition, 98.5% (67) of participants incorrectly believed that smoking was a risk factor for hypertension. Few respondents (17.4%) had prescribed a potassium supplement or seen another physician prescribe a potassium supplement to prevent or treat hypertension, however this was significantly positively associated with level of training (p=0.004). Men were significantly more like than women to identify potassium as playing a role in hypertension (p=0.02) and adequate dietary intake as protective (p=0.003).

Conclusions: Although the study population is small, the results of this survey show that there are significant gaps in physician training and knowledge of current guidelines for the prevention of hypertension.

186 INTERNAL MEDICINE RESIDENT INTEREST IN COMMUNITY SERVICE: AN OPPORTUNITY FOR SERVICE LEARNING AND PROFESSIONAL DEVELOPMENT

N. Redmond, A. Kalokhe, S. Higgins, and J. Doyle. Emory University, Atlanta, GA

Purpose of Study: To assess resident interest in volunteer service overall and preferences for project types and level of time commitment.

Methods Used: Anonymous survey, focus group.

Summary of Results: As a result of an effort to recognize internal medicine trainees for areas of professional development beyond the realm of clinical skills, a resident-driven initiative to encourage housestaff participation in activities related to community service, health promotion, public awareness and activism was developed. A brief survey to assess interest in participating in community service was distributed. Of 165 internal medicine residents, 48 surveys were completed (29% response rate). 85% percent of respondents indicated they were “not volunteering currently”; however, 91% of respondents indicated they were “interested in volunteering”. Most respondents preferred projects requiring only a one day commitment. Leading interest areas included global health, health inequalities, and health promotion. A resident leadership group developed the organization’s structure and mission. Partnerships were established with existing community groups with ongoing service projects in the leading interest areas. Also, an interdisciplinary lecture series with community leaders and experts in non-clinical academic departments (such as the social sciences) was developed. This lecture series supplements community service initiatives by providing information on a particular social issue. Subsequently, residents may participate in related community service and advocacy projects as well as post-project reflection and self-assessment exercises.

Conclusions: Internal medicine residents are interested in community service and levels of participation may be increased with short term projects initiated by residents themselves. Training programs may utilize this interest to develop service-learning opportunities. Such opportunities may potentially enhance professional development in cultural competency, empathy and humanism, and health care advocacy. Further, it may increase awareness of the financial, political, and psychosocial aspects of healthcare. Future work will include assessment of the increase of volunteerism and activism among housestaff and incorporation of performance improvement initiatives in community and/or clinic-based projects.

Joint Poster Session
Pediatric Clinical Case

5:00 PM
Thursday, February 21, 2008

187 ADRENAL HEMORRHAGE IN A NEWBORN

A.T. Abdus, E.W. Reynolds, and H.S. Bada. UKY, Lexington, KY.

Case Report: A 3724-gm male infant was born to a 25 year-old, G4, P2 woman after an uneventful pregnancy. Onset of labor was spontaneous, with membranes ruptures 2.5 hrs. Prior to vaginal delivery. A nuchal cord was noted at delivery. Apgar scores were 9 and 9 at 1 and 5 min, respectively. The infant was admitted to the well baby nursery for routine care. The infant initially did well until 12 hours of age when he was noted to feed poorly, was hypotonic, pale, and dusky. After a septicemia work-up, antibiotics were started and infant was transferred to the NICU. His admission vital signs were: T 37.1°C, RR 40/m, HR 140/m, and B/P 61/40 (MAP=47) and O2 saturation: 100% in room air. Glucose was 111mg/dl. He had some facial bruising and was pale. Breath sounds were equal and no murmur was heard. The abdomen was distended and tight, which limited palpation of the internal organs. There was no abdominal ecchymosis or erythema. Neurologically the infant was hypotonic and lethargic but responsive with a weak cry. Although his initial diagnosis was suspected sepsis, because of a falling hematocrit from 33% to 25% over 1 hr and metabolic acidosis (BD=14), an acute surgical abdomen was suspected, because of a falling hematocrit from 33% to 25% over 1 hr and metabolic acidosis (BD=14), an acute surgical abdomen was suspected, because of a falling hematocrit from 33% to 25% over 1 hr and metabolic acidosis (BD=14), an acute surgical abdomen was suspected. Abdominal ultrasound showed a mass, between the liver and right kidney but the mass was not identified. An abdominal CT scan showed a large right sided adrenal hemorrhage. He was managed conservatively and discharged at age 8 days. A subsequent ultrasound scan one month later revealed resolving adrenal hemorrhage calcifications.

Discussion: Acute spontaneous massive adrenal hemorrhage is rare in the newborn. It is usually associated with birth trauma or/and asphyxia.
In our patient, neither trauma nor asphyxia was noted. The sudden catastrophic decompenation required prompt diagnosis to rule out surgical abdomen. Conservative management is usually indicated; bilateral disease may require steroid replacement. Adrenal hemorrhage should be considered in patients with sudden deterioration and poor perfusion, pallor and negative sepsis screens. Although abdominal ultrasound is suggested as the standard first-line diagnostic tool newborn, other modalities may be needed in some cases.

188 AN INFANT WITH RESPIRATORY SYNCYTIAL VIRUS BRONCHIOLITIS, VIREMIA AND HEPATITIS

C.S. Burress1, B. Estrada2, and S. Barik2. 1University of South Alabama, Mobile, AL; 2University of South Alabama, Mobile, AL.3

Background: Respiratory syncytial virus (RSV) is a common cause of bronchiolitis. Less frequently reported extrapulmonary manifestations of infection with this virus in children include hepatitis. Case Report: A 2 month old female presented with fever, and respiratory distress. Pertinent signs at admission included fever (T. 103.6 F) lethargy, tachypnea, grunting, costal retractions and wheezing as well as hepatomegaly. Abnormal laboratory findings included transaminase elevation (AST 170 IU, ALT 992 IU), mild coagulopathy (INR 2.2, PT 24.6, PTT 29) and hypoglycemia (serum glucose of 10 mg/dl). Her C-reactive protein at admission was 1.7 mg/dl. Her chest radiographs demonstrated left lower lobe infiltrates and perihilar infiltrates. Mechanical ventilatory support was required upon admission. A viral culture of her respiratory secretions yielded RSV. Given the presence of RSV bronchiolitis and hepatitis a RSV RT-PCR in serum was performed and reported positive. Serologic evaluations for EBV, CMV, hepatitis B, hepatitis A, hepatitis C viruses were negative. Her HIV-DNA PCR in serum was negative. Work-up to rule inborn errors of metabolism and coagulation disorders were also negative. The patient’s respiratory illness and hepatitis resolved spontaneously under supportive care. Discussion: Previous reports have demonstrated the occasional association of RSV bronchiolitis and hepatitis. To our knowledge this is the first report of this association with documented RSV viremia by RT-PCR. Although our patient did not undergo a liver biopsy to document the presence of RSV in liver tissue, it has been previously documented that RSV can be hepatotropic. Our findings suggest a causative role of RSV in the development of hepatitis in a patient with RSV bronchiolitis and viremia.

189 NEUROFIBROMATOSIS TYPE II: AN UNUSUAL PRESENTATION

C. Burress1,2 and K. Savells1. 1University of South Alabama, Mobile, AL and 2University of South Alabama, Mobile, AL.

Purpose of Study: Neurofibromatosis Type II is an inherited autosomal dominant syndrome characterized by multiple schwannomas, meningiomas, and ependymomas. Majority of spinal meningiomas present in females in their 40’s. Typically, the diagnosis of NF2 is made in the second or third decade of life, with a peak in the 20s. We therefore present an interesting case of a child presenting with ataxia that was found to have spinal meningiomas and ultimately diagnosed with NF Type II.

Methods Used: Chart review.

Summary of Results: An 11 y/o female presented to our Continuity Clinic for a well exam and Grandmother complained the child was “acting out” by “walking funny” for a few weeks. Physical exam demonstrated a well appearing 11 y/o with normal vitals that demonstrated a classic wide waddling gait with decreased propriocep-

190 LATE ONSET CONGENITAL CENTRAL HYPOVENTILATION SYNDROME IN AN 8 MONTH OLD GIRL WITH PHOX2B 20/25 POLYALANINE REPEAT MUTATION


Purpose: To describe a case of Congenital Central Hypoventilation Syndrome in an 8 month old girl.

Methods used: Chart review and Medline database search.

Summary of Results: An eight month old female infant presented to a local hospital with perioral cyanosis, hypopnea, and hypoxia with hypoventilation. Her parents reported cough and congestion for one week but no fever, tachypnea, wheezing, stridor, retractions, grunting or flaring. Her electrolytes were remarkable for a chloride of 88 mmol/L, a bicarbonate of 35 mmol/L, and her hematocrit was 40%. Her chest X-ray and head computed tomography were normal, as was her brain magnetic resonance imaging and angiogram. She had no neurologic deficits and no response to a neoconnirno stimulation test. Her diagnosis was made by DNA evaluation revealing PHOX2B analysis consistent with a diagnosis of Congenital Central Hypoventilation Syndrome (CCHS). She underwent tracheostomy and requires mechanical ventilatory support while asleep. CCHS is a rare and potentially lethal disorder of the autonomic nervous system characterized by respiratory drive failure in the newborn period in the absence of neuromuscular, cardiac, or pulmonary disease or brain stem compromise. Recent association of PHOX2B gene mutations with CCHS has allowed the diagnosis of patients with less severe phenotypes or late presentation. The 25 polyalanine repeat mutation of PHOX2B on one allele has been associated with late onset CCHS.

Conclusions: We report a case of Congenital Central Hypoventilation Syndrome presenting in a previously healthy 8 month old girl with the 20/25 polyalanine expansion in exon 3 of the PHOX2B gene. This case highlights the importance of systematic evaluation of hypoventilation and reviews the emerging genetic implications for the affected patient and her family.

191 KNEE PAIN AS THE SOLE PRESENTING SYMPTOM OF A PATIENT WITH CROHN’S DISEASE

Volume 56, Issue 1 405
G. Hundley, K. Crissinger, and L.M. Crews. University of South Alabama, Mobile, AL.

Introduction: Gastrointestinal symptoms are the most common presentation of inflammatory bowel disease (IBD). Other systemic manifestations include arthralgias which are usually observed during disease progression. However, arthralgias are not commonly observed as the sole symptom at presentation.

Case report: We report a 15yo African-American female with a seven week history of left knee pain. Upon review of her medical records, it was noted that she had weight loss and anorexia. Initial work-up included radiographs of the hip and knee which were normal. The patient continued with pain and was noted to have progression to bilateral knee arthritis with decreased range of motion. She was, then, hospitalized for further evaluation. Pertinent positive findings included an elevated white blood count (17,100/ul), anemia (Hgb 9.5 g/dL) with a normal reticulocyte, thrombocytosis (615,000/ul), an elevated ESR (123 mm/hr), hyperalbuminemia, and sterile pyuria. An arthrocentesis was performed with negative synovial fluid cultures and normal cytologic analysis. Her anemia and hyperalbuminemia continued to progress, and she was noted to have occult blood in her stool. Because of these findings, an esophago-gastro-duodenoscopy and colonoscopy were performed after which the diagnosis of IBD was confirmed. The patient’s arthritis resolved with therapy for her Crohn’s disease.

Discussion: Our case illustrates the need to consider IBD in the differential diagnosis of arthralgia in children even if this is the sole presenting symptom. This should be especially considered in situations where the results of evaluations performed to rule out other more common causes or arthralgia are negative.

193 ASSOCIATION OF STEROID-DEPENDENT ASTHMA, IMMUNODEFICIENCY, AND COWDEN SYNDROME IN A FAMILY COHORT

J. Kennedy, T. Perry, A. Scurlock, K. Palmer, L. Simmons, D. Schellhase, and S. Jones. Arkansas Children’s Hospital, Little Rock, AR.

Purpose of Study: Cowden syndrome is a rare autosomal dominant disorder characterized by noncancerous hamartomas and increased cancer risk. Antibody deficiency and mannan-binding lectin (MBL) deficiency are immune disorders associated with recurrent sinopulmonary infections. The purpose of the study is to review the features of concomitant Cowden Syndrome and immunodeficiency in a family cohort.

Methods Used: We present case reviews of two sisters with severe asthma, Cowden syndrome, and recurrent infections associated with antibody and MBL deficiencies.

Summary of Results: AK initially presented to immunology clinic at age 5 with severe asthma, recurrent sinusitis and otitis media (OM). Her initial lung function was normal (FEV1 98%, FEV1/FVC 88%); however, by age 8 her FEV1 was 44% and FEV1/FVC 35%. She required daily oral steroids and had complications of growth delay, GERD, osteoporosis, and sinopulmonary infections. HK presented at age 2 with severe asthma and recurrent sinusitis/OM. She required high dose inhaled and frequent oral steroids. The family history was significant father having severe childhood asthma and multiple lipomas. Physical examination of family members revealed macrocephaly. Diagnostic evaluation showed the following for AK and HK, respectively: Flow cytometry (% absolute): CD3 (53/895; 61/4568); CD4 (23/389; 41/3070); CD8 (27/389; 18/1348); CD19 (28/324; 34/2546). T lymphocyte function was 30% (AK). Both had normal serum immunoglobulins, but poor post-immunization response in 13/14 pneumococcal serotypes. MBL levels were <50 ng/ml in both. Genotyping found both to have Cowden Syndrome with a frameshift mutation due to a 4 base deletion in exon 6, chromosome 10 and MBL deficiency (genotype LYPB/LYPB). Thus, AK was begun on IVIG therapy in August 2004. To date, AK’s infections are significantly reduced with improved lung function off oral steroids (FEV1 79%, FEV1/FVC 68%). HK started IVIG therapy in July 2006 with a similarly improved clinical course.

Conclusions: To our knowledge, this is the first reported association of Cowden syndrome, severe asthma, and immunodeficiency.
UNIVERSITY HEALTH SCIENCES CENTER, SHREVEPORT, LA and grow and became darker in color the child Two weeks later as the OM and URI were resolving she developed Augmentin.

Case Report: UNIVERSITY HEALTH SCIENCES CENTER, SHREVEPORT, LA. makes Linear IgA disease a formidable diagnostic challenge. other diseases; combined with the paucity of which it is encountered subepidermal vesiculobullous diseases that can be of drug-induced or

Skin biopsy subjected to direct immunofluorescence studies showed a strong linear staining of IgA at the basement membrane which yielded a diagnosis consistent with a Linear IgA dermatosis. Because of the propensity of LAD to affect mucosal surfaces, she was also followed by ophthalmology to detect sequelae such as corneal ulceration. Dapsone could not be started on prednisone. This case was also complicated by MRSA sepsis which was treated and resolved. After being discharged to home on prednisone and dapsone the patient’s lesions were healing well at 2 weeks follow up. This case illustrates the importance of recognizing drug-induced LAD and how rapid diagnosis and treatment to can prevent significant sequelae of LAD.

196 AORTIC THROMBUS LEADING TO NEUROLOGICAL COMPLICATIONS IN THE NEWBORN

M. Maddox, T. Soltau, and J. Philips. UAB, Birmingham, AL. Introduction: Neurological complications are often associated with the neonatal intensive care unit, most commonly as sequelae of prematurity or birth complications. Less frequently, perinatal neurological injury results from a cerebrovascular event such as a stroke. We describe an unusual presentation of perinatal arterial ischemic stroke.

Case: A 36 week newborn, with an unremarkable perinatal course, developed darkening of his ear and suspected seizure activity on his day of birth. After transfer to a level three neonatal intensive care unit, a full sepsis evaluation, appropriate antibiotics and anti-epileptics, he developed necrosis of the left pinna, darkening of the right pinna, and necrosis of the upper lip. An echocardiogram demonstrated a large aortic thrombus, so he was transferred to our facility for further management. This thrombus extended across the entire aortic arch, involving both subclavian and both common carotid arteries. With aggressive anti-coagulation and thrombolysis his skin findings improved, however, intracranial imaging demonstrated ischemic necrosis of both cerebral hemispheres. His cogalopathy workup, including protein C and S, factor V Liden, lupus anti-coagulant, prothrombin mutations, and homocysteine, was inconclusive, and his neurological exam remains impaired.

Discussion: Perinatal arterial ischemic stroke is relatively uncommon, occurring in about 1 in 5000 live births. However most perinatal arterial strokes occur in a single branch artery, such as the middle cerebral artery. Bilateral cerebral infarction is rare. We present this case as an unusual example of perinatal ischemic stroke which resulted in a poor outcome for this newborn despite aggressive interventions. We hope that presenting this case will help with earlier recognition, which may result in more timely therapy and better outcomes.

197 FIVE-MONTH-OLD INFANT WITH EASTERN EQUINE ENCEPHALITIS AND HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

M. Mancao, S. Chandra, R. Vidal, and H. Imran. University of South Alabama College of Medicine, Mobile, AL.

Case Report: A previously healthy 5-month old, Hispanic male presented to a local emergency room with four days of fever of 103°F associated with right focal seizures, lethargy, and decreased appetite. On examination, he was febrile, irritable with bulging anterior fontanelle associated with right focal seizures, lethargy, and decreased appetite. On hospital day 2, the patient developed neurological impair. His coagulopathy workup, including protein C and S, factor V Liden, lupus anti-coagulant, prothrombin mutations, and homocysteine, was inconclusive, and his neurological exam remains impaired.

Discussion: Perinatal arterial ischemic stroke is relatively uncommon, occurring in about 1 in 5000 live births. However most perinatal arterial strokes occur in a single branch artery, such as the middle cerebral artery. Bilateral cerebral infarction is rare. We present this case as an unusual example of perinatal ischemic stroke which resulted in a poor outcome for this newborn despite aggressive interventions. We hope that presenting this case will help with earlier recognition, which may result in more timely therapy and better outcomes.
198 PRENATAL DIAGNOSIS AND PHENOTYPIC DELINEATION OF OTOCEPHALY

S.A. Masood1, H. Chen2, and H. Ibrahim3. 1Louisiana State University Health Science Center, Shreveport, LA; 2Louisiana State University Health Science Center, Shreveport, LA and 3Louisiana State University Health Science Center, Shreveport, LA.

Purpose of Study: To report prenatal diagnosis of a rare lethal otocephaly syndrome and further delineate the phenotype of the syndrome with prenatal and postnatal imaging and necropsy studies.

Methods Used: Prenatal ultrasound and MRI postnatal CT, necropsy, and review of the literature.

Summary of Results: Otocephaly is characterized by severe mandibular hypoplasia or agenathia, ventromedial displacement of the external ear structures (synotia), small mouth (microstomia), and severe hypoplasia of the tongue (aglossia). It is thought to result from an arrest in the development of the first brachial arch due to an insult to the neural crest cells. It should be considered in the differential diagnosis when pregnancy is complicated by unexplained polyhydramnios associated with severe mandibular abnormalities. Of the 80 cases reported so far since 1700, no long term survivors have been reported.

Conclusions: Otocephaly syndrome can be diagnosed prenatally with combination of prenatal ultrasound and MRI imagings in any fetus that has severe mandibular abnormalities.

200 ALBUTEROL INDUCED MYOCLONUS

J. Scarberry and R.D. Smalligan. East Tennessee State University, Johnson City, TN.

Purpose of Study: Alert physicians to an unusual side effect of a commonly used medication.

Methods Used: Case report.

Summary of Results: A 16-year-old girl presented to an outside emergency room with a history of headache, shaky hands and dizziness. She was noted to have intermittent myoclonic jerks of her arms and legs with some periods of tonic muscle contractions. She was given intravenous lorazepam with some improvement of her symptoms and transferred to our facility. On further questioning it was found that the patient had just been diagnosed with asthma and had filled a new prescription for an albuterol inhaler. She had used the inhaler immediately prior to symptom onset. The patient denied over-using her inhaler and was following the recommended dosing schedule. She denied any other regular medications or drug or alcohol abuse and PMH was otherwise unremarkable. PE: vitals all normal, alert, anxious girl, with normal exam except for frequent myoclonic jerks and some tonic muscle contractions of her arms and legs. Lab: CMP, CBC, urine drug screen all negative. EEG normal. The patient was observed for 24 hours and the frequency and duration of the myoclonic jerks diminished and finally ceased within 48 hours. She was discharged home with instructions not to use the albuterol inhaler any more.

Conclusions: Albuterol is a commonly prescribed medication in both pediatric and adult medicine. Side effects such as tremor and tachycardia are common with its use but usually decrease over time. Tremor is usually less evident with inhaled than with oral beta-agonist administration and can represent an exaggeration of a normal, physiologic tremor. Since beta receptors are found on all human cells except erythrocytes, beta agonists have the potential to effect virtually all cell types and body systems, including the CNS. There are several case reports of pediatric patients with exaggerated tremors in response to beta agonists and one case of tonic-clonic seizures in a child that resolved after excessive albuterol use was discontinued. Myoclonus was reported by Mechelli et al. in three adults associated with albuterol treatment but no similar cases could be found reported in children. Our case is unusual in that the patient reported using the inhaled albuterol in appropriate doses and yet developed the debilitating side effect of myoclonus shortly after initiation of its use.

201 PRIMARY AUTOIMMUNE NEUTROPENIA IN INFANCY

K.M. Truman, H.N. Champney, and R.D. Smalligan. Quillen College of Medicine, East Tennessee State University, Johnson City, TN.

Objective: Remind pediatricians of a rare cause of self-limiting neutropenia in young children.

Case: A 4-month-old Hispanic female presented with fever and an anterior cervical lymphadenitis and abscess which required incision and drainage twice along with IV antibiotics. While her initial CBC was only mildly abnormal, as treatment proceeded her absolute neutrophil count fell from 833 to 220 (WBC: 5.5, Seg: 4, Lymph: 80, Mono: 14, Eo: 1, Meta: 1) by the 3rd day. A peripheral smear was positive for neutropenia. Bone marrow aspirate was negative for lymphoma and leukemia. On further work up she was found to have an anti-neutrophil antibody (Ab), and was negative for EBV, CMV, influenza A, influenza B, and CMV. The patient was started on granulocyte colony stimulating factor which resulted in a rapid return of the neutrophil count to normal ranges. No recurrence of the neutropenia has been noted to date. This case highlights the need for pediatricians to consider primary autoimmune neutropenia as a cause of neutropenia in young children and the importance of starting granulocyte colony stimulating factor in these cases.
B, and rotavirus. The patient required bi-weekly granulocyte-colony stimulating factor (G-CSF) for approximately 12 months to maintain a normal ANC and was treated for several episodes of otitis media (OM), URI, and candida during that time, typically when her ANC had fallen despite therapy. She also had a persistent exfoliative rash that ultimately resolved.

**Discussion:** This case illustrates the typical course of primary auto-immune neutropenia in infancy (AIN), a rare condition caused by granulocyte-specific auto-antibodies directed against neutrophil-specific antigens NA1 or NA2. The average age at diagnosis is between 5–15 months and is typically recognized due to an increased frequency of OM, dermatological infection, URI, and abscess formation. Infections acquired during neutropenic periods tend to be mild to moderate and only rarely result in serious infections despite severely diminished neutrophil counts. In our case, the recurrent cervical adenitis with systemic symptoms prompted treatment with G-CSF to maintain an adequate ANC and prevent recurrent infections. IVIG and steroids have also been effective in treating the disorder. Over 95% of cases of AIN spontaneously remit within two years of diagnosis as was seen in our case. Due to the self-limiting nature of AIN, more benign presentations can be managed expectantly with antibiotics for minor infections, and IVIG, corticosteroids, and G-CSF reserved for more serious infections or just prior to surgery.

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**202**

**A FATAL CASE OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS IN A TWO-YEAR-OLD**

E. Wadzinski, K. Klopfenstein, and R. Smalligan, East Tennessee State University, Johnson City, TN and East Tennessee State University, Johnson City, TN.

**Purpose of Study:** To remind pediatricians of a rare disorder: hemophagocytic lymphohistiocytosis (HLH) and its potentially fatal consequences.

**Methods Used:** Vignette.

**Summary of Results:** A 2-year-old boy was transferred from an outpatient hospital with a 5 day history of high fevers, headache, vomiting, and jaundice. His past history was unremarkable and his exam was significant only for jaundice and hepatosplenomegaly. Labs included WBC 0.9, HGB 9.3, platelets 73,000; bilirubin 6, direct 4, ferritin 14,587; AST 921, ALT 165, LDH 9446, and TG 414. The patient had been empirically treated with broad spectrum antibiotics but workup for an infectious cause including bacteria, fungus, EBV, CMV, and hepatitis was negative. One day after transfer, the patient developed petechiae, hypotension, and respiratory distress and required intubation, pressors and infusions of PRBCs, platelets, and fresh frozen plasma. Bone marrow studies demonstrated proliferation of non-malignant histiocytes actively phagocytosing red blood cells, a finding consistent with HLH, and etoposide was started immediately. Three days later the patient succumbed to multi-system organ failure. Autopsy confirmed hemophagocytosis in the liver, spleen, and subarachnoid space.

**Conclusions:** HLH is an uncommon disorder of cellular immune regulation which, as demonstrated in our case, can be life-threatening. This hemophagocytic syndrome is often misdiagnosed because it can easily mimic other conditions, notably sepsis. HLH can be seen in association with a variety of infections as well as with collagen-vascular disease or malignancy but the initial findings are similar regardless of etiology and include fever, splenomegaly, pancytopenia, liver dysfunction, hypertriglyceridemia, and a very high ferritin. Pathologic features include hemophagocytosis in the bone marrow and reticuloendothelial system. While many cases of HLH are fatal, a more favorable outcome is sometimes possible when aggressive etoposide-based chemotherapy is instituted in timely fashion. Bone marrow transplant has also shown some promise in treating this often tragic disease. This case reminds pediatricians to investigate further if there is not a prompt clinical response to standard therapy for what initially appears to be a sepsis syndrome.

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**Joint Poster Session**

**Perinatal Medicine**

**5:00 PM**

**Thursday, February 21, 2008**

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**203**

**WHAT’S MOM ON? A CASE OF BRADYCARDIA IN A PREMATURE INFANT ON BREAST MILK**

J. Mirpur1, H. Patel1, D. Rhee2, and K. Crowley1, Emory University, Atlanta, GA and Morristown Memorial Hospital, Morristown, NJ.

**Introduction:** Labetalol has always been thought of as safe for breastfeeding infants. We present a case here of a premature infant who developed asymptomatic bradycardia and atrial premature contractions while on full OG feeds of breastmilk.

**Brief case report:** A 26-week gestation preterm infant was born via emergent C-section to a mother with severe pre-eclampsia. The baby was 640 grams at birth, had been intubated the first week of life and consequently was doing well on CPAP and with TPN given via a PICC. The baby was advanced slowly on NG feeds and suddenly developed Atrial Premature Contractions (APCs) on DOL#8. She was advanced more aggressively and the PICC was removed, but she then developed severe bradycardia (HR 80–90bpm). A septic work-up including LP was negative and an echocardiogram showed no structural abnormalities. 24 hour Holter monitoring was significant for sinus bradycardia (average 90bpm) and isolated atrial premature beats. The breastmilk was replaced with formula and sent for a labetalol level after noting the mother was on Labetalol for hypertension (300mg BID). The bradycardia and APC’s resolved within 24 hours. The breastmilk was subsequently found to have a concentration of 710 mg/ml, which at maximal feeds of the infant corresponded to a dose of 100mg/kg/day of Labetalol.

**Discussion:** This case illustrates that vigilance in the use of Labetalol in breast feeding mothers should be exercised in preterm and term infants. Although labetalol is considered a safe and permissible medication for breastfeeding infants, this case illustrates the adverse effects that may occur when labetalol is passed from mother to infant in breastmilk.

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**DE NOVO INTERSTITIAL DELETION OF THE LONG ARM OF CHROMOSOME 2 (q32.1q33) DETECTED PRENATALLY: CASE REPORT**

S.M. Olister, D. Rivera, and Y. Lacassie. LSUHSC and Children’s Hospital, New Orleans, LA.

**Case Report:** Since the first description of a patient with a deletion of (2q31q33) by Taysi et al. in 1981, few others with apparent identical cytogenetic interstitial deletions have been reported. In 2005 Van Buggenhout et al., using array-CGH studies, reported 4 cases of (2q32q33) deletions. Common clinical features include pre-and postnatal growth restriction, mental retardation, facial dysmorphism, micrognathia, cleft or high palate, neonatal feeding difficulties, and behavioral abnormalities. Other reports of overlapping deletions of chromosome 2 reveal a wider spectrum of phenotypic manifestations. Recently, Mencarelli et al. (2007) reported a patient with a de novo del(2)(q31.2q32.3) identified by array CGH and confirmed by quantitative PCR, and compared the phenotype with previous reports.
suggesting that the involvement of the COL3A1 and COL5A2 genes might explain the manifestations of wrinkled skin observed in some patients. We report an infant with a del(2)(q32.1q33) diagnosed prenatally by amniocentesis after bilateral talipes equinovarus were noted on ultrasound.

**Case Report:** A female child was delivered at 37 3/7 weeks via NSVD with Apgar scores of 9/10. Birth weight was 2414g (15%), length 43cm (10%), and head circumference 33cm (50%). Physical findings included short umbilical cord, downslanting palpebral fissures, mild micrognathia, VSD, slightly anteriorly displaced anus, bilateral Sydney lines, moderate ridge dysplasia in palms and soles and bilateral talipes equinovarus. She developed a pneumothorax on day four and also had feeding difficulties requiring placement of a gastrostomy tube prior to discharge at 1 month. The proband is the product of the non-consanguineous second pregnancy of a healthy 32 year old father and 29 year old mother. The first pregnancy ended in a miscarriage at 8 weeks. Parental chromosomal studies were normal.

In summary, our proband is a newborn with a de novo del(2)(q32.1q33) with few and nonspecific manifestations, which are common to many chromosomal abnormalities, who had a pneumothorax suggesting involvement of connective tissue. Molecular studies of this and other patients will be necessary for a more precise delineation of the deletion and a better genotypic-phenotypic correlation.

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**205 ALVEOLAR CAPILLARY DYSPLASIA AND NEW ASSOCIATED FINDINGS**

E. Ponce de Souza1, M.M. Tyree2, M.T. Shoemaker2, and A.K. Gong3.

**1UTHSCSA, San Antonio, TX; 2Wilford Hall Medical Center, San Antonio, TX**

**Case Report:** Alveolar capillary dysplasia (ACD) is a rare cause of persistent pulmonary hypertension (PPHN) in the newborn, and is uniformly fatal. Abnormalities of other organ systems, most commonly involving the GI tract, have been described in the literature. We present a case of a newborn with confirmed ACD, anal atresia, imperforate anus and malrotation.

In addition, we describe several of her genitourinary abnormalities, including duplicated cervix and bicornuate uterus, with the purpose of adding these associated anomalies to the phenotype of congenital ACD. The medical chart of this patient was reviewed retrospectively, and a comprehensive literature review was performed.

At approximately two hours of life, a full-term female infant presented with respiratory distress accompanied by profound hypoxemia. Her physical exam was remarkable for a distended abdomen with palpable loops of bowel and hypoactive bowel sounds, although her anus was externally patent-appearing. An echocardiogram confirmed severe PPHN which was unimproved with medical management and a trial of high-frequency ventilation. Her respiratory status continued to decline requiring placement on veno-venous extracorporeal membrane oxygenation (ECMO) at twelve hours of age. She was also found to have various gastrointestinal and genitourinary anomalies including: malrotation, anal atresia, imperforate anus, bicornuate uterus and cervical duplication. She initially did well and came off ECMO on day of life (DOL) six. However, a second decompensation required placement on veno-arterial ECMO on DOL ten. Due to an inability to wean off the second run of ECMO, the diagnosis of ACD was suspected and confirmed by lung biopsy on DOL fifteen and care was withdrawn when the biopsy results became available on DOL twenty.

In addition to other previously described malformations of the gastrointestinal tract, this infant with ACD had associated bicornuate uterus and cervical duplication. ACD should be suspected in cases of PPHN presenting with imperforate anus as well as genitourinary anomalies such as cervical duplication. Appreciation of the anomalies associated with ACD may assist in leading to earlier biopsy and definitive diagnosis of ACD in cases of refractory PPHN.

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**206 A RARE DIAGNOSIS OF CONGENITAL CRICOPHYRNGEAL ACHALASIA: CASE REPORT**

D. Rivera, J. Ferry, S. Olieter, and D. Penn. LSU Health Sciences Center and Children’s Hospital, New Orleans, LA.

**Case Report:** A 3055gm male was delivered at 37 5/7 weeks gestation to a 24yo gravida 2 para 1 mother by NSVD. Prenatal history was significant for polyhydramnios. The patient required only routine resuscitation at delivery and physical exam was within normal limits. On the first day of life the infant developed marked difficulties with feeding including loud gulping, gagging, pooling of milk in the mouth, cyanosis and stridor. Modified barium swallow studies (MBSS) revealed pooling of milk, narrowing at the level of the upper esophageal sphincter and gross tracheal aspiration with deep penetration. Despite radiographic suggestion of a stricture, an esophagospyscopy showed no anatomical obstruction. An MRI of the brain, brainstem and spine were normal. Based on these findings, a diagnosis of cricopharyngeal achalasia was made. The patient underwent simple esophageal dilatation at 10 days of life. Follow up MBSS showed improvement in the swallowing mechanism without pooling or aspiration. Improvement in oral feedings was noted but short-lived with subsequent development of gagging and desaturations. MBSS showed silent aspiration and a second dilatation (balloon) was performed. The patient was discharged 5 days later on full oral feeds. However, symptoms returned in less than one week and the infant underwent another balloon dilatation. There has been no improvement after the third dilatation, and consideration is currently being made for G-tube placement, myotomy or botulinum toxin therapy.

Cricopharyngeal (CP) achalasia consists of failure of the cricopharyngeus muscle to relax appropriately during swallowing. Neonatal CP achalasia is exceedingly rare and potentially life threatening. With few neonatal cases reported, the diagnosis may present a therapeutic dilemma. There are single case reports of successful outcome with esophageal balloon dilatation or botulinum injections in the newborn period. As spontaneous resolution has been described in neonates, a sequential approach to treatment may be reasonable to avoid unnecessary invasive procedures. Some clinicians suggest symptom severity should dictate intervention. As more cases are described, management protocols in the neonatal period will hopefully become better elucidated.

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**207 ALL THAT GREEN IS NOT MECONIUM**

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**Case Report:** The patient was a female Infant weighing 1710 gms who was born by spontaneous vaginal delivery at 32 wks gestation to a woman with intrahepatic cholestasis of pregnancy and a history of hepatitis C diagnosed at 22 weeks gestation. Her serum bile acids were very high at the time of delivery (~4000mmol/L). The infant was born with aggar scores of 5 and 8, at 1 and 5 min, with green colored amniotic fluid, identified as meconium staining. Soon after delivery, signs of severe respiratory distress appeared requiring intubation and conventional ventilation, despite a full course of prenatal steroids. She had progressive worsening of her RDS, PPHN, CO2 retention and decreased PaO2 to the 30’s requiring surfactant replacement therapy, HFOV and inhaled NO.
Blood cultures and sepsis screens were done. Ampicillin and Gentamicin were started, due to suspected sepsis. Subsequently, the sepsis evaluation was negative. Systemic hypotension required dopamine, dobutamine and hydrocortisone administration. Throughout her course, her arterial oxygenation remained low and repeated chest x-rays showed intense inflammatory changes. Her clinical status worsened despite maximal support. In view of her poor prognosis, the family agreed to discontinue life support and the patient died on day 4. As part of her evaluation, her serum bile salt level was measured and was found to be very elevated (14 mmol/L). Retrospectively, it was noted that the amniotic fluid was actually stained with bile salts and not meconium. Histologic examination of the placenta and membranes showed that they were green-colored, with no evidence of meconium or inflammatory infiltrates. We have reviewed our NICU database and found 21 cases of infants born at less than 30 weeks gestation who were identified as having meconium stained fluid. The final diagnoses for these infants are under review. Given that many preterm infants are identified as having meconium stained fluid despite being born at an age when gut motility is usually not established, we suggest that physician carefully evaluate such claims and remember that...“All that’s green is not meconium.”

208 AUTOMATED ANALYSIS OF RHYTHMIC SUCKLE FEEDING
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Purpose of Study: Integration of suck-swallow-breath rhythms during feeding is essential to the survival of the newborn infant. An effective way to study these rhythms is to analyze pressure changes associated with suck and swallow and respiratory measurements. Unfortunately, these methods are not efficient, taking hours or days to properly analyze one feeding event. We have developed an automated method to identify changes in biometric waveforms to aid in our analysis of infant feeding.

Methods Used: As part of our study of development of infant feeding, we have collected continuous 8-channel linear recordings of biometric data. Patients were fitted with the following equipment during a study: 2 types of acoustic detectors for cerebral ascultation, a naso-pharyngeal tube to measure swallowing pressure, a catheter placed through a pacifier or nipple such that the tip is flush with the nipple to measure suckle pressure, a thermistor placed at the nares to measure temperature changes (airflow), a chest band to measure thoracic motion and a pulse oximeter. Suck and swallow waveforms were analyzed in the traditional method with an examiner visualizing the waveforms with the aid of a computer program (WINDAQ, Dataq Instruments, Akron, OH) and manually tabulating the time, in seconds, that each event occurred. The same waveforms were analyzed by the automated computer program (code written in MATLAB 7.0, The Mathworks, Natick, MA). Event markers were compared for the two methods. Coefficients of variation (COV), a measure of the stability of rhythmic suck and swallow waveforms were calculated and compared for both methods.

Summary of Results: The program correctly identified 139 of 144 (96.5%) suck events with an average disagreement of 0.005 seconds. Also, the program correctly identified 105 of 108 (97%) swallow events, with an average disagreement of 0.005 seconds. COV was similar for both sucks and swallows.

Conclusions: We have developed an automated process for data reduction and analysis of complex biometric waveforms. This process will dramatically increase the efficiency of data analysis in our future studies of infant feeding. The program can be easily adapted to other waveform analysis. This work was funded by the NICHD Grant 5K23HD05081-02.

209 CURRENT GLUCOSE CONTROL STRATEGIES IN VERY LOW BIRTH WEIGHT INFANTS
C.D. Wendel, C. Blanco, and A. Gong. University of Texas Health Science Center, San Antonio, TX.

Purpose of Study: Hyperglycemia (HG) affects up to 30–50% of Very Low Birth Weight (VLBW) infants. To date, there are no recommendations for serum glucose targets. Traditional practice has been to allow high levels of serum glucose for aggressive nutritional support. Studies from adult and pediatric ICUs suggest that tight glucose control may improve mortality and morbidity. The objective of this study was to determine current glucose infusion strategies and serum glucose targets of HG to design a prospective glucose control protocol for VLBW infants.

Methods Used: Baseline data was gathered on 41 VLBW infants admitted to University Hospital in San Antonio, TX from December 2006 to June 2007. The current hospital Glucose Infusion Rate (GIR) strategy was analyzed along with demographic, pre- and postnatal clinical information. A glucose ratio (@ of glucose >150 mg/dL divided by # glucose levels/day) was used as a measure of time spent in HG (serum glucose > 150 mg/dL). A total of 635 serum glucose samples were recorded during the first 30 days of life. Descriptive statistics and Pearson Correlations were performed using SPSS. The distributions and means of these variables will be utilized to generate a sample size for a prospective trial.

Summary of Results: HG was found in 28% of the infants during the first 2 weeks of life. Serum glucose and glucose ratios peaked on Day of Life (DOL) 2 and 10. Infants with HG had a median GIR of 5.5 mg/kg/min and 6.5 mg/kg/min on DOL 2 and 10, respectively. After DOL 18, no HG was found; glucose levels were normal regardless of higher GIR suggesting self regulation. Demographic characteristics did not predict the development of HG. A tight correlation was found between the morning serum glucose and the maximum serum glucose for the subsequent 24 hours on DOL 2 (R 0.74, p = 0.001) and DOL 10 (R 0.99, p < 0.001). Moming serum glucose had not been used to prescribe GIR for the following day.

Conclusions: Current glucose strategy is not adequately targeting normoglycemia, GIR is not tightly controlled and HG develops frequently. Morning serum glucose correlates well with serum glucose throughout the subsequent 24 hours and can be used to assist planning the GIR intake for the day. The design of a protocol with specific target serum glucose for the first 2 weeks of life in VLBW infants is underway.

210 IS TRANSFUSION OF PACKED RED BLOOD CELLS (PRBCS) ASSOCIATED WITH THE DEVELOPMENT OF NECROTIZING ENTEROCOLITIS (NEC)?
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Purpose of Study: NEC is one of the most common gastrointestinal emergencies in newborn infants, yet the pathogenesis has not been fully elucidated. Anecdotal reports and small studies suggest that NEC develops shortly after pRBC transfusion, but the relationship has not been rigorously evaluated.

Methods Used: A retrospective, case-control study was conducted at a large level III NICU on all infants delivered from January 2003 to April 2007. Subjects were reviewed for the occurrence of NEC and its relationship to pRBC transfusion. Patients with NEC were divided into
two groups: (1) pRBC transfused, and (2) non-pRBC transfused. All patients in the NEC group (n=31) were similar to controls (n=33) for gestational age, birth weight, and postnatal age. Medical records were reviewed for each group. Tabulated information included delivery room resuscitation, birth weight, gestational age, hematocrit at birth and at diagnosis of NEC, weight and age at the onset of symptoms. **Summary of Results:** Over a 40-month period, 1765 neonates were admitted to the NICU. The overall prevalence of NEC was 1.8% (31/1765) and the prevalence of NEC in neonates < 1500 grams at birth was 5.7% (24/420). Transfusion was required for 55% (17/31) of the NEC group and for 58% (18/31) of the controls (odds ratio 0.87; 95% CI: 0.32 to 2.4). The demographic characteristics of the transfusion associated NEC group and non-transfusion associated NEC group were tabulated and compared. In the NEC group, there was a difference between the birth weight in the transfusion associated NEC group (median 765 g) and the non-transfusion associated NEC group (median 1560 g, p-value=0.001). The transfusion associated group had lower Apgar scores at 1 min (p-value=0.04), developed NEC later (p=0.0004), and required surgical intervention more often (p-value=0.09) when compared to the non-transfusion NEC group. **Conclusions:** Preliminary data from this study are inconclusive in demonstrating an association between NEC and pRBC transfusion. A larger retrospective study is underway to further evaluate a potential association.

Joint Poster Session
Pulmonary and Critical Care Medicine
5:00 PM
Thursday, February 21, 2008

211 ROLE OF ISOPROTERENAL HYDROCHLORIDE FOR THE TREATMENT OF VENTRICULAR ARRHYTHMIAS
S. Aggarwal, D. Godkar, and S. Selvaratnam. Coney Island Hospital, Brooklyn, NY.

**Introduction:** Medications like Amiodarone and procainamide are commonly used for the treatment of Ventricular arrhythmias. Rarely these medications can cause QT-prolongation and worsening of the ventricular arrhythmias. We present a case of ventricular tachycardia induced by amiodarone and procainamide which was successfully treated by increasing the heart rate with Isoproterenol hydrochloride.

**Case Report:** A 52-year-old gentleman was admitted with intracranial bleed. Course was complicated by raised intracranial pressure (ICT) requiring mannitol. Patient had sinus bradycardia and hypertension complicated by non sustained ventricular tachycardia for which intravenous amiodarone was started (Blood chemistry including electrolytes were normal). Six hours after starting amiodarone patient had sustained ventricular tachycardia requiring direct current cardioversion with 360 joules. Subsequently amiodarone was stopped and procainamide was started which resulted in worsening of ventricular tachycardia requiring two more shocks. In order to maintain a resting heart rate more than 80 beats per minute (bpm) Isoproterenol hydrochloride was started at 0.5 micrograms per minute. Ventricular tachycardia subsequently resolved. Isoproterenol was stopped 48 hours after patient’s intrinsic heart rate was consistently noted to be more than 70 bpm.

**Discussion:** Amiodarone, procainamide and sotalol are commonly used to treat ventricular arrhythmias. These medications can cause arrhythmias by prolonging depolarization that may be life threatening and is most likely to develop in the setting of low heart rates, hypokalemia, hypomagnesemia, and in patients with preexisting lengthening of the QTc interval which can be secondary to IC block as in our case. Role of Isoproterenol in ventricular tachycardia can be explained by it’s positive inotropic and chronotropic activity. There have been studies in the past in which Isoproterenol or override pacing appear to be the therapy of choice for Atypical Ventricular Tachycardia. This case underscores the value of more controlled observational studies that should be undertaken to determine the role of isoproterenol in patients with recurring ventricular arrhythmias especially in the setting of bradycardia and prolonged QT interval.

212 ALL THAT IS AFB POSITIVE ISN’T TUBERCULOSIS IN AIDS

**Case Report:** A 46 year old male with AIDS (CD4 count 45) presented to the Emergency Room with a six week history of shortness of breath, productive cough, Pleuritic chest pain. He had decreased breath sounds in the right lower hemithorax and crackles. Labs included WBC 7.4, ESR of 87 and LDH of 84. Chest radiograph showed right perihilar opacities with cystic changes in upper lobes. CT chest showed bilateral upper lobe cavitary lesions with fluid levels, ground glass appearance of the lung parenchyma and bilateral pleural effusions. Our patient was treated empirically for PCP, Mycobacterium avium-intracellulare complex (MAC) and Community Acquired Pneumonia. Acid fast bacillus (AFB) smear was negative but two cultures were positive for AFB and patient was treated for Mycobacterium tuberculosis (MTB) and MAC, without any improvement. Sputum culture grew Mycobacterium fortuitum and therapy was changed to Imipenem and Ciprofloxacin with discontinuation of treatment for MTB. Patient responded clinically and radiographically with resolution of ground glass opacities, regression of pleural effusions and decrease in the intra cavitary fluid.

Non tuberculous mycobacteria are ubiquitous in nature and implicated in skin, soft tissue, bone and pulmonary infections. The incidence of pulmonary disease is unknown and depends on the opportunity for transmission and the host’s immune status. The pulmonary infection may present as bronchopneumonia, lung abscess, enlarging pulmonary nodule or as in our patient, as bilateral pulmonary cavi ties. To diagnose non tuberculous Mycobacterial pulmonary disease pulmonary symptoms, abnormal chest imaging (nodules or cavitary opacities multifocal bronchiectasis etc) with two positive cultures from sputum samples or from broncho-alveolar lavage are needed. Recommended treatment involves parenteral treatment with two agents (Imipenem, Amikacin, Tobramycin, Cefoxitin, or Levofloxacin) for two to six weeks followed by oral antimicrobial agents (Trimethoprim / Sulphamethoxazole, Doxycycline, Clarithromycin, Azithromycin and Levofloxacin), for one year after the last negative sputum culture. Deaths are rare with M.fortuitum but remain a clear and present danger to patients with pulmonary disease in the immune compromised host.

213 SYSTEMIC SCLEROSIS SINE SCLERODERMA PRESENTING AS NONSPECIFIC INTERSTITIAL PNEUMONIA (NSIP)
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**Purpose of Study:** N/A.
Methods Used: A 42-year-old female, who was diagnosed with interstitial lung disease (ILD) 1 year ago, presented to the hospital with progressive worsening of dyspnea. She also had fatigue, heartburn, diffuse arthralgias, myalgia, Raynaud’s phenomena and weight loss over the last 18 months. A previous bronchoscopy was inconclusive. On Examination the patient was in mild respiratory distress and had end-inspiratory crackles. Initial laboratory work up showed elevated erythrocyte sedimentation rate (45 mm/hr) and creatinine kinase (2979 mg/dL). Chest radiograph showed cardiomegaly and bilateral interstitial infiltrates. Echocardiography revealed elevated right heart pressures (78/39 mmHg) which were confirmed with right heart catheterization (Pulmonary artery occlusive pressure: 27 mmHg). High Resolution CT of the chest revealed patchy airspace disease. Esophagogram showed hypomotility. A connective tissue disease work up was negative, including a negative Anti-nuclear antibody (ANA) test. Open lung biopsy revealed NSIP. A provisional diagnosis of systemic sclerosis sine scleroderma (ssSSc) associated ILD was made. Prednisone and Azathioprine were started. The patient was seen 4 weeks after and reported significant improvement of her dyspnea. We plan to continue to report her progress.

Summary of Results: ssSSc is characterized by multi-organ involvement with systemic sclerosis without characteristic skin lesions. Multiple organ systems may be involved including renal, pulmonary (ILD and pulmonary hypertension), gastrointestinal, cardiac and musculoskeletal. ssSc-ILD is poorly studied and classified. In a recent case series of six patients, all had positive ANA, gastroesophageal reflux, restrictive pulmonary physiology and decreased diffusion capacity; four of them had Raynaud’s phenomenon. Lung biopsy (obtained only in three cases) revealed NSIP in two. Our patient is the first to have ILD with a negative ANA. Treatment of ILD in systemic sclerosis (which is often NSIP) is usually a combination of a glucocorticoid and an immunosuppressive agent.

Conclusions: This case demonstrates the importance of a careful, systematic evaluation of patients with otherwise undefined ILD.

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**SEVERE MYOGLOBINURIC RENAL FAILURE: SEQUELAE OF SEROTONIN SYNDROME**

P. Atwal, C. Atwal, N. Lokhandwala, S. Puttaswamy, and R. Doshi. Coney Island Hospital, Brooklyn, NY.

**Background:** Overstimulation of serotonin receptors in the CNS produces a combination of mental status changes, autonomic hyperactivity, and neuromuscular abnormalities collectively referred to as serotonin syndrome. It is seen with therapeutic medication use, inadvertent interaction between medication, and intentional self poisoning. It is a clinical diagnosis and there is no laboratory test which is confirmatory for this syndrome. Nevertheless, severe cases may develop rhabdomyolysis and acute myoglobinuric renal failure. Rhabdomyolysis is a clinical syndrome resulting from muscle necrosis causing the release of myoglobin from injured myocytes. Myoglobin damages the renal tubular epithelium resulting in acute renal failure.

**Case Report:** A forty-year-old male with a history of severe mental retardation and autism, on fluvoxamine and thorazine treatment, presented with agitation, fever, tremors, diaphoresis, and a history of passing out while at home. Physical examination revealed tachycardia, hyperreflexia, temperature of 102.4°F, and rigidity particularly involving the lower extremities bilaterally. Laboratory analysis revealed leukocytosis, increased anion gap metabolic acidosis, and severe rhabdomyolysis with CPK levels ranging from 272930 U/L to 810400 U/L with acute renal failure and hyperkalemia. Substantial elevations in aspartate aminotransferase and alanine aminotransferase were observed. Fluvoxamine and thorazine were discontinued. The agitation was controlled with benzodiazepines. Supportive care was provided with oxygen and intravenous hydration and bicarbonate. The patient’s symptoms improved but the renal failure which was attributed to acute tubular necrosis secondary to rhabdomyolysis continued to worsen requiring hemodialysis.

**Teaching Point:** The increasing use of serotonergic drugs such as SSRIs in medical practice and polypharmacy usage puts patients at greater risk for serotonin syndrome. The severity of illness can vary widely and manifestations may be wrongly attributed to another cause. Because the onset and progression of serotonin syndrome is rapid and severe complications like rhabdomyolysis can occur, it is imperative that clinicians recognize early symptoms to ensure timely therapeutic response to avoid potentially life threatening complications.

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**SEVERE BRADYCARDIA AND SINUS PAUSE DURING ENDOTRACHEAL SUCTIONING: PREVENTED BY PRE-TREATMENT WITH HIGH DOSE INHALED IPRATROPium**


**Case Report:** A 65 year old woman, active smoker for 35 years, noted anorexia, weight loss, hoarseness of voice and exertional dyspnea, presented to the emergency room in acute respiratory failure, was intubated, and mechanically ventilated. Chest CT revealed that a large right lung mass had extended to involve the mediastinum and was compressing but not occluding the Superior Vena Cava and right pulmonary artery. Acute respiratory failure was attributed to exacerbation of underlying chronic obstructive airway disease and airway compression by the lung and mediastinal mass. Adequate oxygenation and ventilation was achieved by the use of mechanical ventilation, bronchodilators and steroids.

A striking feature noted during the management of this patient’s respiratory failure was the repeated occurrence of severe bradycardia and sinus pause of up to 6 secs at the onset of endotracheal suctioning. During this adverse cardiac event there was no evidence of hypoxia, acid base disturbance, electrolyte abnormality or cardiac ischemia. The occurrence of bradycardia and sinus pause on ET suctioning was attributed to heightened vagal tone in spite of standard dose ipratropium inhalation every 4 to 6 hours. As airway obstruction due to tracheobronchial secretions mandated the need for ET suctioning; high dose ipratropium inhalation (10 puffs via MDI) was delivered via the ventilator port prior to ET suctioning in an attempt to achieve vagal blockade. This strategy proved successful and allowed for successful ET suctioning without any further disturbance of cardiac conduction.

**Discussion:** Mechanical stimulation of the tracheobronchial tree during ET suctioning in intubated patients can be expected to increase vagal tone. Expression of increased vagal tone in the form of severe bradycardia and sinus pause is not generally described in this setting. The ability of high dose ipratropium to prevent this suggests that vagal over activity was the underlying mechanism responsible for the bradycardia and sinus pause that occurred on ET suctioning. We describe this case to illustrate the fact that in the rare situation where ET suctioning results in severe heart rate and conduction disturbance, vagal blockade using high dose inhaled ipratropium is a strategy to consider.

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**PNEUMONIA IN A PATIENT WITH HIV**

H. Majid, P. Alapat, and N. Hanania. Baylor College of Medicine, Houston, TX.

**Case Report:** A 20-year-old African-American male, with no known medical problems, presented with 3 months of progressive weakness,
30 pound weight loss, lethargy, and a 10-day history of fevers, chills, dyspnea and confusion. His exam was remarkable for a temperature of 103.9°F, oral thrush, findings of rhonchi and rales, egophony and dullness to percussion in the right upper and middle lung zones. Labs were remarkable for a positive HIV test, CD4 count of 3, anemia, and neutrophilic leukocytosis. Chest X-ray showed multi-lobar consolidation. Sputum culture and 3 AFB smears did not show any pathogens. The patient underwent bronchoscopy and lavage. Subsequently, blood and BAL cultures grew rhodococcus equi. The patient defervesced on appropriate antibiotics and mental status improved to baseline.

Rhodococcus equi is an uncommon opportunistic infection that occurs during advanced stages of immunological impairment in patients who are immunocompromised or have HIV. The lung is the most common organ involved with this pathogen and chest imaging is usually abnormal. Pulmonary infiltrates are the most common radiological finding; more than half of these have cavitations. Sputum and blood cultures have the best diagnostic yield (approximately 50%). Infection caused by R equi is a severe illness that requires a long duration of therapy with multiple antibiotics. Concomitant HAART has been shown to improve prognosis.

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TRAUTOMATIC BRAIN INJURY TRIGGERING SYSTEMIC LUPUS ERYTHEMATOSUS
B.M. Varisco and L. Hayes. University of Alabama at Birmingham, Birmingham, AL.
Purpose of Study: To describe a case of systemic lupus erythematosus that followed a traumatic brain injury and review the evidence for central nervous system (CNS) injury inducing such an immune response.
Methods Used: Chart review and Medline database search.
Summary of Results: Dysregulation of the adaptive immune system in the setting of CNS trauma is an area of active research. Mouse models of both brain and spinal cord contusion have shown local T-cell infiltration, splenic B-cell activation, and production of multiple autoantibodies, including anti-double stranded DNA (anti-ds DNA) antibodies. Adult patients with spinal cord injury exhibit antibodies to several different CNS proteins. To our knowledge, there are no reports of brain contusion inducing autoimmunity in humans.
We present the case of a 15-year-old African-American female who sustained a moderate occipital cerebral contusion and 12 days into her hospital course had rapid onset of renal failure requiring continuous renal replacement therapy. Antinuclear antibodies and anti-ds DNA antibodies were positive. Renal biopsy revealed WHO class II lupus nephritis. She had no evidence of central nervous system, cardiac, serosal, skin, or musculoskeletal involvement. She did have a lupus anticoagulant present very early in her hospital course which has since resolved. Three years later she has normal renal function but continues to exhibit serologic markers of lupus and requires daily immunosuppressant therapy.
Conclusions: This case suggests that traumatic brain injury in humans can induce an autoimmune reaction similar to that seen in human spinal cord and in murine brain and spinal cord injury. Further investigation into the prevalence and pathogenesis of autoimmune reactions to CNS injury is warranted.

Joint Poster Session
Renal, Electrolyte, and Hypertension
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NON-HODGKIN’S LYMPHOMA ASSOCIATED MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS: LONG TERM REMISSION WITH CHEMOTHERAPY
H.M. Alshayeb1,2, and B.M. Wall1,2,1FAMC, Memphis, TN and 2UTHSC, Memphis, TN.
Purpose of Study: Membranoproliferative glomerulonephritis(MPGN) has been reported to occur in association with Non-Hodgkin’s lymphoma(NHL), but data concerning the effects of treatment of NHL on the progression of NHL associated MPGN are limited. This report presents a patient with previously normal renal function who developed MPGN in association with NHL. Sustained remission of MPGN was achieved after remission of NHL with systemic chemotherapy.
Methods Used: Case report.
Summary of Results: 64 year old previously healthy male presented with a 4 wk history of shortness of breath, bilateral lower limb swelling, increased abdominal girth, and 30 lb weight gain. Blood pressure: 208/140 mm Hg. Heart exam revealed regular rhythm and an S4 gallop. He had positive shifting dullness and splenomegaly on abdominal examination and +3 pitting edema of extremities. There was no peripheral lymphadenopathy. Laboratory studies revealed a Hct of 34%; platelet count 99 x 109/L. Cr 2.9 mg/dl (which subsequently peaked at 7 mg/dl). Albumin 2.6 g/l. Urinalysis showed 3+ blood, 3+ protein, >100 RBCs/hpf, abundant hyaline & granular casts. 24hr protein excretion was 28 gm. No monoclonal bands were present on serum IFE. C3 was low and C4 low-normal. RF 299 IU(0–29). Tests for hepatitis B surface antigen, antibodies to hepatitis C and HIV, RPR, streptozyme, and ANA were negative. CT abdomen showed hepatosplenomegaly and periarticular lymphadenopathy. Renal biopsy showed MPGN type I. Bone marrow biopsy showed NHL of small B cell lymphocytic type. After treatment with 6 cycles of Cytoxan, Vincristine, prednisone, the patient improved symptomatically. He became normotensive and creatinine decreased to 1.4–1.7 mg/dl. Protein excretion ultimately decreased to <300 mg/day and microhematuria resolved. MPGN continued to be in remission during 11 years of follow up despite 2 relapses of lymphoma which were treated with additional chemotherapy.
Conclusions: The findings of previously normal renal function, the development of MPGN in association with NHL, and the sustained remission of MPGN with remission of NHL strongly support a pathogenic mechanism involving tumor antigens and circulating immune complexes with glomerular deposition leading to histopathological changes of MPGN, type I.

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CHANGES IN RENAL FUNCTION IN HIV INFECTED PATIENTS TREATED WITH ENFUVIRTIDE

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Purpose of Study: Enfuvirtide is the first member of the fusion inhibitor class. There are no known long-term renal effects associated with the use of this drug, nor is there data on its use in patients with known kidney disease. The purpose of this study is to determine if changes in renal function occur in patients undergoing long-term treatment with enfuvirtide.

Methods Used: All patients treated with enfuvirtide for at least one year were identified at the Emory Crawford Long Infectious Diseases Clinic. Baseline and demographic data were recorded. Renal function was measured using estimated GFR by the MDRD calculation. Initial eGFR was compared with eGFR after 12 months of treatment. A decrease in eGFR of 10mL/min/1.73m2 was considered clinically significant. Data represents mean±SD.

Summary of Results: From 2002–2007 we identified 39 patients treated with enfuvirtide. Twenty-eight of them received enfuvirtide for at least one year. The mean eGFR at time of initiation of enfuvirtide was 93±26mL/min/1.73m2. After 12 months of treatment the eGFR decreased to 79±22mL/min/1.73m2 (p=0.04). Nineteen patients received tenofovir, a drug associated with renal impairment, as part of their antiretroviral medication regimen. In this group, eGFR decreased from 90±23mL/min/1.73m2 at initiation of treatment to 75±26mL/min/1.73m2 at 12 months (p=0.004). Nine patients treated with enfuvirtide did not receive tenofovir. The eGFR in this group also decreased from 98±35mL/min/1.73m2 at beginning of therapy to 88±24mL/min/1.73m2 at 12 months (p=0.04). Overall, 14 out of 28 patients had eGFR decline of at least 10mL/min/1.73m2. There were no significant differences at baseline between those patients with eGFR decline greater than 10mL/min/1.73m2 and those without eGFR reduction. CD4+ cell count increased from 113±107 cells/mL to 193±141 cells/mL at the end of one year (p=0.026). The percentage of patients with HIV viral load less than 400 copies/mL increased from 19% at initiation of therapy with enfuvirtide to 48% at one year (p=0.05).

Conclusions: There was a statistically significant decrease in eGFR in patients treated with enfuvirtide over a period of 12 months. The decrease in eGFR associated with enfuvirtide demonstrated by this study indicates that renal function should be carefully monitored while undergoing treatment with this medication until more data is available.

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NEPHROGENIC SYSTEMIC FIBROSIS WITH GADODIAMIDE INJECTION (OMNISCAN): THE EMORY EXPERIENCE RENAL DIVISION AND RADIOLOGY DEPARTMENT, ATLANTA, GA

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Purpose of Study: Nephrogenic systemic fibrosis (NSF) is a rare systemic disorder that principally affects the skin of End Stage Renal Disease and advanced Chronic Kidney Disease patients. NSF is a progressive disorder associated with joint contractures, visceral organ fibrosis, closely linked to previous gadolinium exposure. We now present a retrospective chart review of 9 patients diagnosed with NSF by skin biopsy between 2002 and 2007 at Emory University.

Methods Used: A retrospective chart review was performed to identify all subjects with a diagnosis of NSF in the Emory Clinical Medical Record system, Department of Pathology, and Outpatient Dialysis Units within the Emory System. Nine patients were diagnosed with NSF by punch skin biopsy between 2002 and 2007. Medical chart review determined previous gadolinium, timing and type of dialysis following gadolinium exposure, age, gender, and comorbid conditions including diabetes, hypothyroidism, deep venous thrombosis, autoimmune disease, presence of dependent edema and number of inpatient days during one year preceding NSF diagnosis.

Summary of Results: NSF patients were 48 yrs + 8 yrs (range19–69); 5 males: 4 females. 8 were on Renal Replacement: 5 on hemodialysis, 3 on peritoneal dialysis and 1 with CKD stage 3. 8/9 had documented exposure to Gadodiamide injection < 6 mo prior to skin biopsy. Diabetes was present in 2 (22%), history of DVT in 4 (44%), hypothyroidism in 2 (22%) and dependent edema in 6 (66%) patients. Total life time spent on dialysis prior to NSF diagnosis ranged from 1–18 years. Total inpatient days 1 year prior to biopsy ranged 0 – 28 days.

Conclusions: 8/9 cases of NSF were associated with Gadodiamide injection <6 month after exposure. History of DVT, dependent edema likely are important risk factors and presence of diabetes and hypothyroidism can further predispose patients for NSF development.

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ANALYSIS OF THROMBOTIC PROFILES IN PATIENTS WITH END STAGE RENAL DISEASE UNDERGOING HEMODIALYSIS


Purpose of Study: Patients with End Stage Renal Disease (ESRD) are paradoxically characterized by an enhanced risk of thrombotic as well as bleeding complications. The explanations to the elevated prevalence of both disorders, which have opposite pathophysiological mechanisms, in the same patient population remain poorly explored. We hypothesize that ESRD patients undergoing hemodialysis have abnormal profiles of the plasmatic (hypo-coagulability) and cellular (hyper-aggregability) components of thrombosis, which may explain the enhanced bleeding and thrombotic risk, respectively. The aim of this study was to characterize thrombotic profiles (plasmatic and cellular) in ESRD undergoing hemodialysis.

Methods Used: A total of 34 patients were enrolled. Blood sampling was performed before hemodialysis and prior to heparin administration. Whole blood samples were analyzed by thrombelastography. The onset of thrombin induced platelet-fibrin clot formation (R value; normal range: 2–8 min), a marker of the speed of thrombin generation, was evaluated to determine the plasmatic component of thrombosis. The maximum amplitude (MA value; normal range: 51–83) of the thrombelastographic tracing represents the strength of the clot, reflecting the cellular component of thrombosis.

Summary of Results: Continuous variables are presented as mean ± standard deviations; categorical variables as percentages. Patients (mean age: 62; standard deviation ± 15.2; 70% females) were on hemodialysis for a mean of 2.5 years. R values were prolonged (8.8 ± 2.8 min) in our study population, indicative of hypo-coagulability. In 47% of patients, R values were above the normal reference range. MA values were also prolonged (66.7 ± 7), indicative of a hyper-aggregable status. In 35% of patients, MA values were above the normal reference range.

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Conclusions: Patients with ESRD undergoing hemodialysis are characterized by abnormal profiles of both the plasmatic (hypo-coagulability) and cellular (hyper-aggregability) components of thrombosis. These findings may explain the elevated prevalence of both bleeding and thrombotic events, two pathophysiologically distinct disorders, in the same high risk patient population.

222 Nafcillin-Associated Life Threatening Hypokalemia


Introduction: Nafcillin sodium is a narrow spectrum beta lactam antibiotic. Complications of nafcillin therapy include hypersensitivity reactions, gastrointestinal disorders & skin rash. Rarely, nafcillin can cause hypokalemia especially if given in huge doses. We present a case of hypokalemia in a patient treated with nafcillin.

Case: 81 year old white female was admitted to the hospital with sick sinus syndrome. She had Temporary Transcutaneous Pacemaker insertion, complicated by Methicillin sensitive staphylococcus aureus septice- mia requiring 12g/d of nafcillin. During the course of therapy with nafcillin, it was noted that patient was having low Potassium (K+) level. Other causes of hypokalemia were excluded. By day 7, it was noted that she was actually requiring 160 mEq of K+ per day. So, she was started on a standing dose 160 mEq/day in two divided doses. Over the next three weeks, her K+ requirements range from 160–240 mEq/day. Since nafcillin was a life saving medication for her, dose of nafcillin was not altered. Following completion of nafcillin therapy, supplemental K+ was stopped and serum K+ was monitored over the next 48 hours. She was discharged home safely without K+ supplementation.

Discussion: Antibiotic-induced hypokalemia does not occur frequently, but has been described with amphotericin B, amino-lycosides and penicillins. The development of hypokalemia in a patient receiving huge dose of nafcillin sodium showed that this antibiotic may act as other penicillins i.e. it acts as non reabsorbable anions leading to increased renal distal tubular K+ excretion down a greater negative transtubular potential difference, resulting in excessive renal loss of K+. Hypokalemia is an important finding in hospitalized patients because it may provoke cardiac arrhythmias. The differential diagnosis of any patient with hypokalemia should include medications. When nafcillin associated hypokalemia is suspected, aggressive K+ administration and frequent K+ monitoring is indicated. The hypokalemia may be corrected by decreasing the dose of nafcillin but still maintaining effective antimicrobial activity. Sometimes, administration of a potassium sparing agent, such as spirinolactone or triamterene by blocking potassium reabsorption in the distal tubular, can prevent hypokalemia.

Summary of Results:

<table>
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<th>PHQ-2</th>
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<th>SF-36 MCS</th>
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<td>8%</td>
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<td></td>
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224 Epidemiological Changes of Acute Post Streptococcal GLOMERULONEPHRITIS IN CHILDREN

M. Ilyas and A. Tolaymat. University of Florida, Jacksonville, FL.

Purpose of Study: The objective of this study was to review the changing epidemiological pattern of acute post streptococcal glomerulonephritis (APSGN) in our pediatric population. We compared incidence, prevalence, pathogenesis, clinical presentation and outcomes in two cohorts with acute post streptococcal glomerulonephritis in Northeast Florida.

Methods Used: We retrospectively reviewed the medical records of children who were admitted to our institution with diagnosis of APSGN, between 1999 and 2006 (recent cohort). These patients were compared with a previously reported cohort of patients admitted from 1957 to 1973 (earlier cohort).

Summary of Results: A total of 45 children with APSGN were included in the recent cohort, 40 (87%) were males, median age was 7 years, accounted for an average incidence of 6.4 patients/year and prevalence of 0.64/100,000 populations. This cohort was compared with 153 children of the earlier cohort where 95 (62%) were males, median age was 4.25 years, accounted for an average incidence of 10.9 patients/year and prevalence of 2.18/100,000 populations. The recent cohort was predominantly White-American (62%) as compared to the earlier cohort, which was predominantly Afro-American (87%). In the recent cohort, sixty four percent of patients had antecedent pharyngitis, while in the earlier cohort antecedent pyodermia was present in 66% of children with APSGN. In the recent cohort symptoms of acute glomerulonephritis at presentation were mild and outcome was excellent. Comparatively, two children died in the earlier cohort due to APSGN-related complications.
Conclusions: There is a significant decline in incidence, prevalence and severity of APSGN. Instead of impetigo, pharyngitis is now the predominant cause of acute post-streptococcal nephritis. This has impacted the incidence of disease, seasonal variation, severity of presentation and racial background of patient population. These changes in APSGN are due to overall changes in the pathogenesis of pyoderma.

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CONSTRICTIVE PERICARDITIS MASKED BY CONTINUOUS AMBULATORY PERITONEAL DIALYSIS
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Purpose of Study: Dialysis pericarditis is defined as development of pericardial disease in a patient receiving chronic maintenance dialysis. Constrictive pericarditis with pericardial calcification is an uncommon late complication of this disorder.

Methods Used: We present a 36 year old man with end stage renal disease and poorly controlled secondary hyperparathyroidism on continuous ambulatory peritoneal dialysis who developed refractory hypotension. Chest x-ray examination and computed tomography revealed a calcified pericardium with an “egg shell” appearance. Echocardiogram was suggestive of constrictive pericarditis which was confirmed by right heart catheterization, showing characteristic “Dip and Plateau” pattern.

Our patient had only dizziness and hypotension. Other clinical features of constrictive pericarditis such as dyspnea, fatigue, jugular venous distention, Kussmaul’s sign, hepatomegaly, and peripheral edema were absent due to control of extra-cellular volume by continuous peritoneal dialysis.

Summary of Results: Constrictive pericarditis is not rare in patients with dialysis pericarditis, but complete calcification of the pericardium (“egg shell”) in association with constrictive pericarditis is an uncommon phenomenon.

Conclusions: Clinical features of constrictive pericarditis can be subtle in patients on dialysis, especially on a continuous dialysis modality.

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HEALTH CARE DISPARITY IN AFRICAN AMERICANS WITH CHRONIC KIDNEY DISEASE
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Purpose of Study: We hypothesized that glomerular filtration rate (GFR) correlates with patient characteristics of adherence to medical follow-up and their personal belief of who is responsible for their health care. To address the hypothesis, we carried out a cross-sectional study.

Methods Used: 221 patients from the University Medical Center Nephrology Clinic were enrolled, including 82 males and 139 females with ages from 18 to 85. Inclusion criteria were: <eGFR < 75 ml/min/1.73 m2 (MDRD) and no dialysis; patients were divided into NKF stage by eGFR: stage 2, 60–89; 3, 30–59; 4, 15–29; 5, <15. All patients gave informed consent and underwent a Locus of Control (LOC) survey of their belief of responsibility for their health: self, others (MD or nurses), or fate (God). Charts were examined for age, missed appointments/year, blood pressure (BP), body mass index (BMI), hemoglobin (HGB), serum bicarbonate (HCO3), serum albumin, and iPTH. Data was analyzed with ANOVA of each variable versus eGFR stage.

Summary of Results: No significant differences among the CKD stages were found in: age (means: 49–51 years), BP (MAPs: 102–108 mmHg), BMI (range: 31–37), LOC Self score (4.51–4.62 of 6.00), LOC God/Fate score (3.06–3.79/6.00 max), LOC others (3.27–3.64/6 max), type of insurance (Medicare, Medicaid, BCBS, self-pay).

Although missed appointments per patient per year was not significantly different among the CKD stages, it did rise from a mean 0.96 ± 0.43 in Stage 2 to 1.83 ± 0.39 in Stage 5. Biochemical variables changed significantly from stage 2 to 5: HGB, 12.8 ± 0.35 to 10.8 ± 0.32; serum HCO3, 28.4 ± 0.75 to 23.3 ± 0.7; iPTH: 74 ± 81 to 578 ± 50. Albumin concentrations did not change significantly from Stage 2 (3.88 ± 0.10) to Stage 5 (3.70 ± 0.10).

Conclusions: In the current cross-sectional study, we disproved our hypothesis. Although there was a trend for patients with a greater burden of CKD to have more missed appointments, the statistics were not significant. African American Patients have a sense that they are primarily responsible for their health, but God and Powerful Others (MDs, nurses) significantly share this responsibility. That serum albumins and mean BMIs are not depressed in CKD Stage 5 lends support to the reverse epidemiology of this population in uremia.

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BARTTER’S SYNDROME IN PREGNANCY: REVIEW OF POTASSIUM HOMEOSTASIS IN PREGNANCY
A. Luqman, A. Kazmi, and B.M. Wall. UTHSC, Memphis, TN.

Purpose of Study: Potassium homeostasis remains normal during pregnancy despite the presence of volume expansion, elevated GFR, and elevations in renin-angiotensin-aldosterone levels. This is largely due to anti-mineralocorticoid effects of progesterone. We present a case of severe hypokalemia due to Bartter’s syndrome during pregnancy, which was exacerbated by the use of corn silk and licorice-containing herbal medicines.

Methods Used: A 26 year old G3P2 Hispanic female presented at 13 week gestation with acute urinary retention. She was taking prenatal vitamins and herbal supplements containing corn silk which acts like a diuretic and licorice root. Her BP was 110/70 mmHg. No edema was present. A Foley catheter was placed with return of 1700 ml of urine. Laboratory included: K 1.6 meq/L, Na 131 meq/L, Cl 91 meq/L, HCO3 25 meq/L, Mg 2.0 meq/dl and Ca 8.5 mg/dl. EKG and urinalysis were normal. The plasma renin activity was 103 ng/ml/hr, and aldosterone levels were 25 meq/L, Mg 2.0 mg/dl and Ca 8.5 mg/dl. EKG and urinalysis were normal. The plasma renin activity was 103 ng/ml/hr, and aldosterone concentration was 145ng/dl (significantly higher than levels seen in normal pregnancy). Urine diuretic screen was negative. Herbal medicines were stopped, and oral and IV potassium replacement was begun. Her voiding symptoms resolved, but hypokalemia persisted. Subsequent 24 hour urine collection performed when serum K was 2.2 meq/L revealed: Na 158 meq/24hr, urine K 554 meq/24hr(high), and urine Ca 440 mg/24hr(high). She was discharged on potassium supplements (240 meq/d).

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Summary of Results: The findings of refractory hypokalemia, renal K wasting, metabolic alkalosis, hyperreninemia, hyperaldosteronism, increased urinary Ca, and normal serum Mg levels in the absence of hypertension or edema are most consistent with previously undiagnosed Bartter’s syndrome. Our patient’s chronic hypokalemia likely worsened due to licorice and corn silk-containing herbal medicines, which also contribute to renal K wasting. ACE inhibitors, K-sparing diuretics and NSAIDs have all been recommended in the treatment of Bartter’s syndrome. Since each of these has potential teratogenic effects, they were not utilized in our patient. Her pregnancy has continued uneventfully (K ranging from 2.5 – 3.0 meq/L).

Conclusions: Bartter’s syndrome can be associated with normal pregnancy outcomes and can be distinguished from surreptitious vomiting or diuretic abuse by measuring urine CI concentration and screening the urine for diuretics.

228 CLINICAL UTILITY OF RENAL ULTRASOUND IN ACUTE KIDNEY INJURY
A.S. Podoll and K.W. Finkel. University of Texas Health Science Center, Houston, TX.

Purpose of Study: Acute kidney injury (AKI) occurs in hospitalized patients especially the critically ill with an incidence of 16% to 23%. A small incremental rise in serum creatinine has been shown to portend a higher mortality. A renal ultrasound (RUS) is commonly obtained in AKI to exclude obstruction. Conversely, the cause of AKI in the hospitalized patient most commonly occurs from acute tubular necrosis, acute interstitial nephropathy or contrast-induced nephropathy. Therefore, in a patient with previously stable renal function, the likelihood of an acute obstruction leading to AKI is low.

Methods Used: A systematic review of RUS studies performed during the period of 2003–2005 at a tertiary referral center. Data collected included age, sex, cause of AKI, history of chronic kidney disease, history of abdominal malignancy, benign prostatic hypertrophy or GU malformation, presence of oliguria and if the patient required intensive care management.

Summary of Results: An total of 4443 inpatient RUS were performed over the three year period, of which 2854 studies were selected after exclusion of patients if they were transplant recipients, institutionalized, pregnant or pediatric. Forty-seven cases of the 2854 (1.6%) were identified to have an obstructive etiology of AKI. A higher predictive risk of obstructive uropathy was found in men over 65, history of benign prostatic hypertrophy or history of prior nephrolithiasis. No difference was seen in patients with prior malignancies in this population. 28% of patients had a previous RUS performed and 17% had >2 prior RUS studies. 65% of RUS performed were done with Doppler measurements of arterial blood flow.

Conclusions: The use of RUS as a standard diagnostic test in all cases of AKI does not change the clinical impression or therapeutic treatment plan in most of the patients in a general medical population. Additionally, most RUS were ordered with Doppler readings of the renal arteries. While the utility of Doppler studies is important in the diagnosis of renal artery stenosis, it provides little diagnostic information in the setting of AKI and increases cost per ultrasound examination. We propose the selective use of RUS in the evaluation of AKI to be limited to cases of high pre-test probability or when clinically indicated in an attempt to reduce unnecessary testing and clinical costs.

229 PROTEINURIA IN PREGNANCY WITH UNDERLYING KIDNEY DISEASE

230 TESTICULAR ANGINA: A NOVEL PRESENTATION WHILE ATTEMPTING TO ESTABLISH DRY WEIGHT
A.P. Sequeira and M. Buffington. LSU Health Sciences center, Shreveport, LA.

Introduction: Establishment of dry weight is limited by the development of cramps or hypotension during dialysis. We present a case of testicular angina that developed while trying to attain dry weight.

Case: The patient is a 68-year-old African American male with a history of hypertension, diabetes mellitus and end-stage renal disease on hemodialysis. His surgical history was significant for ischemic colitis with sigmoid resection and abdominal aortic aneurysm repair. He presented initially with worsening shortness of breath after having missed a few dialysis sessions. While attempting to readjust his dry weight on dialysis, he began to complain of testicular pain that occurred peculiarly toward the end of his dialysis sessions. On further questioning, it was learned that he had been treated a few months earlier for possible epididymitis and although his symptoms had initially improved with antibiotics they had recurred over the last month. He denied any history of sexually transmitted diseases. On examination, he had atrophic and very tender testes particularly on the right although externally the scrotum appeared normal. No swelling or hydroceles were appreciable. No prostatic tenderness was noted. A CAT scan of the
abdomen and pelvis revealed severe atherosclerotic disease involving nearly every vessel of the pelvis including the spermatic cord vessels. Doppler evaluation and color-flow analysis was then performed which showed no flow to either testicle. A diagnosis of testicular angina (secondary to ischemia) with testicular atrophy was entertained. He underwent bilateral simple orchectomy. Pathology of resected testes showed extensive atrophy with fibrous parenchyma suggestive of chronic ischemia with evidence of chronic epididymitis.

Discussion: The two commonest mechanisms involved in the development of scrotal pain include ischemia and infection. This case was unique in its presentation. Typically patients complain of cramps or develop hypotension when nephrologists aggressively try to attain a new dry weight. The patient’s symptoms occurred toward the end of dialysis when his blood pressure and intravascular volume were relatively low. This may have aggravated the underlying ischemia. It is believed that the chronic ischemia may have predisposed to a smoldering epididymitis.

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RENA L RESPONSES TO ACUTE ADMINISTRATION OF HUMAN RECOMBINANT TNF-ALPHA IN MICE

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Purpose of Study: TNF-α, an inflammatory cytokine, has been implicated in the pathogenesis of renal injury observed in angiotensin II-induced hypertension and other kidney diseases. However the acute effects of TNF-α on renal hemodynamic and excretory function are not yet clearly defined. In the present study, we have examined the renal effects of acute administration of human recombinant TNF-α (rTNF-α) in anesthetized mice (C57BL/6 strain).

Methods Used: Right jugular vein was cannulated for intravenous infusion of saline and drugs. Right carotid artery was cannulated and connected to a pressure transducer to measure systemic arterial pressure. Urine was collected from the bladder through a cannula inserted into it. Renal blood flow (RBF) and glomerular filtration rate (GFR) were determined by PAH and inulin clearance respectively. After 60 min of control clearance period, a continuous infusion of rTNF-α (0.33 μg/kg/min) was started. After 15 min of stabilization period following initiation of rTNF-α infusion, clearance collections were made for another 60 min.

Summary of Results: Administration of rTNF-α (n=6) resulted in decreases in RBF (7.9±0.3 to 6.4±0.3 ml/min/g; p<0.05) and GFR (1.0±0.06 to 0.62±0.08 ml/min/g; p<0.05) without altering systemic arterial pressure. However there were increases in urine flow (9.3±1.4 to 15.0±2.0 μl/min/g; p<0.05), sodium excretion (0.77±0.25 to 1.37±0.26 mmol/min/g; p<0.05) as well as fractional excretion of sodium (0.59±0.22 to 1.45±0.39 %; p<0.05). These responses to rTNF-α were not seen in animals pre-treated with a soluble TNF-α receptor fusion protein, etanercept (which binds with TNF-α and prevents its cellular action; 5 mg/kg, ip. 24 hr and 3 hr before the administration of rTNF-α).

Conclusions: These results demonstrate that rTNF-α administration in vivo can cause acute functional changes in the kidney. The data showed that rTNF-α acts as a vasoconstrictor as well as natriuretic agent in the kidney. The natriuretic effect may be due to its direct inhibitory action on epithelial sodium channel activity as reported previously in many in vitro studies.

W. Shao, D.M. Seth, and I.G. Navar. Tulane University Medical School, New Orleans, LA.

Purpose of Study: In several models of Angiotension II (Ang II)-induced hypertension, the intrarenal Ang II levels are greater than the circulating Ang II concentrations due to increased AT1 receptor-mediated Ang II internalization and stimulation of intrarenal angiotensinogen. However, the relative contributions of the source(s) of the increased intrarenal content have not been fully elucidated. Thus, the objective of the present study was to determine the extent to which the elevated intrarenal Ang II occurring during Ang II-dependent hypertension is due to accumulation of the peptide from the systemic circulation and how much of the increase is due to intrarenal de novo formation of Ang II.

Methods Used: Male Sprague-Dawley rats were divided into two groups: Control (n=3) and Val5-Ang II infused (n=5). Val5-Ang II, which exerts the same effects as endogenous Ile5-Ang II, was infused at 80 ng/min via a subcutaneous osmotic minipump for 14 days. On day 14 the animals were sacrificed by conscious decapitation and blood and kidney samples were harvested. All of the samples were partially purified by solid phase extraction and then subjected to HPLC in order to separate Val5-Ang II from Ile5-Ang II and the peptide levels in the fractions were measured by RIA.

Summary of Results: In the Val5-Ang II infused rats, by day 12, systolic blood pressure increased significantly from 127±1.4 to 188±2 mmHg; p<0.01. The kidney Val5-Ang II levels were 2.8±0.4 times higher than the plasma Val5-Ang II; p<0.01. Also in the infused animals, the kidney Ile5-Ang II levels; being 4.4±1.1 times higher than the plasma Ile5-Ang II; p<0.01, were 8.8±1.9 times higher than the kidney Ile5-Ang II levels in the control rats; p<0.01. Relative to the eight-fold increase in total kidney Ang II, up to one-fourth of the elevated Ang II present in the kidney during Ang II-induced hypertension was due to intrarenal accumulation of the peptide from the circulation. The greatest proportion of the increase in the intrarenal Ang II was due to the elevated endogenous Ile5-Ang II which accounted for 75%±3% of the total kidney Ang II in the Val5-Ang II-infused animals.

Conclusions: In conclusion, most of the increases in intrarenal Ang II levels occurring during Ang II-dependent hypertension is due to the increased formation of endogenous Ang II, probably by stimulating angiotensinogen formation.

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LUPUS NEPHRITIS. CLINICAL PRESENTATION AND OUTCOMES. A SINGLE CENTER STUDY

S. Singh and R. Saxena. UT Southwestern Medical Center, Dallas, TX.

Purpose of Study: To evaluate clinical presentation, response to treatment and risk factors associated with progression of lupus nephritis (LN).

Methods Used: Retrospective analysis.

Summary of Results: We evaluated 144 patients (21 males and 123 females) with biopsy proven LN, who presented at our center between January 1999 and 2007. 48% percent were African American (AA), 43.7% were Latin American (LA), 5.5 % Caucasian and 3.0% Asians. Out of 30.55% of the patients who presented with LN as one of the first manifestation, 14.58% had LN as the sole manifestation of SLE. 10.4% of the patients had class 2, 37.5% class 3, 48% class 4, 22% class 5 and 2% had Class 6 LN. Mean activity and chronicity scores were 11.21 and 2.61 respectively. Mean age of LN diagnosis was 32.74 years. Mean serum creatinine and proteinuria were 1.62 mg/dl and 3.95 gms/24hrs.

Among 102 patients with class 3 and 4 LN, 61 patients received intravenous cyclophosphamide (IVC), 24 mycophenolate mofetil (MMF), 4 azathioprine (AZA), 6 received IVC and plasmapheresis and 5 received both MMF and IVC. For maintenance, 27 patients received IVC, 47 MMF, 6 AZA and 2% received other agents. Despite treatment, 29 (28.4%) patients progressed to ESRD and 3 patients died. 17 (58.62%) of the 29 patients who progressed to ESRD had class 4 LN,
10 had Class 3, 1 had class 5 and 1 had Class 2 LN. 9 (33.33%) of the patients who progressed had also class 5 lesion with either class 3 or 4 LN. Nine (31.03%) of the 29 patients were male. Mean serum creatinine at presentation was higher in the group with ESRD (2.36 vs. 1.62). Also, Mean proteinuria and activity scores were higher in ESRD group (4.17 gms and 12.64 respectively). More AA (58.62%) progressed to ESRD as compared to LA (34.48%). Non-compliance with immunosuppression played a role in progression of disease in 12 of the 29 of the patients. 28 of the 29 patients who progressed to ESRD had HTN as a comorbidity. **Conclusions:** LN can be among the first manifestation of SLE in more than 30 % of patients. Despite treatment, about 28% of patients can progress to ESRD. Risk factors for progression are male gender, class 4 LN, African American race, presence of HTN, higher creatinine and activity score. Combination of Class 5 lesion with Class 3 or 4 LN confers higher risk of progression to ESRD. Non-compliance with IS contributes significantly to progression of LN to ESRD.

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**234 HYPERBARIC OXYGEN TREATMENT IN END STAGE RENAL DISEASE PATIENTS WITH CALCIFIC UREMIC ARTERIOPATHY**

G. Wang and J. Navarrete. Emory University School of Medicine, Atlanta, GA.

**Purpose of Study:** We report our experience using Hyperbaric Oxygen therapy (HBO) in treating Calcific Uremia Arteriopathy (CUA).

**Methods Used:** ESRD patients with CUA between 1996 and 2007 were found through hospital records. Data obtained included: age, gender, ethnicity, dialysis modality, time on dialysis, wound location, serum calcium, phosphorus, iPTH, coumadin exposure, calcium-based binders use, corticosteroids exposure, and history of parathyroidectomy. Mortality data was obtained from the hospital chart and the United States Social Security database. Patients were treated with 100% O2 at 2.0-2.4 atmospheres for 90 minutes 5 times per week with a goal of 40 sessions. A Kaplan-Meier survival analysis was performed to evaluate the effect of HBO therapy.

**Summary of Results:** 66 patients with CUA were found. 16 patients did not receive HBO (1 patient refused, 13 had contraindications, and 2 patients were not offered therapy). The median survival time was 279 days for HBO treated patients vs. 96 days for patients who were not treated (p=0.82). 40 had proximal wounds and 26 had distal wounds. There was no statistical difference in survival time (196 vs. 279 days, p=0.51). 13 patients underwent parathyroidectomy after the diagnosis of CUA. The mean iPTH was 960±756 pg/mL. 7 patients underwent parathyroidectomy prior to the diagnosis of CUA and the iPTH was 498±636 pg/mL. The prevalence of coumadin exposure was high compared to a reference dialysis population (26 vs. 4%).

**Conclusions:** CUA patients treated with HBO appear to have a longer survival time than those that did not receive HBO. The location of the lesions does not have a significant impact on patient survival.

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**SSCI and SAFMR Plenary Session**

Young Investigator Award Finalists
SAFMR/SSCI/ Young Faculty Award
SAFMR/SSCI/ Trainee Research Award
8:00 AM
Friday, February 22, 2008

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**235 EXAGGERATED NEOINTIMA FORMATION IN HUMAN C-REACTIVE PROTEIN TRANSGENIC MICE IS IgG Fc RECEPTOR TYPE I (FcγRI) DEPENDENT**

F. Hagé1, D. Xing1, S. Oparil2, W. Feng1, M. McCrory2, Y. Chen1, and A. Szalai2. 1University of Alabama at Birmingham, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** Neointima formation after vascular injury is exaggerated in ovariectomized (OVX) human C-reactive protein transgenic mice (CRPtg) compared to non-transgenic mice (NTG). We tested the hypothesis that this CRP mediated exacerbation requires immunoglobulin G Fc receptors (FcγRs).

**Methods Used:** OVX NTG, CRPtg, and CRPtg lacking FcγRI, FcγRIIb, FcγRIII, or the common γ-chain (FeγR) had their common carotid artery ligated. Twenty-eight days after injury mice were euthanized and the neointimal formation was examined using computer-assisted morphometric analysis of digitized images.

**Summary of Results:** Neointimal thickening in CRPtg/FcγRI-/- and CRPtg/FcγRγ-/- was significantly less than in CRPtg and no worse than in NTG, whereas in CRPtg/FcγRIIb-/- and CRPtg/FcγRIII-/- neointimal thickness was equal to or greater than in CRPtg. Immunohistochemistry revealed human CRP in the neoinima of CRPtg but little or none was observed in those lacking FcγRI or FeγR. Real-time RT-PCR demonstrated that FcγR types I-III were expressed in the CRPtg arteries, with FcγRI expression increasing by threefold after ligation injury. Levels of serum complement (C3), neointimal deposition of complement (C3d), and cellular composition (monocytes, macrophages, lymphocytes) in the neoinima did not differ among the different CRPtg genotypes. However, by immunofluorescence, a neointimal population of F4/80+CRP+ was revealed only in OVX CRPtg.

**Conclusions:** The exaggerated response to vascular injury provoked by CRP in OVX CRPtg depends on FcγRI and likely requires its expression by F4/80+ cells. Our findings support a functional role for CRP in the pathogenesis of vascular disease and begin to delineate a mechanism by which this may occur.

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**236 INDUCTION OF INDOLAMINE 2, 3 DIOXYGENASE (IDO) IN DENDRITIC CELLS BY HISTONE DEACETYLASE INHIBITORS IS CRITICAL FOR REGULATION OF ACUTE GVHD FOLLOWING EXPERIMENTAL ALLOGENIC HEMATOPOIETIC STEM CELL TRANSPLANTATION**

T. Toubal1, Y. Sun1, S. Clouthier2, I. Tawara3, E. Gazza2, C. Dinarello1, J.L. Ferrara1,2, and P. Reddy1. 1University of Michigan Comprehensive Cancer Center, Ann Arbor, MI; 2University of Michigan Comprehensive Cancer Center, Ann Arbor, MI and 3University of Colorado Health Sciences, Denver, CO.

**Purpose of Study:** Histone deacetylase (HDAC) inhibitors reduce experimental acute graft-versus-host disease (GVHD) and suggest that HDAC inhibitors regulate dendritic cell (DC) function. However, the critical cellular and molecular mechanisms underpinning these observations are not known.

**Methods Used:** We investigated the mechanisms involved in the regulation of DCs and experimental GVHD by two hydroxamic acid containing HDAC inhibitors, suberoylanilide hydroxamic acid (SAHA) and ITF 2357.

**Summary of Results:** Pre-treatment with HDAC inhibitors significantly reduced DC mediated in vitro responses to toll receptor (LPS) and the stimulation of allogeneic T cells (P<0.05). Mechanistic studies demonstrated that SAHA and ITF 2357 increased expression of IDO at both mRNA and protein levels. Blockade of IDO induction with specific small interfering RNA (siRNA) in the wild type (WT) DCs and those derived from IDO deficient (IDO-/-) animals confirmed a functional role for IDO in HDAC inhibitor mediated regulation of DCs. DNA-protein interaction analysis with ChIP assay demonstrated that both
Conclusions: Our study indicates that IL-17 signaling promotes IFN-α expression and thereby may provide a novel pathway by which IL-17 could promote the expression of IFN-α is essential to antibody formation.

Summary of Results: Increased type I IFN expression is associated with lupus, whereas IL-17-producing CD4+ T-cells (Th17) are thought to play critical roles in rheumatoid arthritis, psoriasis, inflammatory bowel disease, and multiple sclerosis. However, patients with Th17-mediated diseases could also present with a type I IFN signature, suggestive that IL-17 and type I IFN may not be mutually exclusive for the induction of disease. We hypothesize that IL-17 promote type I IFN expression in an autoimmune mouse model.

Methods Used: Flow cytometry, confocal imaging, ELISA, polymerase chain reaction.

Summary of Results: A novel model of autoimmune disease, BXD2 mice exhibit autoantibody-mediated destruction of the glomeruli and joint cartilage. BXD2 mice exhibit an increased presence of both IL-17 and type I IFN. BXD2 mice displayed significantly increased serum IL-17 (5-6 fold; p<0.01), and Th17 population in the spleen of BXD2 mice relative to that of non-autoimmune mice (14% vs. 0.1%) as demonstrated by ELISA and flow cytometry. Blood mononuclear cells showed increased type I IFN message levels (6-fold; p<0.01), and treatment with CpG increased serum IFN-α (5-50-fold) in BXD2 mice. Confocal microscopy showed the presence of an increased population (2-4 fold; p<0.005) of plasmacytoid dendritic cells (pDCs). To determine whether IL-17 could promote the expression of IFN-α in BXD2 mice, we used an AdIL-17R:Fc (2×10^9 pfu iv) to block IL-17 in 8-mo-old BXD2 mice which had high sera levels of IL-17. Ten days after AdIL-17R:Fc treatment, there was a significant decrease in IFN-α production by pDCs after CpG treatment as revealed by confocal microscopy staining and analysis of sera levels of IFN-α. When immunized with NP-CGG, mice treated with AdIL-17R:Fc showed increased serum NP-CGG antibody titers (2-fold; p<0.05), and decreased autoantibody titers of anti-dsDNA, anti-histone and anti-BP. In vivo blocking of IFN-α in NP-CGG immunized BXD2 mouse also decreased antibody serum titers to pre-immunization levels, demonstrating that IFN-α is essential to antibody formation.

Conclusions: Our study indicates that IL-17 signaling promotes IFN-α expression and thereby may provide a novel pathway by which IL-17 promote antibody production through type I IFN.

238 BACTERMIA IN PATIENTS WITH HIV AND HEPATITIS C: ANALYSIS OF THE DMMS STUDY

239 HYPOVITAMINOSIS D IN AFRICAN-AMERICANS RESIDING IN MEMPHIS, TENNESSEE WITH AND WITHOUT HEART FAILURE

Volume 56, Issue 1
Summary of Results: Serum 25(OH)D \( \leq 30 \) ng/mL was found in 96% and 90% with protracted or short-term decompensated HF, where it was of moderate to marked severity (<20 ng/mL) in 83% and 76%, respectively. In patients with either compensated or no HF, 25(OH)D <30 ng/mL was found in 95% and 100%, respectively, and in 30% of volunteers. Serum 1,25(OH)2D3 levels were normal and did not differ between patient groups. Serum PTH levels were normal and did not differ between patient groups. Serum PTH between patient groups. In preliminary studies, twice-weekly application of irradiation from a UVB-emitting lamp to the exposed back in suberythemal doses for 12 wks in AA patients with hypovitaminosis D lead to a 63% improvement in 25(OH)D.

Conclusions: Hypovitaminosis D is prevalent amongst AA residing in Memphis, with or without HF. Elevations in serum PTH in keeping with secondary hyperparathyroidism are only found in decompensated HF, where hypovitaminosis D and other factors are contributory. Correction of hypovitaminosis D by a “vitamin D lamp” holds promise towards an inexpensive home therapy for the management of AA with heart failure.

SSPR Plenary Session
Young Investigator Award Finalists
8:00 AM
Friday, February 22, 2008

240 SWALLOW-BREATH INTERACTION DURING NONNUTRITIVE SUCK
E.W. Reynolds1, P. Vijaygopal1, P.R. Abhijit2, and R. Charnigo2.
1University of Kentucky, Lexington, KY; 2University of Kentucky, Lexington, KY.

Purpose of Study: Respiratory changes during rhythmic suckle feeding include deglutition apnea, changes in inspiratory/expiratory time, altered tidal volume and changes in minute ventilation. Previous authors have shown minimal changes in breathing during nonnutritive suck. There has been little work on swallow-breath interaction during nonnutritive suck.

Methods Used: Infant patients were studied during 1 minute of nonnutritive suck. Patients were fitted with the following equipment: 2 types of acoustic detectors for cervical auscultation, a naso-pharyngeal tube to measure swallow pressure, a catheter placed through a pacifier so that the tip is flush with the nipple to measure suckle pressure, a thermistor placed at the nares to measure temperature changes (airflow), a chest band to measure thoracic motion and a pulse oximeter. Continuous 8-channel recordings were made during each study. 10 infants were studied weekly for a total of 15 studies. Infants were healthy and high-risk preterm infants.

Summary of Results: 78 swallow events were noted during nonnutritive suck. All swallow events were accompanied by altered respiration, including 20 alterations of expiratory or inspiratory time, 21 obstructive apneas, 37 central apneas and 1 significant bradycardic event. Suckle did not correlate with changes in respiratory parameters. There was no correlation between prolonged inspiratory/expiratory times with gestational age or birth weight. There was a trend toward more obstructive apnea with lower birth weight (p=0.0605). There was a highly significant association between lower birth weight and more central apnea (p=0.0005).

Conclusions: During nonnutritive suck episodes, suckle has minimal impact on respiration. However, swallow impacts respiration directly and universally by altering inspiratory or expiratory time or by inducing central or obstructive apnea. This swallow-breath relationship is reflexively controlled through the nucleus tractus solitarius. Maturation of this process may be a signal for feeding readiness in the growing preterm infant. Further studies of how this relationship changes over time or is affected by diseases states and gestational age are underway. This work was funded by the NICHD Grant 5K23D05081-02.

241 PaCO2 LEVELS AND NEURODEVELOPMENT IN PREMATURE INFANTS
University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: We have previously shown maximum (max) and minimum (min) PaCO2, as well as the fluctuations (max-min) in PaCO2 over the first 4 days, were associated with severe intraventricular hemorrhage (IVH). Our purpose in this study was to determine associations between PaCO2 in the first 4 days and neurodevelopment at 18–22 months.

Methods Used: Stepwise regression models and classification and regression trees (CART) were developed for neurodevelopmental impairment (NDI: CP/Blind/Deaf/MDI or PDI<70), mental developmental index (MDI), and psychomotor developmental index (PDI) using as dependent variables antenatal, intrapartum, and neonatal clinical variables in combination with the max, max-min, and time-weighted average (avg) PaCO2 over the first 4 days, in 420 infants 401–1250g birth weight (BW).

Summary of Results: Predictor variables by regression (p<0.2): For NDI: male gender, premature prolonged rupture of membranes (PPROM), lower BWT, inotrope use, no BPD, sepsis, severe IVH, and lower 1-minute apgar score. For a lower MDI: male gender, PPROM, no preeclampsia, no antenatal steroids, lower BWT, severe IVH, sepsis, and higher avg PaCO2. For lower PDI: female gender, PPROM, lower BWT, severe IVH, sepsis, higher avg and higher max-min PaCO2. Predictor variables by CART: For NDI: gender is the most important factor with 54% males vs. 30% females having NDI. After gender, NDI increases with 5 minute Apgar<7 followed by max PaCO2>64 in males, and BWT<746g followed by an avg PaCO2>51 in females. For MDI: Gender is again the most important factor (MDI 76 in males vs. 87 in females). For males, the next factor is max-min PaCO2>43 (MDI 66 for >43 vs. 80 for <43). For females, the next factor is GA (82 for <27 wks; 94 for >27 wks). For PDI: Severe IVH is the most important factor (PDI 74 with severe IVH; 91 for those without). For those with severe IVH, the next factor is max-min PaCO2>43 (PDI 60 vs. 81 for max-min PaCO2<43). Given no severe IVH, the next factor is max-min PaCO2>43 (PDI 81 vs. 93 for max-min PaCO2<43).

Conclusions: Regression and CART analysis indicate that extreme fluctuations in PaCO2 are associated with a worse neurodevelopmental outcome, even after correction for severe IVH and other clinical variables. We speculate that ischemia-reperfusion injury induced by large fluctuations in PaCO2 may be associated with cerebral injury.
243 MATRIX METALLOPROTEINASE ACTIVITY IN PEDIATRIC ACUTE LUNG INJURY

M. Kong, Y. Li, A. Gaggarr, M. Winkler, and J. Clancy. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To examine matrix metalloproteinase (MMP) expression and activity in pediatric Acute Lung Injury (ALI), specifically in viral induced ALI.

Methods Used: Lower airway secretions were collected from 28 pediatric patients intubated for ALI in the intensive care unit and from 14 pediatric subjects intubated for elective surgery in the Operating Room. Samples were probed for MMP expression and activity using immunoblotting and ELISA-based quantitative analysis. In-vitro studies utilized Respiratory Syncytial Virus (RSV) A2 strain and human bronchial epithelial cells (16HBE cells).

Summary of Results: MMP-8 and MMP-9 expression were elevated in lung secretions of pediatric ALI patients, with lower levels of MMP-10 and MMP-11 detected. Approximately 75% of the total MMP-8 and MMP-9 activity was constitutive in early ALI. In subjects who remained intubated for >10 days (n=14), MMP-9 activity dropped by 13-fold relative to day 0–10 values (p<0.004). MMP-9 reverted to a regulated phenotype, with <25% of total activity demonstrating constitutive function. In contrast, MMP-8 activity remained elevated, with a predominantly constitutive activity pattern demonstrated in both early (days 0–10) and later stages of ALI (days 11–20). Tissue Inhibitor of Matrix Metalloproteinase-1 (TIMP-1), a natural inhibitor of MMPs was detected in the majority of ALI samples. Discriminating MMP-9:TIMP-1 ratios were seen for ALI that resolved by 10 days compared with protracted ALI (defined as >10 days). The highest MMP-8 and MMP-9 activity was seen in subjects with ALI caused by viral infection, primarily by RSV, relative to non-viral ALI and controls. Complimentary in-vitro studies demonstrated up-regulation of MMP-9 mRNA transcription and MMP-9 protein expression and release in RSV infected 16HBE cells compared with uninfected control cells.

Conclusions: These results identify a limited repertoire of MMP isoforms in the lower lung secretions of pediatric ALI patients, and demonstrate changing activities of the two predominant MMP isoforms (~8 and ~9) with disease progression. Our studies identify a direct link between RSV infection and MMP-9 expression in human airway epithelial cells, potentially contributing to heightened MMP-9 detection in viral-induced ALI. These findings lend support to further investigations to clarify the role of these MMPs in ALI manifestation.

244 REGULATION OF EPITHELIAL SODIUM CHANNELS AND GLUCOCORTICOID RECEPTORS BY GLUCOCORTICOIDS SELECTIVE FOR TRANSACTION

T.A. Biela, S.R. Seidner, B. Henson, and S.B. Mustafa. University of Texas Health Science Center, San Antonio, TX.

Purpose of Study: Lung fluid clearance is coupled to Na+ transport via epithelial sodium channels (ENaC). ENaC consists of three subunits α, β, and γ. Glucocorticoids (GC) e.g. dexamethasone (dex) regulate expression of ENaC subunits in lung epithelial cells. Dex, once bound to the GC receptor (GCR) can either directly stimulate transcription of certain genes via binding to the GC response element (i.e., transactivation) or modify gene expression by protein-protein interactions with other transcription factors e.g. NF-kappa B (i.e., transrepression) in a cell-specific manner. Treatment of premature infants with postnatal dex is discouraged due to decreased lung growth and other potential neurological side effects. Here, we evaluated the effects of synthetic GC selective for transaction (ZX-57740 and ZX-077945) on ENaC subunits and endogenous GCR expression compared to dex in mouse lung (MLE-12) epithelial cells.

Methods Used: MLE-12 cells were exposed individually for different times to dex, ZX-57740, or ZX-077945 (10nM). RT-PCR was used to assess changes in mRNA expression and immunoblotting was employed to detect changes in protein levels compared to untreated cells.

Summary of Results: Exposure of MLE-12 cells to either ZX-57740 or ZX-077945 (10nM) for 48h did not affect cell proliferation or injury as assessed by [3H] thymidine and LDH assays. Dex treatment for 48h caused a slight increase in cell proliferation and a 2-fold increase in LDH. All GC treated cells demonstrated an elevation in α-ENaC mRNA accompanied by an increase in total whole cell α-ENaC protein levels. This correlated with an increased abundance in cell surface α-ENaC. Cellular β-ENaC protein levels were elevated after 48h of treatment. There was a 3-fold elevation in γ-ENaC protein expression at 24h. In the presence of RU-486, α-ENaC protein levels were suppressed in all GC-treated samples. Exposure to dex for up to 48h decreased endogenous GCR protein compared to untreated cells, but GCR protein levels remained abundant after treatment with either ZX-57740 or ZX-077945.

Conclusions: Our findings suggest that synthetic GC selective only for transactivation may have potential therapeutic value in instances when the transrepressive properties of dex are undesirable.

245 INHIBITION OF CXCR2 AND P38 SIGNALING CAN BLOCK ECMO-RELATED INFLAMMATION

1/AB, Birmingham, AL; 2/UB, Birmingham, AL and 3/UB, Birmingham, AL.

Purpose of Study: Neonates treated with ECMO frequently develop a systemic inflammatory response syndrome (SIRS). In ECMO-related
SIRS, endothelial-derived chemokines attract activated neutrophils, which cause vascular injury. Consistent with this model, IL-8, a neutrophil chemoattractant, is associated with ECMO-related SIRS. However, IL-8 is not a therapeutic target because there are six other homologous ‘ELR-CXC’ chemokines with similar activities. We hypothesized that endothelial-neutrophil interaction can be targeted in ECMO-related SIRS by blocking endothelial chemokine production or cognate receptors on neutrophils to block neutrophil chemotaxis.

Methods Used: CXCL1-8 were measured serially in 20 neonates on ECMO and in 10 babies on assisted ventilation. To determine vascular conditions under which chemokines are produced, umbilical venous, aortic and microvascular endothelial cells were exposed to laminar flow shear to simulate capillary, medium and large vessel conditions (4-16 dynes/cm²). CXCL1-8 expression was measured by qPCR and ELISA. Signaling mediators were identified using a MAP kinase array, western blots, immunocytochemistry, and specific inhibitors. Cord neutrophils were exposed to conditions in the ECMO circuit including ECMO membrane, 50% FiO₂, and high flow shear, and chemotaxis was measured using a standard assay.

Summary of Results: ELR-CXC chemokines were upregulated during ECMO; CXCL1 levels were highest (median 1282, range 480-7103 pg/mL, day 3-4 on ECMO vs. 124, range 13-315 pg/mL in controls, p<0.01). In vitro, endothelial chemokine production was activated by low shear (1.5-2.4x) but inhibited by high shear. Low shear induced chemokines via cell membrane heparan sulfates, β1-integrins, FAK, p38/p38β, MSK-1, and NF-κB. Shear-induced chemokines activated p38 in a +ve feedback loop to further increase chemokine production, which was blocked by p38 and CXCR2 inhibition. p38 inhibitors were most effective in blocking chemokine production. Neutrophil chemotaxis was also blocked by CXCR2 and p38 inhibitors.

Conclusions: Inhibition of p38 signaling and CXCR2 can block endothelial chemokine production as well as neutrophil chemotaxis. Because endothelial-neutrophil interaction is a key mechanistic event in ECMO-related SIRS, p38 and CXCR2 can be potential therapeutic targets.

246 DEVELOPMENTAL DEFICIENCY OF TGF-β ACTIVITY PREDISPOSES THE PREMATURE NEONATE TO NECROTIZING ENTEROCOLITIS

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Purpose of Study: NEC is believed to occur when mucosal injury allows bacterial translocation into the lamina propria, causing leukocyte recruitment and tissue destruction. This model is inconsistent with observations in the adult that intestinal cells such as macrophages are ‘energetic’ to bacterial products. Because NEC is seen almost exclusively in the premature infant, we hypothesize that NEC occurs because normal mucosal mechanisms of tolerance to bacterial products are developmentally regulated, and hence, deficient in the premature neonate.

Methods Used: Fetal & adult intestinal macrophage TNF-α expression was determined by immunostaining human tissue and direct measurements in cultured murine cells. Because intestinal macrophage tolerance to bacterial products results from extracellular matrix factors, we prepared tissue-conditioned media (TCM) from 12-24 wk human fetal (n=25) and adult intestinal tissue (n=3) to investigate developmental changes. Monocytes were treated with TCMS×2h and LPS-stimulated cytokine production was measured by ELISA and microarray. TGF-β isoforms and activators were measured in TCMS by qPCR, ELISA, and std. bioassays. We also measured TGF-β2 and MMP2 expression in normal fetal and NEC tissue. Finally, we compared platelet-activating factor+LPS-induced gut injury in wild-type and TGFβRII-deficient mice (lack all TGF-β signaling).

Summary of Results: Unlike in adult, fetal intestinal macrophages respond to LPS and produce TNF-α. Intestinal TCMS suppressed monocyte TNF-α production in a gestation-dependent manner (TNF-α: 552±245 with media alone, 4174±719 at 11-17 wks, 2518±462 at 18-24 wks, and 876±546 pg/mL with adult T-CM). Intestinal TCMS similarly suppressed IL6, IL1β, IL8 production, neutrophil chemotaxis, and NFκB activation. TCM effects correlated with TGF-β bioactivity (p<0.01), TGF-β2 concentrations, and MMP2 activity. Both TGF-β2 and MMP2 are significantly downregulated in NEC. PAF-LPS-induced injury was more severe in TGFβRII-deficient mice (injury score 1.13±0.16 in WT vs. 3±0.45, p<0.01).

Conclusions: Normal mucosal tolerance to bacterial products is developmentally regulated and is related to TGF-β2 expression. In premature infants, deficient TGF-β activity may predispose to mucosal inflammation, as seen in NEC.

Southern Society for Clinical Investigation and International Academy of Cardiovascular Sciences—NA Chapter Joint Session I: Young Clinician Scientist Award Competition 12:20 PM Friday, February 22, 2008

247 MICROALBUMINURIA IS ASSOCIATED WITH SEVERE ANGIOGRAPHIC CORONARY ARTERY DISEASE IN DIABETICS AND NON-DIABETICS

P. Kakar1, R. Sukhiija2, R. Sachdeva2, and J.L. Mehta1. 1UAMS-AHEC, Fort Smith, AR and 2University of Arkansas for Medical Science, Little Rock, AR.

Purpose of Study: Microalbuminuria is a well known risk factor for coronary artery disease (CAD) in diabetics as well as non-diabetics. It is associated with higher cardiovascular mortality, especially in diabetics. Microalbuminuria appears to be a signal from the kidneys that the vasculature, particularly the endothelium, is not functioning normally. However, there are no data linking angiographic severity of CAD to microalbuminuria.

Methods Used: We examined coronary angiograms for the extent of severe CAD (luminal narrowing ≥50%) in the following four groups; group A: patients with type 2 diabetes mellitus (DM) and microalbuminuria (n=54); group B: patients with DM but no microalbuminuria (n=54); group C: patients without DM but with microalbuminuria (n=47); and group D: patients without DM and without microalbuminuria (n=47).

Summary of Results: The mean age of patients in groups A, B, C, and D was 71 ± 7 years, 71 ± 6 years, 71 ± 7 years, and 72± 7 years, respectively (p-NS). Gender distribution in the 4 groups was also not significantly different. There was no significant difference in the prevalence of hypertension, hypercholesterolemia, and current smoking between the four groups. Three- vessel CAD was present in 40 of 54 group A patients (83%), in 23 of 54 group B patients (43%), in 18 of 47 group C patients (38%), and in 10 of 47 group D patients (21%) (p<0.001 comparing group A with group B, group A with group C, and group A with group D; p<0.025 comparing group B with group D). Two- or three- vessel CAD was present in 50 of 54 group A patients (93%), in 37 of 54 group B patients (69%), in 35 of 47 group C patients (74%), and in 21 of 47 group D patients (45%) (p<0.01 comparing group A with group D; p<0.005 comparing group A with group B, and group C with group D; p<0.02 comparing group A with group C and group B with group D).
Conclusions: Patients with microalbuminuria have more severe angiographic CAD than those without microalbuminuria. This relationship is independent of other risk factors, and is particularly evident in patients with DM. Therefore, patients with microalbuminuria, especially those with DM, may need screening and more aggressive treatment for CAD than those without microalbuminuria.

248 HIGH-SALT DIET AND ALDOSTERONE INDUCES VASCULAR DAMAGE IN PATIENTS WITH RESISTANT HYPERTENSION


Purpose of Study: Experimental data indicate that aldosterone excess and high dietary salt ingestion combine to worsen vascular function. To what degree this interaction occurs in humans is unknown. The purpose of this study was to determine the effect of salt diet and aldosterone on arterial stiffness and endothelial function in subjects with resistant hypertension.

Methods Used: Consecutive subjects with resistant hypertension (n=5) were prospectively evaluated by measurement of plasma renin activity; 24-hr urinary aldosterone, sodium, and albumin excretion; 24-hr ambulatory blood pressure; pulse wave velocity (tonometry), flow-mediated dilation (FMD) of the brachial artery. Subjects ingested a low-salt diet (<3 g of salt per day) for 1 week, resumed their normal diet for 2 weeks, followed by a high-salt diet (>18 g of salt per day) for 1 week. Procedures were repeated after each salt intervention.

Summary of Results: The mean clinic blood pressure for all patients was 154.3±28.2/87.3±11.9 mm Hg on an average of 3.2 medications. Daytime systolic BP (151.6±13.8 vs. 124.0±13.9 mm Hg, p=0.02), 24-hr systolic (150.2±16.1 vs. 125.4±12.5 mm Hg, p=0.03) and diastolic BP (81.0±8.7 vs. 68.8±6.4 mm Hg, p=0.03) significantly increased after high-salt diet compared to low-salt diet. Patients after high-salt diet tended to have impaired FMD and pulse wave velocity compared to low-salt diet, but the differences did not reach statistical significance. Blood pressure and vascular function changes tended to be higher in subjects with high (>12 μg/24-hr) compared to normal urinary aldosterone excretion.

Conclusions: These results indicate that high salt diet worsens vascular dysfunction in patients with resistant hypertension. This effect tends to be more pronounced in subjects with high aldosterone levels.

249 CINACALCET AND THE PREVENTION OF SECONDARY HYPERPARATHYROIDISM IN RATS WITH ALDOSTERONISM


Purpose of Study: In rats receiving aldosterone/salt treatment (ALDOST), increased urinary and fecal Ca2+ excretion leads to a fall in plasma-ionized Ca2+ and appearance of secondary hyperparathyroidism (SHPT) with parathyroid hormone (PTH)-mediated intracellular Ca2+ overload inducing oxidative stress in diverse tissues. Parathyroidectomy prevents SHPT, Ca2+ overloading and oxidative stress. Cinacalcet (Cina), a calcimimetic that raises the threshold of the parathyroids’ Ca2+-sensing receptor, could provide for a “medical parathyroidectomy.” Cina was coadministered to rats with ALDOST to assess its ability to prevent SHPT and associated pathophysiologic responses.

Methods Used: We monitored plasma-ionized [Ca2+]0, PTH, total Ca2+ in heart, intracellular free [Ca2+], in peripheral blood mononuclear cells (PBMC), evidence of oxidative stress in heart (malondialdehyde, MDA), PBMC (H2O2 production), and plasma α1-antiproteinase activity. Cina-treated rats for 4 wks were compared to 4 wks ALDOST alone (0.75 mg/kg plus 1% NaCl/0.4% KCl) and to untreated age-/gender-matched controls.

Summary of Results: In comparison to controls, ALDOST led to: a fall (p<0.05) in [Ca2+]0 (1.16±0.01 vs. 1.03±0.01 mmol/L), which was not prevented by Cina (1.01±0.03 mmol/L); a rise (p<0.05) in plasma PTH (36.7±17 vs. 134±19 pg/mL) that was attenuated by Cina (69±12 pg/mL); increased (p<0.05) cardiac [Ca2+]i (3.92±0.25 vs. 6.78±0.35 nEq/mg FFDT) and PBMC [Ca2+]i (29.8±2.3 vs. 50.2±2.3 mmol/L), each of which was prevented with Cina (3.65±0.10 nEq/mg FFDT and 32.5±6.0 mmol/L, respectively); increased cardiac MDA, a marker of lipid peroxidation, (0.56±0.03 vs. 0.94±0.07 mmol/mg protein) and PBMC H2O2 production (63.5±7.5 vs. 154.0±25.2 mcb) and reduced (p<0.05) plasma α1-antiproteinase activity (39.8±0.6 vs. 29.6±1.8 nM), which each prevented by Cina (0.66±0.04 mmol/mg protein, 58.2±12.7 mcb and 37.0±1.2 mM, respectively).

Conclusions: PTH-mediated intracellular Ca2+ overloading accounts for the induction of oxidative stress in diverse tissues in rats with aldosteronism and which can be prevented by Cina, a calcimimetic, that prevents the appearance of SHPT.

250 HYPERTHYROIDISM AND ACTIVATING AUTOANTIBODIES TO β2 ADRENERGIC AND M2 MUSCARINIC RECEPTORS: SYNERGISTIC ROLE IN ATRIAL FIBRILLATION

R.M. Pappas, S. Stavriakos, E. Patterson, L. DeAos, M.W. Cunningham, D.C. Kem1,2, and X. Yu1. 1University of Oklahoma Health Sciences Center, Oklahoma City, OK and 2VA Medical Center, Oklahoma City, OK.

Purpose of Study: Hyperthyroidism is an important factor in the etiology of atrial fibrillation (AF). Sym pathetic and parasympathetic nervous systems have a synergistic role in the initiation and maintenance of AF. We hypothesized that autoantibody activation of beta adrenergic (β-AR) and M2 muscarinic (M2-R) receptors would compound the effects of hyperthyroidism in the pathogenesis of AF.

Methods Used: We examined 24 patients with Graves’ disease for the presence of activating autoantibodies to β-AR (AAβAR) and M2-R (AAM2). 11 patients had AF and 13 had sinus rhythm (SR). The functional properties of the autoantibodies were studied by examining the inotropic effects of purified IgG from their sera in an isolated perfused canine Purkinje fiber preparation. The response before and after exposure to atropine (100nM) was used to estimate the inhibitory effect of the AAM2 component contained within the IgG.

Summary of Results: IgG alone had a positive inotropic effect in 7 patients, had no effect in 13 and a negative inotropic effect in 4 patients (29% positive). IgG in the presence of atropine resulted in a significant contractile response in 10 of the 17 patients with either no or a negative inotropic effect with IgG alone and a significant incremental response in 2 of the 7 patients who demonstrated an initially positive inotropic response with IgG alone. This positive inotropic response was blocked with the non-selective β-blocker, nadolol (100nM). In the remaining 12 patients, IgG plus atropine had no additional effect. Atropine alone did not affect the contractility. Thus, 71% of the hyperthyroid patients demonstrated evidence for AAβAR, while 12 (50%) had evidence for both AAβAR and AAM2 based on their positive response with atropine. 82% of patients with AF (9/11), compared to 23% of patients with SR (3/13), demonstrated evidence for both AAβAR and AAM2 (p=0.012, odds ratio=15).

Conclusions: Our data are the first to demonstrate the presence of AAβAR and AAM2 in hyperthyroid patients with AF. These autoantibodies in most cases activate their respective receptors and are capable of increasing calcium entry and cell contraction in the atrial tissue.
of initiating and/or maintaining the arrhythmogenic activity associated with hyperthyroidism for generation of AF.

Adolescent Medicine and Pediatrics
Concurrent Session
2:00 PM
Friday, February 22, 2008

251 SOCIAL OUTCOMES ASSOCIATED WITH MEDIA VIEWING HABITS OF LOW-INCOME PRESCHOOL CHILDREN
J.J. Fussell, N.A. Conners-Burrow, and L.M. McKelvey. University of Arkansas for Medical Sciences, Little Rock, AR.
Purpose of Study: The purpose of this study was to examine the relationship between preschool children’s social outcomes in the classroom, including hyperactivity, aggression and social skills, and their media viewing habits, including the amount of television they watch and whether they watch videos/movies that are rated as inappropriate for young children.
Methods Used: The participants were 95 low income pre-kindergarten aged children participating in a larger national study of Early Head Start (EHS) eligible children. Study data was collected during a home visit prior to the children entering kindergarten (Mean age = 61 months, SD = 3.5), during which mothers completed questionnaires about their children’s media viewing habits. Questionnaires about children’s classroom behavior and social skills were collected from teachers during a visit to the child’s preschool.
Summary of Results: Mothers reported that their children watched television/movies an average of 3.3 (SD = 1.6) hours per day. More than half the children watched movies labeled as inappropriate for children their age, including PG-13 and R-rated movies (58.7% once a month or more). Analysis of Covariance (ANCOVA) was used to examine the impact of media viewing habits on children’s social outcomes controlling for maternal education, ethnicity, child gender and EHS intervention. Results indicate that children who watched inappropriate content (PG-13 or R-rated videos at least once per month) had significantly higher hyperactivity and aggression scores and significantly lower social skills scores as rated by their preschool classroom teachers. The amount of time children spent viewing television and movies was not associated with social outcomes.
Conclusions: The American Academy of Pediatrics has published several guidelines for children and the media. These guidelines regard both amount and content of media exposure as important for pediatricians to address with families. The findings of the current study would direct pediatricians to focus most specifically on the content of what their preschool patients are watching.

252 NEURODEVELOPMENTAL IMPACT OF CONGENITAL HEART DEFECTS IN DOWN SYNDROME
J.J. Visootsak1, L. Huddleston1, M. Caron2, A. Ransom2, and S. Sherman1. Emory University, Decatur, GA and 2Emory University, Atlanta, GA.
Purpose of Study: Down syndrome (DS) is the most common genetic cause of mental retardation with an incidence of 1 in 600 live births. Approximately 50% of children with DS suffer from a congenital heart defect (CHD). Atrioventricular septal defect (AVSD), the most common form of CHD in DS, occurs in 38–60% of children with DS and CHD, but is observed in only 1 in 10,000 live births without DS. This represents a dramatic 2,000 fold increase in risk for AVSD among individuals with DS compared to those without DS; yet, virtually no studies have examined the neurodevelopmental outcomes. This study is the first to characterize the early developmental profiles of children with DS and AVSD compared to age-matched children with DS without CHD, and specific interventional strategies are suggested.
Methods Used: Participants consist of 2 groups: 6 subjects with DS/AVSD (mean age 17.11 months) and 12 subjects with DS/no CHD (mean age 16.50 months). The Bayley Scales of Infant and Toddler Development III was administered by a psychometrician who is blinded to the participants’ cardiac status. The Bayley III was administered to the AVSD group at least 4 months after cardiac repair.
Summary of Results: The AVSD group exhibited greater developmental delays across all domains including cognitive, expressive and receptive language, and gross motor and fine motor skills compared to their age-matched controls without CHD. The deficits in expressive language skills were the most prominent, with the AVSD group lagging 8 months behind their chronological age compared to 4 months for the no CHD group (p=.11).
Conclusions: As children with DS and AVSD increasingly survive cardiac surgery and consequently live longer, characterization of their early developmental profiles is critical in designing early interventions to maximize their potential. Our preliminary cross-sectional data document that children with DS and AVSD have greater developmental delays especially in the language domain, compared to children with DS without AVSD. Implications for outcome and treatment are discussed. Studying young infants with DS and AVSD allows us the opportunity to identify variables linked with early deficits that may lead to further delayed development, and initiate novel interventions to improve their lives.

253 ASSESSING THE KNOWLEDGE OF ATV SAFETY FOR CHILDREN AMONG ALABAMA PEDIATRICIANS
N. Frascogna1, B. King1, S. Lycans2, M. Nichols1, and K. Monroe1. 1University of Alabama Birmingham School of Medicine, Birmingham, AL and 2University of Alabama Birmingham School of Medicine, Birmingham, AL.
Purpose of Study: Since 1987, the AAP has had a policy regarding the use of ATVs by children which calls for pediatricians to educate families regarding the dangers of ATV use and recommendations for safety. Given the high incidence of ATV-related injuries in Alabama, our objective was to determine if pediatricians in our state are educating patients on ATV hazards and safety.
Methods Used: All general pediatricians in Alabama who are members of the AAP were asked to complete a survey distributed by email using Survey Monkey®. Data was entered into Microsoft Excel®.
Summary of Results: Of the 353 general pediatricians in Alabama, 104 have responded to date. 41.3% (43/104) of respondents were not aware there is an AAP policy. Of the 58.7% (61/104) who knew of the policy, 36.1% (22/61) correctly identified the age limit recommendations. Only 48.5% (49/101) said they routinely give anticipatory guidance regarding ATV use. Of the 35 respondents who said they routinely give age limit recommendations as part of their anticipatory guidance, 62.9% (22/35) gave limits younger than the AAP recommendation. Respondents who had a patient require treatment for an ATV-related injury were more likely to give anticipatory guidance than those who had not (OR 3.9 (95%CI 1.2,13.6) chi square 5.3, p=0.02). Respondents who practice in rural areas were not more likely to provide guidance than pediatricians in urban areas (OR 2.1 (95%CI 0.8,5.4) chi square 2.1, p=0.14).
Conclusions: General pediatricians in a state of high ATV use are not familiar with the current AAP policy and don’t routinely follow its guidelines. Given the high incidence of ATV-related injuries, other methods of gaining public awareness are warranted.

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ADVERSE EVENTS ASSOCIATED WITH PROCEDURAL SEDATION BEFORE AND AFTER THE INTRODUCTION OF A SEDATION EDUCATION MODULE

J.W. Barber, K.W. Monroe, R. Bramlett, and W.D. King. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To determine what effect, if any, the introduction of a procedural sedation education module has on the incidence of adverse events associated with procedural sedation at a Children’s Hospital.

Methods Used: The Procedural Sedation Module was made available as an avenue for credentialing for practitioners wishing to obtain mild/moderate sedation privileges at Children’s Hospital in 2004. A retrospective chart review of all patients that had an adverse event(s) associated procedural sedation reported in the two years before and after the introduction of the module was undertaken. Patient demographic data was recorded as well as pharmacologic agent(s) used, depth of sedation to be obtained and the specialty/training of the sedation providers. The total number of sedations performed in the two time periods was recorded and was further broken down into depth of sedation to be obtained and sedation providers’ training.

Summary of Results: The total number of reported adverse events during procedural sedations increased from 24 (total cases 3404) in the pre-intervention period to 53 (total cases 4816) in the post-intervention period. Deep sedations (compared to the mild to moderate sedations) increased significantly from 2038 to 3466 (chi sq = 131.4, p = 0.001). Over all sedations, reported adverse events increased from 8.2 to 15.5 per 1000 cases (RR=1.9, p=0.004, 95% CI [1.2, 3.0]). Reported adverse events among deep sedation cases increased from 7.8 to 12.0 per 1000 cases (RR=1.5, p=0.017, 95% CI [0.8, 2.9]) as compared to reported adverse events among mild to moderate cases which increased from 5.1 to 8.1 per 1000 cases (RR=1.6, p=0.47, 95% CI [0.6, 4.8]). Unsuccessful procedures due to adverse events decreased from 1.5 to 0.6 per 1000 cases (RR=0.7, p=0.8, 95% CI [0.2, 3.1]) after the introduction of the education module.

Conclusions: The introduction of the education module resulted in improved reporting of adverse events during sedations. The relative rate of reporting sedation related adverse events increased for both deep sedations and mild to moderate sedations, (although the rate of reporting adverse events for mild to moderate sedations failed to reach statistical significance). The rate of reported unsuccessful procedures (due to adverse events during sedation) decreased.

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PEDIATRIC PATIENTS ON HOME MEDICATIONS FOR CHRONIC ILLNESSES: HOW FREQUENTLY ARE THESE MEDICATIONS CORRECTLY IDENTIFIED AND ORDERED BY ADMITTING HOUSE OFFICERS?

S. White, M. Broussard, L. Anderson, J.A. Bocchini, and P.F. Bass. Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose of Study: To determine the accuracy with which Pediatric house officers at the Children’s Hospital of LSU/HSC-Shreveport obtain home medication information and correctly order these medications for inpatients with chronic illnesses.

Methods Used: Consented pediatric inpatients taking medications for chronic illnesses were included in the study. A pharmacist or PharmD student interviewed the patient and/or caregiver to gather the patient’s medication history. The investigators then compared this to the pediatric patient history record completed by the admitting nurse, the resident’s admission note, intern’s admission note, and all physicians’ orders within 24 hours of admission. For the record to be considered accurate, documentation needed to include: 1) Drug name; 2) Dose; 3) Route; and 4) Interval.

Summary of Results: This pilot study includes 25 pediatric inpatients who were taking an average of 4.6 medications (range 1–12) at the time of admission. A total of 544 medications were reviewed. Out of 2176 possible medication errors, 556 errors occurred (26%). The resident admission note contained the most errors (39%); followed by the nurse admission note (30%), intern admission note (29%), and the physicians’ orders (26%). There was a significant relationship between the number of medications taken and the number of errors for individual patients. As the number of medications increased, the number and likelihood of making errors increased.

Conclusions: Increased numbers of medications taken by patients was associated with more in-hospital medication errors at the time of admission. The findings in our pilot study support other studies in noting that the pharmacist is least likely to make errors in recording patient medication histories. While our study does not address why these discrepancies occurred, we believe this should be addressed in residency education and hospital quality improvement because of the potential for patient harm due to medication errors. Our study is limited because it reports data from a single institution and we did not collect any data on adverse events.

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KNOWLEDGE, ATTITUDES, AND BARRIERS TO VISUAL ACUITY SCREENING AMONG PRIMARY CARE PROVIDERS

T.C. Wall, E. Funkhouser, and W. Marsh-Tootle. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To describe knowledge, attitudes, and barriers to screening among providers enrolled in a web-based quality improvement project targeting preschool vision screening in primary care settings.

Methods Used: Alabama Medicaid providers who performed at least 8 well-child checks for preschoolers (ages 3–4 years) over a 12-month period were invited to participate. Physicians who signed on to the website were randomly assigned to intervention vs. control group; each group completed interactive modules presenting questions embedded in a series of cases. This report focuses on responses from the intervention preschool vision screening group.

Summary of Results: Intervention providers totaled 65 (48 pediatricians, 14 family physicians, 3 other) of whom 65% correctly identified risk factors for amblyopia, but only 17% recognized that high refractive error causes 30–50% of amblyopia. Only 5% correctly estimated the percent of children with risk factors for amblyopia. Most (87%) correctly estimated the prevalence of amblyopia, and 71% reported routinely attempting visual acuity screening at 3 or 4 years. Most providers (79%) reported no barriers to making a referral to an eye care specialist, and most (87%) expected parents to take child if referred. Self-efficacy was low for visual acuity screening: only 2% reported successful screening of 3 year olds and 30% successful screening of 4 year olds. However, only about half (52%) of providers reported having an acuity test recommended by the American Academy of Pediatrics. Barriers to screening were reported frequently, with participants responding that preschool children cannot maintain cooperation (67%), they require too much time for visual acuity screening (41%), screening preschoolers interrupts patient flow (33%), and reimbursement for visual acuity screening is too low (44%). Only a small percentage reported that
nearby eye specialists were unwilling to see preschoolers (19%) or lack experience with preschoolers (15%).

**Conclusions:** High refractive error, which cannot be detected by physical examination, is not commonly recognized by providers as a significant cause of amblyopia. Providers’ underestimation of risk factors for amblyopia may contribute to under-screening of preschool children. Providers report difficulty performing visual acuity screening at preschool age.

### 257 TIMING AND DURATION OF RSV ACTIVITY IN SOUTHERN UNITED STATES
J. Fergie, J.P. DeVincenzo, and K. Mavunda, 1Driscoll Children’s Hospital, Corpus Christi, TX; 2University of Tennessee Center for Health Science, Memphis, TN and 3Pediatric Pulmonary Center, Miami, FL.

**Purpose of Study:** The Centers for Disease Control and Prevention (CDC) had originally divided the United States into four broad geographic regions — South, Northeast, Midwest, and West. However, since July 2006 CDC surveillance data for Florida have been separated from the rest of the South. The American Academy of Pediatrics (AAP) guidelines currently defines the RSV season and administration of prophylaxis as a 20-week period between November and March.

**Methods Used:** To better define the RSV season in the Southern states, RSV laboratory surveillance and hospitalization data collected from State Health Departments, major pediatric and referral centers, and smaller community-based centers in representative states of the South (Florida, Texas, and Tennessee) were obtained for several respiratory seasons.

**Summary of Results:** Analysis of these data revealed that timing and duration of the RSV season varied substantially, even within communities in close proximity. RSV seasons did not follow the previous national and regional historic trends reported for the South and the nation. In Florida, four distinct patterns of RSV activity were observed in the Southeast, Central, Southwest, and North, the Southeast season in South Texas, during the years analyzed. In Tennessee, RSV seasons typically started in October, with an occasional outbreak in September. Seasons typically ended in April; however, some seasons extended beyond April. In regions where such data were available, RSV seasonality (defined by laboratory surveillance) and numbers of RSV hospitalizations tended to parallel each other.

**Conclusions:** This analysis confirmed that RSV epidemics vary substantially between and within regions of Southern United States and extend beyond the AAP standard definition of the RSV season. Such variations in RSV seasonality need to be considered when determining the appropriate period for effective RSV immunoprophylaxis.

### 259 IS THERE A CORRELATION BETWEEN OBESITY AND RISKY BEHAVIOR IN ADOLESCENCE?
J. Hixon, and L.M. Crews, University of South Alabama, Mobile, AL.

**Background:** Currently, greater than 15% of adolescents are considered overweight. These patients are at increased risk for comorbidities including diabetes, dyslipidemias, hypertension, sleep apnea, and many psychosocial issues. A review of the literature revealed no studies evaluating obesity and the association with high risk behaviors such as drug or alcohol usage, risky sexual practices, and violence exposure during the adolescent years.

**Purpose:** The purpose of this study was to assess high risk behaviors among adolescent patients attending our institution’s outpatient clinics. Additionally, this study compared high risk behaviors among teens of various weights.

**Methods:** A survey was distributed by the principal investigators to adolescents aged 10–18 years of age appearing in the clinic for well physical exams and acute illness visits. The survey contained no identifying information and all results were kept confidential. The survey contained information regarding demographics, school & home environment, safety, violence exposure, dietary habits, physical activity, body image, drug use, sexual activity, and other risky behaviors. Height, weight, and any significant past medical history was also obtained from each patient.

**Results:** A convenience sample of 159 patients was obtained. The BMI was calculated for each patient, and each patient was placed in one of the three subgroups. Approximately 51% of the patients were considered a healthy weight with a BMI of less than the 85th percentile. Overweight individuals constituted 18% of our population with a BMI in the 85th–94th percentile. The obese group, with a BMI greater than the 95th percentile, encompassed about 28% of all patients surveyed.

Overweight patients in the study demonstrated an increased amount of involvement in high risk behaviors such as truancy, poor school performance, experimentation with drugs & sex, tattoos, and involvement in cutting. There was no correlation between weight and exercise.
safety, and violence exposure. However, obese patients were more likely to skip meals for weight loss, diet multiple times, and not eat breakfast on a routine basis. **Conclusions:** Overweight teens are at an increased risk of co-morbid health conditions, and they are also at an increased risk for involvement in risk taking behaviors.

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**260 PREVALENCE OF METABOLIC SYNDROME IN OBESE ADOLESCENTS AND FACTORS INFLUENCING SYSTEMIC INFLAMMATION, PARTICULARLY CRP**

M.L. Scott¹, A. Ashraf², and L. Yufeng¹. ¹UAB, Birmingham, AL; ²UAB, Birmingham, AL and ³UAB, Birmingham, AL.

**Purpose of Study:** Obesity, metabolic syndrome, and type 2 DM are increasing worldwide and we know little about what predisposes obese children to develop systemic inflammatory markers such as CRP. CRP is recognized as the strongest predictor of future CV risk. The objectives of this study are to determine the prevalence of components of metabolic syndrome and identify characteristics associated with elevated CRP in obese adolescents.

**Methods Used:** This retrospective study was done using weight management clinic patients at Children's Hospital of Alabama, Birmingham. With IRB approval, we collected data on race, sex, weight, height, BMI, SBP, DBP, HbA1c, fasting glucose, insulin, AST, ALT, CRP, and lipids. Children age 10–18 with BMI 95th percentile for age and sex were included. Those with DM, hypothyroidism, renal failure or active infections were excluded. Using modified ATP III guidelines, we assessed parameters of metabolic syndrome and calculated HOMA IR on these children.

**Summary of Results:** An N of 73 with mean BMI of 43.80 kg/m² was studied. There were 52.7% female and 47.3% male, 64% blacks and 36% whites. Fasting glucose was >100mg/dl in 18%, triglycerides >110mg/dl in 36.9%, HDL <40mg/dl in 38.4%, SBP >90th percentile in 52%, and DBP >90th percentile in 2%. There was no significant difference in age, BMI, CRP or transaminases between blacks and whites. HbA1c and DBP were higher in blacks and triglycerides were higher in whites. Elevated CRP was found in 37%. Children with elevated CRP had higher BMI (p=0.025), higher AST (p=0.007), higher ALT (p=0.033), and higher HOMA IR (p=0.0073). Factors predisposing for higher CRP in obese children were BMI, HOMA IR, triglycerides, LDL, and HDL. The total cholesterol and fasting insulin levels did not predict elevated CRP.

**Conclusions:** In obese adolescents BMI, triglycerides, SBP, LDL and HDL all predict elevated CRP and therefore CV risk. Obesity and elevated CRP were seen with elevated transaminases and IR, indicating obese adolescents are also at risk of developing fatty liver disease and type 2 DM. Elevated SBP, triglycerides, and low HDL are common in obese children. As childhood obesity increases we must target therapy to prevent metabolic syndrome and its consequences. Identifying specific characteristics associated with elevated CRP in adolescents helps develop such therapies.

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**261 PREVALENCE OF OVERWEIGHT IN A SAMPLE OF SOUTH CAROLINA CHILDREN: COMPARISON TO A NATIONAL SAMPLE**

S.A. Kennedy, J.R. Roberts, B.T. William, and D.M. Paul. Medical University of South Carolina, Charleston, SC.

**Purpose of Study:** To determine the prevalence of childhood overweight in a sample of South Carolina children from the South Carolina Pediatric Practice Based Research Network (SCPPRN) and compare it with the prevalence of overweight children measured in the National Health and Nutrition Examination Survey (NHANES) which records data from a representative sample of US children. The prevalence of overweight children in the US has risen by 45% between 1988 and 2002 according to the NHANES recorded data.

**Methods Used:** Height and weight were measured in 1392 patients from 6 SCPPRN practices, collected October 2006. BMI was calculated for children ages 2 to 18 years. Children were categorized as overweight if their BMI was greater than the 95th percentile. Age groups were made according to the national data (2–5 years, 6–11 years, and 12–19 years). We compared the prevalence of overweight children in the SCPPRN with that of NHANES. The prevalence of overweight by race was also compared.

**Summary of Results:** In the SCPPRN the mean BMI for children age 2–5 years was 16.4; age 6–11 years was 18.6; and age 12–19 years was 23.2. The prevalence of overweight children in the SCPPRN age 2–5 years was 14%; age 6–11 years was 21.7%; and 12–19 years was 17.3%. NHANES comparison rates were 13.9%, 18.8% and 17.4%, respectively. When compared to national data, children in the SCPPRN age 2–5 years, 6–11 years and 12–19 years are 1.01 times, 1.15 times, and 0.99 times as likely to be overweight, respectively. The overall age-adjusted prevalence of overweight children and adolescents in the South Carolina sample was 17.7% compared to 17.1% nationally, for a ratio of 1.04. When adjusted for race, the prevalence of overweight in SCPPRN in white children was 11.2% compared to 16.3% nationally; in black children 21.2% compared to 20.0% nationally; and in Hispanic children 34.4% compared to 19.2% nationally.

**Conclusions:** The prevalence of overweight South Carolina children determined from measured data approximates the national prevalence. Hispanic children and children in the 6–11 year age group from the SCPPRN have a prevalence of overweight that exceeds the national prevalence. South Carolina should work to improve upon the increasing prevalence of overweight in children.

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**Allergy, Immunology, and Rheumatology Concurrent Session**

2:00 PM

Friday, February 22, 2008

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**262 RELATIONSHIP BETWEEN SMOKING AND AUTOANTIBODY POSITIVITY AMONG FEMALE AFRICAN AMERICAN LUPUS PATIENTS**

A.C. Bryan¹, T.M. Parker¹, G.R. Bruner¹, J.B. Harley³, G.S. Gilkeson¹,², and D.L. Kamen¹. ¹Medical University of SC, Charleston, SC; ²Ralph H. Johnson VAMC, Charleston, SC; ³OMRF, Oklahoma City, OK; ⁴UOHSC, Oklahoma City, OK and ⁵Oklahoma City VAMC, Oklahoma City, OK.

**Purpose of Study:** To examine the influence of smoking on autoantibody prevalence in patients with lupus from the Sea Island African American Gullah population of South Carolina. Their low genetic admixture make the Gullah a valuable cohort for investigating potential environmental triggers of autoimmunity, such as smoking.

**Methods Used:** Smoking history and autoantibody serologies were examined in 177 female African American Gullah patients with lupus between 16 and 70 years of age. Data regarding past smoking, current smoking, number of cigarettes per day, and duration of smoking was obtained during an in-person interview at the time of blood collection. The distribution of categorical variables was examined by Chi-squared tests and p values <0.05 were considered statistically significant. Logistic regression was used to determine autoantibody positivity associated with smoking status, while adjusting for age and other potential confounders.
ASSOCIATION OF BODY MASS INDEX, RACE/ETHNICITY AND GENDER IN A COHORT OF SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS WITH DIABETES AND/OR HYPERTENSION

J. Lim1, N. Mustafaq2, R. Aggarwal1, and R.H. Scofield1,3,4. 1QUISRC, OKC, OK; 2College of Public Health, OKC, OK; 3Oklahoma Research Foundation, OKC, OK and 4Department of Veterans Affair Medical Center, OKC, OK.

Purpose of Study: To determine the prevalence of diabetes mellitus (DM) and/or hypertension (HTN) in systemic lupus erythematosus (SLE) patients and its association with body mass index (BMI). To determine racial/ethnic and gender differences among SLE patients having DM and/or HTN.

Methods Used: In a large cohort of 2044 SLE patients we explored BMI, race/ethnicity and gender as risk factors for development of DM and HTN. All SLE patients met at least four 1982 American College of Rheumatology classification criteria. Chi square and regression techniques were used for this analysis. Statistical analysis was performed on 991 patients for whom we could confirm the diagnosis of DM and HTN after review of medical records of these patients. SAS version 9.1 was used for statistical analysis.

Summary of Results: Among the aforementioned 991 patients, 20.38% (n=202) had DM and 92.53% (n=917) had HTN. 12.92% (n=128) patients had both DM and HTN. There was no association between gender and DM and/or HTN (p=0.1772). There was no association between race/ethnicity and DM and/or HTN (p=0.0124). However, we found that for every one unit increase in BMI, the odds of having DM is 1.046 (95% CI: 1.026, 1.066) times higher in the SLE population after adjusting for race/ethnicity and gender.

Conclusions: These data suggest that in a large cohort of SLE patients, the presence of SLE takes away the protective or predisposing effect of race/ethnicity as factor in the development of DM and/or HTN. SLE and/or the treatment of SLE may be an overwhelming risk factor and not race/ethnicity as found in the general population.

DYSFUNCTIONAL HEMATOPOIETIC PROGENITOR CELLS IN RHEUMATOID ARTHRITIS: REDUCED FREQUENCIES, TELOMERIC ATTENTION AND IMPAIRED CLONOCENIC POTENTIAL

I. Colmegna, L. Qian, H. Fujii, J.J. Goronzzy, and C.M. Wyand. Emory University School of Medicine, Atlanta, GA.

Purpose of Study: Patients with RA have premature immunosenescence, an abnormality that not only involves end-differentiated T cells but also naive T cells and myeloid cells. The combination of cell lineages affected suggests excessive proliferative pressure on common hematopoietic progenitor cells (HPCs). Here we have investigated the clonogenic potential of CD3+ HPCs in RA.

Methods Used: Frequencies of circulating CD34+ HPCs were measured by flow cytometry in 48 RA patients and 48 matched controls. Entry into and progression through cell cycle were studied by CFSE dilution 4 days after stimulation with early acting hematopoietins. Baseline expression of growth factor receptors was evaluated by FACS. HPC telomeric lengths were measured by real time PCR. Results were correlated with clinical variables.

Summary of Results: Female lupus patients who were ever smokers (N=39) were significantly older (44.8 ± 11.5 years vs 37.9 ± 12.9 years, p=0.003) and less likely to have positive anti-phospholipid antibodies (33.3% vs 51.4%; p=0.046) compared to female patients who had never smoked (N=138). Differences between ANA and anti-dsDNA positivity were not significantly different between smokers and never-smokers. Smokers were more likely to have positive anti-Smith (23.1% vs 17.4%), anti-RNP (46.2% vs 39.9%), and anti-Ro antibodies (25.6% vs 21.0%) than never-smokers, however, these differences were not statistically significant, even when controlling for age, years smoked, and packs per day. Similar trends were seen comparing current smokers (n=21) to patients who had either quit or never smoked.

Conclusions: In this study, there was an inverse relationship between smoking and the presence of anti-phospholipid antibodies, but the significance was dependent on age. Neither current nor past history of smoking had a significant impact on lupus-related autoantibody serologies within this cohort of female African American patients with lupus.

Purpose of Study: Increased type I IFN expression is associated with lupus, whereas IL-17-producing CD4+ T-cells (Th17) are thought to play critical roles in rheumatoid arthritis, psoriasis, inflammatory bowel disease, and multiple sclerosis. However, patients with Th17-mediated diseases could also present with a type I IFN signature, suggestive that IL-17 and type I IFN may not be mutually exclusive for the induction of disease. We hypothesize that IL-17 promote type I IFN expression in an autoimmune mouse model.

Methods Used: Flow cytometry, confocal imaging, ELISA, polymerase chain reaction.

Summary of Results: As a novel model of autoimmune disease, BXD2 mice exhibit autoantibody-mediated destruction of the glomeruli and joint cartilage. BXD2 mice exhibit an increased presence of both IL-17 and type I IFN. BXD2 mice displayed significantly increased serum IL-17 (5-6 fold; p<0.01), and Th17 population in the spleen of BXD2 mice relative to that of non-autoimmune mice (14% vs. 0.1%) as demonstrated by ELISA and flow cytometry. Blood mononuclear cells showed increased type I IFN message levels (6-fold; p<0.01), and treatment with CpG increased serum IFN-α (5-50-fold) in BXD2 mice. Confocal microscopy showed the presence of an increased population (2-4 fold; p<0.005) of plasmacytoid dendritic cells (pDCs). To determine whether IL-17 could promote the expression of IFN-α in BXD2 mice, we used an AdIL-17R:Fc (2x10^9 pfu iv) to block IL-17 in 8-mo-old BXD2 mice which had high sera levels of IL-17. Ten days after AdIL-17R:Fc treatment, there was a significant decrease in IFN-α production by pDCs after CpG treatment as revealed by confocal microscopy staining and analysis of sera levels of IFN-α. When immunized with NP-CGG, mice treated with Ad-IL-17R:Fc exhibited decreased NP-CGG antibody titers (2-fold; p<0.05), and decreased autoantibody titers of anti-dsDNA, anti-histone and anti-BiP. In vivo blocking of IFN-α in NP-CGG immunized BXD2 mice also decreased antibody serum titers to pre-immunization levels, demonstrating that IFN-α is essential to antibody formation.

Conclusions: Our study indicates that IL-17 signaling promotes IFN-α expression and thereby may provide a novel pathway by which IL-17 promote antibody production through type I IFN.
Summary of Results: In RA patients, CD34+ cell frequencies within the CD45+ nucleated population were 0.03% versus 0.05% in HC (p<0.001). Upon stimulation with hematopoietic growth factors, CD34 cells completed 3.5 ±1.03 cycles within four days in the RA group versus 5.6 ±0.86 in the controls (p<0.001). RA patients had a higher proportion of HPC that failed to enter the cell cycle (15.5±1.61 versus 5.1±3.3; p<0.05). Baseline expression of growth factor receptors (CD131, CD123, c-kit, CD135, CD126, CD130) was indistinguishable in patient-derived and control HPC. Telomeres from RA HPCs were 1600 bp shorter than in the controls (RA 7990±1031 versus HC 9597±1615 bp). Neither disease duration, severity, activity nor therapies were predictors of either reduced HPC frequencies or shorter HPC telomeres in the RA group.

Conclusions: In RA, the circulating pool of HPCs is contracted to about 50% of that in age-matched controls. Despite intact surface expression of growth factor receptors, RA HPCs are hypo-responsive to hematopoietins. Premature trimming of telomeric sequences in RA HPC suggests a history of pronounced proliferative stress. Abnormalities in HPC biology may be primary as the clinical presentation of this autoimmune syndrome and its therapies are not associated with defective clonalogenic potential and telomeric loss in HPC.

266 MATERNAL AND FETAL CYTOKINE CONCENTRATIONS IN SMOKERS AND NONSMOKERS AT CHILDBIRTH
S.R. Myers1, C. Cunningham1, D. Adamkin2, B. Barnes1,2, and P. Radmacher2. 1University of Louisville School of Medicine, Louisville, KY and 2University of Louisville School of Medicine, Louisville, KY.

Purpose of Study: Smoking has been shown to elicit an inflammatory response associated with respiratory dysfunctions such as asthma and emphysema. These effects are widespread among smokers, but potentially cause the greatest harm in smokers during pregnancy, with potentially harmful effects on the developing fetus. In this study, cytokine concentrations were measured in the plasma of mothers and cord blood samples collected at birth. Maternal and fetal pairs were placed in smoking and non-smoking categories based on plasma cotinine concentrations. TNFα and the interleukins IL-1β, IL-6, IL-8, and IL-10 were measured as markers of elevated inflammatory status.

Methods Used: Samples were grouped in smoking classes based on plasma cotinine concentrations (heavy smoke exposure; low smokers, and nonsmokers). Plasma cotinine and cytokine concentrations were measured using commercially available high sensitivity ELISA kits from Cozart Bioscience.

Summary of Results: Analysis of the data reveals depression both IL-8 as well as IL-1β in both the maternal and fetal samples. The change in IL-1β, was dose-dependent across the three distinct groups of smokers (nonsmokers, low smokers, and high smokers). This dose-dependent trend was not observed in the IL-8 measurements of the three groups. No significant changes between the smoking groups were seen in either IL-10, IL-6, or TNFα although slight trends may exist within each of these data sets.

Conclusions: The observed trends in IL-8 and IL-1β levels contradict the expected results when taken in consideration of the current opinion that smoking is an inflammatory stimulus. However, recent findings of immune studies have suggested that smoking and nicotine may affect the cytokine profile by reducing the production of pro-inflammatory cytokines. Additional studies have shown the smokers with inflammatory bowel disease (IBD) have significantly lower concentrations of IL-1β and IL-8. This previously reported finding is in accordance with the results obtained from the plasma cytokine concentrations measured in our study.

267 PEDIATRIC ASTHMA DIAGNOSIS AND MORBIDITY IN URBAN AND RURAL ARKANSAS
R.D. Peseck1,2, P.A. Vargas1, S.M. Jones1,2, A. McCracken1,2, and T.T. Perry1,2. 1University of Arkansas for Medical Sciences, Little Rock, AR; 2Arkansas Children’s Hospital, Little Rock, AR and 3Arizona State University, Glendale, AZ.

Purpose of Study: Asthma, the most common chronic illness of childhood, disproportionately affects minority and low-income children. Recent pediatric research focuses on inner-city asthma populations while studies focusing on pediatric populations outside of the inner-city are limited. The purpose of this study was to compare asthma diagnosis and morbidity among urban and rural children in Arkansas.

Methods Used: An asthma screening tool was used to survey children enrolled in the Little Rock (urban) school district during the 2002–2003 school year. Children enrolled in the Marvell (rural) and Eudora (rural) school districts were surveyed during the 2005–06 school year. Data were analyzed to compare rates of asthma diagnosis, asthma symptoms, medication use, and healthcare utilization between urban and rural populations.

Summary of Results: Age and gender distribution were similar between groups; however, 91% of rural children were African American (AA) as compared to 69% urban [p=0.001]; and 78% of rural children had state-issued medical insurance compared to 37% urban [p=0.001]. The prevalence of provider-diagnosed asthma was similar among rural (20%) and urban (21%) children but rural children were more likely to be diagnosed with bronchitis [OR 3.4; 95% CI 2.5–4.6]. Rural children also appeared to be at higher risk for uncontrolled asthma including recurrent breathing problems [OR 1.8; 95% CI 1.5–2.2], recurrent cough [OR 2.2; 95% CI 1.9–2.6], repeated episodes of bronchitis [OR 2.2; 95% CI 1.7–2.8] and recurrent chest tightness [OR 1.8; 95% CI 1.5–2.2] over the preceding 2 years. Rural children were more likely to miss school due to asthma [p = 0.001], have frequent asthma symptoms with exercise or play [p = 0.001], and use rescue asthma medications [p = 0.001] in the preceding 4 weeks. There were no differences in ER visits or hospitalizations between groups.

Conclusions: Asthma prevalence is similar between rural and urban populations in Arkansas, yet asthma morbidity markers were significantly higher among the predominately AA rural population. Our findings suggest that future asthma investigations should be carried out to address the specific needs of high risk rural children.

268 MYCOPHENOLATE MOFETIL DEMONSTRATES MARKED IMPROVEMENT IN AUTOIMMUNE RELATED PULMONARY FIBROSIS
L.A. Saketkoo and L.R. Espinoza. LSU HSC, New Orleans, LA.

Purpose of Study: Examine Mycophenolate Mofetil’s (MMF) efficacy and safety in Autoimmune Related Pulmonary Fibrosis (ARPF), encourage large scale investigations.

Methods Used: Observation (0–13 months) of 12 patients with scleroderma (Scl), RA, polymyositis (PM) or SLE related PT treated with MMF due to cyclophosphamide (CYC) intolerance or high dose prednisone. Measured by comparison high resolution computed tomography (HRCT), pulmonary function tests (PFT), symptoms, physical exam, quality of life (QOL) and adverse effects.

Summary of Results: 10/12 patients were on MMF >3 weeks at time of submission. All patients had symptomatic relief with increase in activity level. Oxygen requirements were reversed. Averaged prednisone dose decreased from 58 mg to 4.4 mg. 1/6 repeat HRCTs improved with 3/6 stabilising and 2/6 PFTs improved with 4/6 stabilising after at least 2
months of MMF. All patients showed improvement in symptoms, alveolitis and QOL (except KT with worsening fibromyalgia). The only side effect was transient diarrhea.

**Conclusions:** The effects of MMF on ARPF are favorable heralding hope for a condition with a poor prognosis. At the very least, MMF allows reduction or discontinuation of prednisone. MMF’s specific inhibition of lymphocyte proliferation and migration and its ability to inhibit fibroblast proliferation and activity is further enhanced by downstream interruption of fibroblastic interplay of autocrine and paracrine secretion of Transforming Growth Factor-β, Platelet Derived Growth Factor, Connective Tissue Growth Factor and fibronectin thwarting excess deposition of collagen and extracellular matrix proteins. MMF is a less toxic and potentially more effective agent that is likely to supplant the use of CYC in the treatment of ARPF.

270 **ALLERGEN EXPOSURE AND HOME CHARACTERISTICS OF HIGH RISK RURAL CHILDREN WITH ASTHMA**

A.D. Haynes 1, P.A. Vargas 1, D.R. Watkins 2, B.C. Brown 3, A. McCracken 2, S.M. Jones 2, and T.T. Perry 3. 1University of Arkansas for Medical Sciences, Little Rock, AR; 2University of Arkansas for Medical Sciences/Arkansas Children’s Hospital, Little Rock, AR and 3Arizona State University, Phoenix, AZ.

**Purpose of Study:** Home environmental exposure risks among high-risk rural children with asthma are poorly understood.

**Methods Used:** The primary caregivers of predominately low-income, minority children with asthma living in the Delta region of Arkansas completed a home environment questionnaire (HEQ) followed by a detailed home inspection with analysis of bedroom dust for common allergen concentrations. The median bedroom allergen concentrations were Musm1 0.27 μg/g, dust mite 0.46 μg/g, Canf1 0.08 μg/g, and Blag1 and Blag2 below detection.

**Conclusions:** In this high risk rural population, ETS, mouse, dog and dust mite allergen exposure is high, and home characteristics previously associated with increased dust mite and pet allergen exposure are common. Further studies to examine allergen exposure and the relationship to sensitization and endotoxin exposure should be carried out in this high-risk rural population.

**Cardiovascular I**

**Concurrent Session**

2:00 PM

Friday, February 22, 2008

271 **AN ELEVATION OF WHITE BLOOD CELLS IS ASSOCIATED WITH METABOLIC SYNDROME IN BLACK AND WHITE CHILDREN AND ADULTS: THE BOGALUSA HEART STUDY**

W. Chen, S.R. Srinivasan, and G.S. Berenson. Tulane University, New Orleans, LA.

**Purpose of Study:** White blood cell (WBC) count, an important marker of systemic inflammation, is associated with cardiovascular disease and risk factors. This study assessed the hypothesis that elevated WBC is related to metabolic syndrome components in children and adults.

**Methods Used:** The study cohorts for cross-sectional analyses consisted of 939 white children (49.4% male) and 771 black children (51.1% male) aged 4–14 years, and 1002 white adults (39.7% male) and 406 black adults (37.2% male) aged 19–38 years enrolled in the Bogalusa Heart Study. Race-, sex- and age-specific quartiles of body mass index, mean arterial pressure, high-density lipoprotein cholesterol (bottom quartile), triglycerides and homeostasis model assessment of insulin resistance derived from fasting glucose and insulin were used to define metabolic syndrome in children and adults.

**Summary of Results:** White versus black subjects had significantly higher WBC in both children (6852/μL vs 5974/μL, p<0.001) and adults (6572/μL vs 6086/μL, p<0.001). Females showed significantly higher lymphocytes and neutrophiles, but lower monocytes than males in children and adults for both races. Current smoking was associated with elevated WBC in black (p=0.001) and white (p<0.001) adults. Mean values of WBC increased with the number (0, 1, 2 and 3 or more) of metabolic syndrome risk variables in black (p=0.001) and white (p=0.001) adults.

**Conclusions:** The results from this study show that the WBC count is associated with metabolic syndrome starting from childhood. The findings suggest that WBC levels are related to cardiovascular disease, at least partially, through mechanistic link between increased systemic inflammation and metabolic syndrome components.
ALDOSTERONE INDUCES INTRACARDIAC VOLUME OVERLOAD IN PATIENTS WITH RESISTANT HYPERTENSION - SPIRONOLACTONE BUT NOT THIAZIDE DIURETICS OVERCOMES IT


Purpose of Study: Aldosterone increases sodium and fluid retention. However, the reported effects of aldosterone on the heart have been largely limited to left ventricular (LV) hypertrophy and fibrosis. Here we test the hypothesis that hyperaldosteronism (HA) results in volume overload of the heart.

Methods Used: Ninety-seven subjects with resistant hypertension (RHTN) [clinic blood pressure (BP) ≥140/90 mm Hg on ≥3 antihypertensive medications], all receiving renin angiotensin system (RAS) antagonists and 90% receiving thiazide diuretics had cardiac MRI. Subjects with plasma renin activity (PRA) ≤1 ng/ml/hr and urine aldosterone excretion ≥12 µg/24-hr were considered to have HA (n=23) and all others were normal (n=74). Twelve subjects with HA were followed up after 6 months of treatment with spironolactone (SPL) (25–50mg/day) was added to their ongoing antihypertensive therapy.

Summary of Results: Brain natriuretic peptide (BNP) (81±143 vs 35±47 pg/ml; p=0.01), left ventricular end diastolic volume (LVEDV) (77±13 vs 67±17 mL/m2; p=0.002), right ventricular end diastolic volume (RVEDV) (84±24 vs 67±15 mL/m2; p=0.001) and left atrial volume (LAV) (44±13 vs 37±11 mL/m2; p=0.02) were higher in HA group compared to normal subjects. Systolic and diastolic BP, LV mass and products of collagen synthesis were similar in both groups. Both groups had equally high 24-hr urine sodium excretion (192±79 vs 185±68; p=ns). SPL treatment significantly increased PRA (0.8±0.9 to 14±19 ng/ml/hr; p=0.004) and decreased BNP (55±46 to 21±17 pg/ml; p=0.005), LVEDV (82±18 to 71±18 mL/m2; p=0.004), RVEDV (91±24 to 75±19 mL/m2; p=0.005), LAV (52±17 to 37±11 mL/m2; p=0.04) and LVM (82±17 to 66±10 g/m2; p=0.001) with a small but insignificant decrease in BP (139±86±4 to 133±7/81±3 mm Hg; p=ns) in patients with HA.

Conclusions: This study demonstrates that HA causes a volume overload despite adequate diuretic therapy and RAS blockade without evidence of fibrosis in patients with RHTN. The decrease in cardiac volumes and LV mass without significant decrease in BP using a mineralocorticoid antagonist suggests aldosterone causes cardiac hypertrophy secondary to volume overload that is resistant to conventional antihypertensive therapy.

LONG TERM OUTCOMES OF OVERLAPPING STENT DEPLOYMENT DURING PERCUTANEOUS CORONARY INTERVENTION

D. Bansal1,2, R. Muppidi1, R. Sukhija1, J.L. Mehta1, and R. Sachdeva1,2

1University of Arkansas for Medical Sciences, Little Rock, AR and 2Central Arkansas Veteran Healthcare System, Little Rock, AR.

Purpose of Study: Drug-eluting stents (DES) decrease restenosis rates and the need for repeat revascularization in discrete de novo coronary lesions. In “real world” setting, multiple overlapping stents are often used to treat diffuse coronary disease or long dissections. Little information is available on the safety and efficacy of very long overlapping stents in patients with diffuse disease. The objective of the study was to assess long term outcomes of patients after deployment of overlapping stents in the current DES era.

Methods Used: We reviewed on post-hoc basis records of all patients who had percutaneous intervention from January 2003 to August 2004 at our institution. Data regarding cardiac risk factors, angiographic details and outcome were recorded.

Summary of Results: In total, 34 lesions out of 472 were treated with deployment of overlapping stent. Baseline characteristic were not different in two groups. Over a mean follow up of 35 months, the overlapping stents were associated with no significant difference in major adverse cardiac events (MACE), target lesion revascularization (TLR) and restenosis compared to single stent group (Table 1). Further, there was no significant difference in safety and efficacy of overlapping stents compared to single stent group.

**Table 1:**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Overlapping stent PCI (n=34)</th>
<th>Single stent PCI (n=35)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bare Metal Stent</td>
<td>20</td>
<td>276</td>
<td>0.69</td>
</tr>
<tr>
<td>Drug-eluting stent</td>
<td>13</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>Stere Diameter (mean ± SD)</td>
<td>3.1 ± 0.5</td>
<td>3.0 ± 0.6</td>
<td>0.64</td>
</tr>
<tr>
<td>Lesion Length (mean ± SD)</td>
<td>34.1±9.6</td>
<td>16±5.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Major adverse cardiac event</td>
<td>5 (14%)</td>
<td>110 (25%)</td>
<td>0.16</td>
</tr>
<tr>
<td>Target lesion revascularization</td>
<td>5 (14%)</td>
<td>85 (19%)</td>
<td>0.49</td>
</tr>
<tr>
<td>Restenosis</td>
<td>5 (14%)</td>
<td>72 (17%)</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Summary of Results: Long term outcomes of overlapping stent deployment during percutaneous coronary intervention.
no difference in outcome whether patients received DES or bare metal stents (BMS).

**Conclusions:** Incidence of MACE, TLR and restenosis among patients treated with overlapping stents is not higher than in patients with single stent. Further, patient’s outcome is similar regardless of stent type.

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**POTENTIAL MECHANISM FOR ATEROPROTECTIVE EFFECTS OF THIAZOLIDINEDIONES: UPRGULATION OF INSULIN-LIKE GROWTH FACTOR-1 RECEPTOR EXPRESSION AND SIGNALING**

Y. Higashi, K. Holder, and P. Delafontaine. Tulane University School of Medicine, New Orleans, LA.

**Purpose of Study:** There is increasing interest in the potential cardiovascular effect of thiazolidinediones (TZDs), antidiabetic compounds that are synthetic ligands for the peroxisome proliferator-activated receptor γ (PPARγ). We have recently shown anti-atherogenic effects of insulin-like growth factor-1 (IGF-1) in the apoE−/− mouse model, potentially via stimulation of anti-inflammatory and anti-apoptotic pathways. In fact, the atherogenic lipoprotein, oxidized LDL (oxLDL), downregulates IGF-1 receptor (IGF-1R) and induces apoptosis in cultured human aortic smooth muscle cells (SMC). Conversely, a forced expression of IGF-1R counteracts the cell-death effect of oxLDL. In this study, we explored the potential action of TZDs on the IGF-axis in human aortic SMC.

**Methods Used:** IGF-1R expression and Akt phosphorylation were assessed by Western blot analysis. PPARγ was assessed by luciferase reporter assay. Apoptotic cell death was semi-quantitatively assayed using Cell Death Detection ELISA kit (Roche).

**Summary of Results:** We found that rosiglitazone (Rosi) upregulated IGF-1R protein level (at 10μM, 67% increase, n=4, p<0.01) and increased IGF-1R downstream signaling activity (36 % increase in Akt phosphorylation). On the contrary, the endogenous PPARγ ligand, 15-deoxy-Δ12,14-prostaglandin J2 (PGJ2), dose-dependently reduced IGF-1R levels (10 μM, 80% decrease, n=4, p<0.01). Over-expression of PPARγ likewise reduced IGF-1R (50% decrease vs SMC infected with control adenovirus encoding green fluorescent protein), while both Rosi (10μM) and PGJ2 (5μM) were found effective to promote PPARγ responsive gene expression by 3.8-fold and 16.0-fold, suggesting PPARγ-independent action of Rosi on IGF-1R expression.

To examine the potential physiological relevance of Rosi upregulation of IGF-1R, we determined the effect of Rosi on oxLDL induced apoptosis. 20μM Rosi reduced oxLDL-induced apoptosis by 40 % and a neutralizing antibody to IGF-1R counteracted this rescue, suggesting the Rosi effect is, at least in part, mediated by IGF-1R.

**Conclusions:** TZD markedly upregulated SMC IGF-1R expression and signaling, likely via a PPARγ independent mechanism, providing a potential mechanism for the atheroprotective effects of these antidiabetic drugs.

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**NEUROGENIC INFLAMMATION PROMOTES "CARDIAC INJURY AT A DISTANCE" THROUGH CHANGES IN INTESTINAL PERMEABILITY**

J.J. Chmielinska1, I.T. Mak1, J.H. Kramer2, and W.B. Weglicki1,2.

1George Washington University Medical Center, Washington, DC and 2George Washington University, Washington, DC.

**Purpose of Study:** Our previous studies showed that at one week on a magnesium-deficient (MgD) diet, rat plasma levels of Substance P (SP), a major mediator of neurogenic inflammation, were increased significantly. In the present study, we hypothesize that Mg-deficiency alone may decrease activity of Neprilysin (NEP), a major SP-degrading enzyme.

**Methods Used:** Rats were kept on MgD diet (9%RDA) along with sufficient controls for 3 weeks; half of each dietary group was treated with Phosphoramidon (5mg/kg/day in s.c. pellet). Animals were sacrificed; hearts (ventricles and atria), and small intestines were removed, imbedded in OCT, frozen, cut into 5μm sections and immunohistochemically stained for NEP. PMNs were isolated from the whole blood through gradient Ficoll centrifugation and basal superoxide anion producing activity was measured colorimetrically as SOD-inhibitable cytochrome c reduction. SP levels in plasma were quantified by ELISA method.

**Summary of Results:** Specific staining in cardiac tissue was localized to vascular and peri-vascular structures, where fluorescence was diminished in Mg-deficiency at 3 weeks. In the intestine in the MgD animals, in addition to vascular areas, villi epithelium displayed a dramatically decreased intensity of NEP fluorescence staining (p=0.05). Treatment with Phosphoramidon, a potent Neprilysin inhibitor, resulted in a 2-fold increase in plasma SP levels and a 3-fold (p=0.05) increase in superoxide production by WBCs.

**Conclusions:** We contend that this loss of NEP protein expression and enzymatic activity, may result in diminished SP-degradation, thus promoting enhanced SP-mediated neurogenic inflammation, leading to increased intestinal permeability, endotoxemia and cardiac injury at a distance. This study was supported by USPHS NIH grants: HL-65178, and HL-62282.
Conclusions: Herein, we evaluated the systems biology changes in skeletal muscle induced by ALDOST and reversed during natural recovery from it. The networks discovered to be affected and reversed are closely connected to processes of inflammation and oxidative stress. Although markers of cell death and proliferation were not seen, these data suggest molecular networks associated with both processes are affected. Since these are opposite effects with interconnected networks this suggests they, in effect, have cancelled each other out.

**278 DIASTOLIC AND SYSTOLIC STRAIN INDICES AND PLASMA COLLAGEN TURNOVER MARKERS INDICATE MYOCYTE DYSFUNCTION IN DIABETIC WITH NORMAL LV FUNCTION AFTER MYOCARDIAL INFARCTION**

M.M. Butler1, G. Zoghibi2, G. Himanshu2, S.G. Lloyd3, G.J. Perry2, R.A. Aqeel2, T.S. Denney1, and L.J. Dell’Italia3. 1University of Alabama at Birmingham, Birmingham, AL; 2University of Alabama at Birmingham, Birmingham, AL and 3Auburn University, Auburn, AL.

**Purpose of Study:** Diabetes mellitus (DM) affects overall left ventricular (LV) function by affecting myocyte function and myocardial fibrosis. Torsion, wall stress and strain define global LV mechanical properties that can be assessed by cardiac magnetic resonance (MR) imaging. We hypothesized that patients with DM and preserved LV function after myocardial infarction (MI) have depressed indices of strain and torsion compared to nondiabetic patients.

**Methods Used:** Healthy volunteers (39) and non diabetics (30) and diabetics (41) with acute troponin positive MI were assessed using 3-dimensional MR tissue tagging. Blood samples for collagen production [procallagen type-1 carboxy terminal propeptide (PICP)] were also collected.

**Summary of Results:** DMMI and nonDMMI patients had 40% increase in LV mass and radius/wall thickness, consistent with concentric LV hypertrophy. LV ejection fraction was well preserved in DMMI and nonDMMI (55% vs 54%). LV midwall circumferential and longitudinal strains (%) were significantly decreased (P=0.05) in DMMI (11±4 and 8±4) and nonDMMI (12±3 and 10±4) compared to volunteers (16±2 and 12±2), in spite of a normal LV midwall end-systolic wall stress. However, early diastolic filling rate and mitral annular velocity were significantly decreased (p=0.05) in DMMI versus nonDMMI. Mean PICP levels (ng/ml) were 55±35 in DMMI, 80±47 in nonDMMI and 93±52 in volunteers (p=0.05).

**Conclusions:** The diabetic heart has decreased myofiber shortening and relengthening that cannot be attributed to plasma indices of fibrosis in the setting of preserved LVEF after MI, suggesting a primary myocyte dysfunction.

**279 THE ADDITION OF PYLOROPLASTY AS A NEW SURGICAL APPROACH TO ENHANCE EFFECTIVENESS OF GASTRIC ELECTRICAL STIMULATION THERAPY IN PATIENTS WITH POST-VAGOTOMY GASTROPARESIS**

I. Sarosiek, J. Forster, K. Roesser, and R. McCallum. Kansas University Medical Center, Kansas City, KS.

**Introduction:** Gastric electrical stimulation (GES) represents a major advancement for symptomatic improvement of refractory gastroparesis (GP) but has minimal effect on accelerating gastric emptying. Aim: To assess any advantage of adding surgical pyloroplasty (PP) to implantation of a GES, for control of GP symptoms and improvement of gastric emptying time (GET) in patients with post-vagotomy GP.

**Methods Used:** 12 consecutive patients with drug-refractory, post-vagotomy GP received GES, and the last 6 also underwent a PP (group I). The initial 6 patients had only GES placement (group II). 5-point Likert scale was utilized for assessment of symptoms. Severity, frequency, and total symptoms score (TSS) of GP-related symptoms were obtained at baseline, and at 3-month follow-up. 4-hour scintigraphy utilizing a standardized 4 hour measurement of isotope-labeled low fat (2%) egg beater meal measured GET before and after surgery.

**Summary of Results:** 12 patients (1M, 11F), mean age 47 years (range 35–58), diagnosed with symptoms of GP for an average of three years (range 1-11) were allocated to Groups I and II as described above. Data are presented as mean ± SEM. Both groups were comparable in terms of age, gender, baseline GET as well as TSS. Patients who underwent PP and GES procedures improved their GET from 80.8 ±9.0 % retention to 42.5 ±14.9 % (p<0.05) at 2 h (normal=60%) and from 49.5±11.4% to 16.5±9.0 % (p=0.072) at 4 hours. 3 patients (50%) in Group I normalized their GET at 4 hours (<10% retention). In comparison group II retained 100% more of the labeled meal after 4 hours than group I (32.8±12.7% vs. 16.5 ±9.0 %; and at 2 h retained 46% more then group I (62.0 ±9.0 % vs. 42.5 ±14.9 %). Both groups had significantly improved severity and frequency of GP symptoms compared to baseline (p<0.01) with a trend towards a lower severity score in Group I (TSS of 8.5±1.3 vs. 9.5±3.1; p=0.10).

**Conclusions:** 1. PP combined with GES shows promise in acceleration of GET as well as improving symptoms in patients with post-vagotomy GP refractory to pharmacotherapy. 2. If these gains in GET persist in a larger study population then this is an important surgical advance for this etiology of gastroparesis.

**280 THE CURRENT CLINICAL SPECTRUM OF RAPID GASTRIC EMPTYING: A SINGLE CENTER EXPERIENCE**

H. Patil, T. Lavenbarg, P. Foran, and R. McCallum. Kansas University Medical Center, Kansas City, KS.

**Purpose of Study:** Our aims were to identify the current incidence of rapid gastric emptying as assessed by scintigraphy, determine the spectrum of symptoms present, the underlying pathophysiology and treatment options.

**Methods Used:** 543 patients referred to one of the investigator (RMC) for evaluation of nausea, vomiting, and abdominal pain from 01/03 to 08/07 underwent a 4 hour scintigraphic gastric emptying test. Rapid gastric emptying was defined as retention of <60% at 1 hr and <30% at 2 hrs following a standardized low fat (2%), egg beater meal. Demographic data, etiology of the presenting symptoms and treatments received were also recorded.

**Summary of Results:** 42/543 (7.8%) of the patients (23 females, mean age 44 years, range 28–60 years) met criteria for rapid gastric emptying. Their mean gastric isotope retention at 1 hr was 42% (Range 28–56%), and at 2hrs was 16% (Range 7–25%). 19/42 (45%) patients with rapid gastric emptying had nausea, vomiting and abdominal pain attributed to
cyclic vomiting syndrome (CVS) and 9/19 (50%) of the CVS patients also met criteria for co-existing irritable bowel syndrome. 11/42 (26%) patients had unexplained nausea and vomiting, 7/11 (63%) of these patients had non-ulcer dyspepsia, while 4/11 (37%) had preexisting diabetes mellitus. 5/42 (12%) patients had a previous fundoplication with accidental vagotomy as documented by sham meal testing and 2/42 (5%) had undergone gastric bypass surgery for obesity. 5/42 (12%) patients had abdominal pain and/or diarrhea with the working diagnosis irritable bowel syndrome. Treatment for rapid gastric emptying included dietary management, prandial anticholinergics, or octreotide in refractory cases to slow gastric emptying and address diarrhea which sometimes needed back up immodium or tincture of opium.

**Conclusions:** Rapid gastric emptying (dumping syndrome) is present in a subset (7.8%) of patients being evaluated for nausea, vomiting, abdominal pain and/or diarrhea. 2. It should be suspected in cyclic vomiting syndrome, non-ulcer dyspepsia, diabetes mellitus, fundoplication and obesity surgeries as well as unexplained abdominal pain and/or diarrhea. 3. Once recognized, therapeutic strategies can be effective.

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**281 GASTRIC EMPTYING RESULTS IN CONDITIONED VOMITING DISORDER: THE CONCEPT OF A PRIMARY ENTITY AS WELL AS A LEARNT REFLEX**

C. Miller¹, R. Twillman², P. Foran², T. Lavenbarg², and R. McCallum³. ¹University of Tennessee, Memphis, TN and ²Kansas University Medical Center, Kansas, KS.

**Purpose of Study:** Conditioned Vomiting Disorder (CVD) is defined as the effortless regurgitation of freshly ingested food and fluid including water within 10 to 15 minutes of intake is often accompanied by epigastric discomfort, nausea, and a stressful psychological setting. Recently we became aware of CVD in patients with established gastroparesis as well.

**Methods Used:** Our goal was to investigate the gastric emptying findings in a large CVD population referred to one of the investigators (RMC). 31 patients, 22 females (age range 18 to 60) underwent a 4 hour scintigraphic gastric emptying test utilizing a standardized 260 calorie low fat (2% fat) egg beater meal and normal gastric emptying was defined as less than 10% retention at 4 hours and less than 60% at 2 hours. All patients were interviewed by one of the investigators, a psychologist (RT), who confirmed CVD, and initiated behavioral therapy involving relaxation tapes and diaphragmatic breathing methods practiced during oral intake.

**Summary of Results:** 60% of the patients met criteria for normal gastric emptying while 13 (40%) met criteria for gastroparesis. Both groups of patients were uniformly treated with behavioral therapy methods. In addition all patients received a tricyclic (typically Nortriptyline) in a low dose of 10 to 50 mg at night as tolerated. Treatment responses became apparent during the first 2 to 8 weeks following initiation of therapy resulting in reduction and/or resolution of symptoms in all patients.

**Conclusions:** 1. The ability to vomit effortlessly within minutes of eating a meal or drinking fluids is termed conditioned vomiting and can present as a primary entity typically in a psychologically stressful situation where gastric emptying is normal and our data now demonstrate that it can also present in the setting of established gastroparesis where it is termed a secondary or learnt reflex. 2. Both types of CVD settings respond to behavioral relaxation therapy and the addition of a centrally acting agent can modify the epigastric pain related to abdominal muscle contraction. 3. Recognition and treatment of CVD allows return to oral intake and avoids considering tube placement and/or parenteral routes for nutrition support.

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**282 OVERUSE OF ACID SUPPRESSION THERAPY IN HOSPITALIZED PATIENTS AND INTERVENTIONS DESIGNED TO IMPROVE PRESCRIBING HABITS**

R. Gupta¹, R. Kottoor², K.J. Vega², O. Petrucelli³, and N.S. Nahman⁴. ¹University of Florida, Jacksonville, FL and ²University of Florida, Jacksonville, FL.

**Purpose of Study:** Acid suppression medications are among the top 5 drugs prescribed in hospitalized patients. We theorized that many inpatients are inappropriately started and subsequently discharged on acid suppression therapy (AST). The aim of this study was to define the prescribing habits of physicians on the medicine service and assess the impact of education on modifying AST prescribing behavior.

**Methods Used:** Chart review of 400 patients (Group 1) admitted to the medicine service was conducted. Any patient who received at least one dose of AST was included. Appropriate indications for inpatient and outpatient AST use were defined and documented on each study subject. When the initial results of the study demonstrated substantial over-prescription of AST, an education program emphasizing evidence-based indications was initiated and the survey repeated on another 270 patients (Group 2).

**Summary of Results:** In Group 1, 69% (279/400) patients were started on AST. 73% (204/279) lacked a clear indication for AST use. The most common inappropriate uses were: no known indication (49%) and stress ulcer prophylaxis in low risk patients (24%). In 69% of patients (141/204), for which AST was inappropriately utilized, it was continued on discharge. Following this study, an education program was introduced to the prescribing physicians and the survey repeated on 270 patients (Group 2). After the educational intervention and when compared to Group 1, there was a significant decline in AST use in the Group 2 patients (69 vs. 37 % for Group 1 vs. Group 2, respectively, p < 0.05). In addition, there was a significant reduction in the percent of Group 2 patients treated with AST for inappropriate reasons (73 vs. 60 % for Group 1 vs. Group 2, respectively, p < 0.05). 20% (12/60) of patients in group 2 who were inappropriately started on AST were discharged on these medications vs 69% in Group 1 (p < 0.05).

**Conclusions:** AST is over prescribed in hospitalized patients, and a substantial number of patients may also be discharged on AST without a valid indication. Simple educational interventions lead to significant reduction in unnecessary prescriptions, with a presumed benefit in cost and a reduction in morbidity from unnecessary drug therapy.

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**283 OUTCOMES OF COMBINATION TREATMENT OF FECAL INCONTINENCE IN WOMEN**

A.D. Markland¹,², H.E. Richter³, K.L. Burgio³,¹, T.L. WheelerIII³, M.P. Malone², and P.S. Goode²,¹. ¹University of Alabama at Birmingham, Birmingham, AL; ²Birmingham VAMC, Birmingham, AL and ³University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** To describe how women with fecal incontinence (FI) respond to combined pharmacologic therapy and pelvic floor muscle exercises.

**Methods Used:** Women with FI (n = 170) were prospectively evaluated since 2002 in the UAB Genitourinary Disorders Center. A follow-up survey was sent to all women who had non-surgical treatment for FI (n = 89) to assess the severity of their FI with the Fecal Incontinence Severity Index (FISI), as part of the Modified Manchester Health Questionnaire (MMHQ), which also measured health-related quality of life (HR-QOL). Perceptions and satisfaction with treatment were analyzed using the Patient Satisfaction Questionnaire (PSQ). Data were also collected on
the number of visits, types of treatment, vaginal examination, and digital rectal examination.

Summary of Results: Response rate was 62% (55/89), with one woman excluded for an ileostomy. Age ranged from 31 to 85 years (mean=59 ± 12). The patients were predominately (85%) non-Hispanic White. 60% had had a hysterectomy, 66% reported concurrent urinary incontinence, and mean BMI was 29 ± 8 kg/m2. All women were taught pelvic floor muscle exercises with digital palpation during the vaginal examination and 87% of the women received medications (70% fiber, 9% loperamide, 7% cholestyramine resin) over 6.9 ± 3.6 months with 2.6 ± 2.1 visits. Non-responders to the survey (n = 54) were not significantly different in age, race, number of visits, or baseline severity of FI (p>0.20). On the PSQ, 66% of patients were either “completely” or “somewhat” satisfied with combination treatment, and 60% of women felt they were “better” or “much better.” Overall, scores on the FISI improved significantly from baseline to follow-up (p < .001), as did scores on HR-QOL (p<.001).

Conclusions: Women with FI treated with combination pharmacologic therapy and pelvic floor muscle exercises improve clinically, are generally satisfied with the treatment, and have improved HR-QOL. Further identification of women who do not respond to combination therapy may help target appropriate therapy and improve overall patient satisfaction and outcomes when treating FI.

284
ENDOSCOPIC MEASURED MUCOSAL EGG MAY BE A PREDICTOR OF OUTCOME TO PERMANENT GES IN GASTROPARESIS
E.S. Weeks, W.D. Johnson, and T.L. Abell. University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: We recently reported on temporary GES (TGES) in a double blinded manner (DDW abstract 2007). We have also reported that the endoscopic mucosal EGG, done at the time of temporary electrode placement, may predict response to TGES therapy (ACG abstracts 2006 and 7).

Methods Used: We now report on a larger series of patients: from a data base of 394 consecutive patients (74 m, 320 f, mean age 43 ± 13 yrs). We examined 145 who had complete data and 85 had idiopathic (ID) gastroparesis. We used linear regression to model baseline factors that may be of value in predicting the outcome of reduction in vomiting based on two outcome indicators: change in vomiting and last measure of vomiting severity. We examined all baseline characteristics, including symptoms and physiologic measures as predictors of vomiting outcome. We reported the predictor mucosal EGG (mEGG) as the frequency/amplitude Ratio (F/A R).

Summary of Results: Three parameters stood out in the model as potentially important predictors of the outcome of later, permanent GES: mEGG, baseline vomiting and age. In the model that included mEGG as the only predictor, mEGG alone showed evidence of being an important predictor (p=0.01 for ID and p=0.008 for all patients) (See Table 1).

Conclusions: A number of baseline characteristics correlate with the outcome of permanent GES. Mucosal EGG may have particularly important predictive value, as this measure can be done endoscopically prior to permanent GES placement.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Change in Vomiting</th>
<th>Last Vomiting Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>P values</td>
<td>ID yrs All yrs</td>
<td>ID yrs All yrs</td>
</tr>
<tr>
<td>F/A R mEGG</td>
<td>0.07 0.06</td>
<td>0.07 0.06</td>
</tr>
<tr>
<td>base vomiting</td>
<td>0.001 0.0001</td>
<td>0.02 0.004</td>
</tr>
<tr>
<td>age</td>
<td>0.08 0.01</td>
<td>0.08 0.01</td>
</tr>
</tbody>
</table>

285
STUDIES OF THE EFFICACY GASTRIC ELECTRICAL STIMULATION FOR GASTROPARESIS-US/EUROPEAN COMPARISON
1University of Mississippi Medical Center, Jackson, MS; 2University of Goteborg, Goteborg, Sweden; 3Rowen University Hospital, Rouen, France; 4University of Glasgow, Glasgow, United Kingdom; 5Karolinska University Hospital, Stockholm, Sweden; 6University of Arkansas, Little Rock, AR; 7Medical University of South Carolina, Charleston, SC and 8University of Tennessee School of Medicine, Memphis, TN.

Purpose of Study: Gastric Electrical Stimulation (GES) is an accepted therapy for drug refractory gastroparesis (GP). However, reports of efficacy have varied between centers. We aimed to compare results from several centers for the efficacy of GES by standardizing data between centers.*

Methods Used: Consecutive patients with the symptoms of gastroparesis were evaluated at each center located in Western Europe (4 centers) and Southern US (4 centers). The patients were by demographics (sex; age), underlying diagnosis (Idiopathic GP=I, Diabetic GP=D, Postsurgical GP=P), % of centers where GET criteria were used, months (Mos) since implant, percentage change in symptoms (baseline to latest for Vomiting =Vom and GI Total Symptom Score=TSS).

Summary of Results: See Table 1. The European centers show a higher percentage change in vomiting than the US centers. However, the European centers had a larger proportin of DGP patients compared to US centres (59% vs 22%) and a smaller proportion of IGP patients (25% vs 72%).

Conclusions: This is the first non-formal trial comparison of the use of GES for patients with the Symptoms of Gastroparesis confirming effectiveness of GES. The specific localities studied (both US & Europe) reveal similarities but also differences between centers, particularly with respect to DGP/IGP proportions. Ongoing prospective comparisons of outcome data are feasible and may be warranted with the continued clinical use of GES.

<table>
<thead>
<tr>
<th>Location</th>
<th>No.</th>
<th>F: M yrs</th>
<th>DX:ID, D, P</th>
<th>GET</th>
<th>Mos</th>
<th>Vom</th>
<th>TSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR</td>
<td>61</td>
<td>38:23:41</td>
<td>15:36:10</td>
<td>100%</td>
<td>35</td>
<td>62.0</td>
<td>48.0(1 centre)</td>
</tr>
<tr>
<td>US</td>
<td>319</td>
<td>258:61:42</td>
<td>231:71:17</td>
<td>75%</td>
<td>49</td>
<td>45.0</td>
<td>38.0</td>
</tr>
<tr>
<td>ALL</td>
<td>380</td>
<td>296:84:22</td>
<td>246:107:22</td>
<td>88%</td>
<td>47</td>
<td>48.0</td>
<td>38.5</td>
</tr>
</tbody>
</table>

286
PREDICTING THROMBOSIS IN GP PATIENTS: LOGISTIC REGRESSION
B. Creel, W. Rock, W.D. Johnson, and T.L. Abell. University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: Recent reports have shown that nearly 90% of patients with gastroparesis have some sort of detectable hypercoagulable state. A recent series of gastroparesis patients has noted an unusually high incidence of deep venous thrombosis, pulmonary embolism and/or line related thrombosis (Lobrano, Advances in Therapy, 2006). We recently examined a group of patients with gastroparesis and identified several specific risk factors for hypercoagulability, using a previously standardized panel of congenital and acquired abnormalities and a discriminant analysis (Creel, ACG abstract 2007).
Methods Used: We retrospectively examined a series of 192 patients (30 male, 162 female; average age of 44 years) with the symptoms of gastroparesis and determined patient history of DVT, PE and/or line-related thrombosis (CLOT, n=50) or no history of thrombosis (NOCLOT, n=142). We now report on the results of logistic regression, looking for additional factors that might correlate with thromboses.

Summary of Results: The most important predictor of thromboses was the presence of at least one abnormality of the coagulation factors on our panel. Antiphospholipid marker ACL was also significant and high factor VIII approached significance. (See table).

Conclusions: From this logistic regression analysis of GP patients, clotting risk can be predicted by the presence of abnormal studies, which combined with our previous work, may be used to risk stratify GP patients, the majority of whom have some hypercoagulable propensity, for life-threatening thrombosis.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Thrombosis</th>
<th>No.</th>
<th>%</th>
<th>Total Patients</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P values</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>50</td>
<td>26.0</td>
<td>192</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At Least One Abnormality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>7</td>
<td>87.5</td>
<td>8</td>
<td>23.0</td>
<td>2.7-191.8</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Normal</td>
<td></td>
<td>43</td>
<td>23.4</td>
<td>141</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor VIII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>37</td>
<td>29.8</td>
<td>124</td>
<td>1.8</td>
<td>0.9-3.7</td>
<td>0.11</td>
</tr>
<tr>
<td>Normal</td>
<td></td>
<td>13</td>
<td>19.1</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACL Iga</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>3</td>
<td>100.0</td>
<td>3</td>
<td>Na</td>
<td>Na</td>
<td>&lt;0.0169</td>
</tr>
<tr>
<td>Normal</td>
<td></td>
<td>47</td>
<td>24.9</td>
<td>189</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

287 THE NUMBER OF ICC CELLS ARE LESS IN GASTROPARETIC PATIENTS WITH DELAYED THAN NON-DelayED GASTRIC EMPTYING

E. Rickman1, R. Schneid1, J. Salameh2, S. Islam1, W.D. Johnson1, S.A. Bigler1, C. Subramony1, and T. Abell1. 1University of Mississippi Medical Center, Jackson, MS and 2Virginia Hospital Center, Arlington, VA.

Purpose of Study: By acting as intermediate cells that relay electrical activity from the intermuscular plexus to the smooth muscle cells in the GI tractwall. Gastroparesis has been linked to possible changes in the ICC cells but few studies have examined direct relationship.

Methods Used: 23 patients: 19 women and 4 men (mean age 33 years) with severe gastrointestinal motor disorders and gastroparesis (GP) symptoms, had full thickness seromuscular biopsies of the stomach using antibody directed against CD117 to identify the ICC. The number of CD117 positive cells per high power field in the inner circular muscle (I) and outer longitudinal muscle (O) layers of the muscularis propria was counted for each patient, and the myenteric plexus was evaluated semiquantitatively as none, decreased, or normal staining (1 was counted for each patient, and the myenteric plexus was evaluated (I) and outer longitudinal muscle (O) layers of the muscularis propria of CD117 positive cells per high power field in the inner circular muscle I layers of the muscularis propria by t-tests and reported as mean values ± SE.

Summary of Results: The most important predictor of thromboses was the presence of at least one abnormality of the coagulation factors on our panel. Antiphospholipid marker ACL was also significant and high factor VIII approached significance. (See table).

Conclusions: From this logistic regression analysis of GP patients, clotting risk can be predicted by the presence of abnormal studies, which combined with our previous work, may be used to risk stratify GP patients, the majority of whom have some hypercoagulable propensity, for life-threatening thrombosis.

288 CAPSULE ENDOSCOPY: A VA EXPERIENCE

A. Selay1, M.S. Sachdev1,2, C. Tombazzi1,2, and M.K. Ismail1,2. 1University of Tennessee, Memphis, TN and 2University of Tennessee, Memphis, TN.

Purpose of Study: Capsule Endoscopy (CE) allows visualization of the entire small intestine as well as the esophagus. It is well tolerated with few complications and has helped in the diagnosis and management of various gastrointestinal disorders. Very little data is available on the overall impact of capsule endoscopy among veterans. The purpose of our study was to retrospectively review the yield, complications and outcomes of CE among veterans.

Methods Used: IRB approval was obtained, and a retrospective review of all consecutive patients who underwent CE between 3/04 to 8/07 at a single veterans hospital was reviewed. Data was collected including, indications, findings, presentation and complications.

Summary of Results: 69 patients underwent CE over 41 months. Of these 38 were Caucasian and 31 were African Americans. All except 7 were males. A single examiner read all CE’s. Indication of examination was: acute overt GI bleed of obscure origin (16), occult GI bleed of obscure origin (46), suspected inflammatory bowel disease (6), and evaluation of suspected malignancy (1). For acute overt GI bleed of obscure origin CE was performed at a mean duration of 6.38 days following presentation (range 1–20 days). The yield for a source of CE among this group was 62.5 % (10/16) patients, (8AVMs (arteriovenous malformations)). CE changed management in 6/10 patients with additional therapeutic and medical therapy, including enteroscopy performed with the intention to treat AVMs, surgery, and Epogen.47 patients underwent CE for evaluation of a chronic source of GIB (Iron deficiency anemia), with the yield for positive findings being 27/47 (57.4%) (22 AVMs). CE changed management in 10/27 patients via additional therapeutic and medical therapy. Therapy included APC, (argon plasma coagulation) of AVMs, surgery, i and Epogen. In 2 patients the source of GI bleed was a small bowel tumor. 3/6 patients with chronic diarrhea had CE findings suggestive of Crohn’s Disease and all three were placed on mesalamine for treatment of this. One patient had capsule retention secondary to tumor, and there was one device failure.

Conclusions: CE is an excellent tool for evaluation of the small bowel. Among veterans the capsule endoscopy yield appears to be favorably compatible to the existing data.

Hematology and Oncology I

Concurrent Session
2:00 PM
Friday, February 22, 2008

289 EVALUATION OF IRON OVERLOAD IN SICKLE CELL PATIENTS ON CHRONIC ERYTHROCYTAPHERESIS USING LIVER BIOPSY

N. Bryant, T. Howard, and L. Hilliard. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: Iron overload is the most common complication in chronically transfused sickle cell patients. Erythrocytapheresis (ECP) is
While ECP limits iron load in some patients, the majority of patients were not adequately chelated after second LBx. Conclusions: Thirty patients on ECP were evaluated with LBx. Start dates for simple transfusion and ECP were available on 25 patients. Total time on transfusion therapy at first LBx ranged from 32–267 mos (mean 99 mos, median 78 mos). Time on ECP ranged from 9–111 mos (mean 43 mos, median 32 mos). Of 25 evaluable patients with at least one post-ECP LBx, 3 had a pre-ECP LBx within 6 mos of starting ECP; 13 had a second LBx after starting ECP (mean of 34 mos after first LBx); and 1 had a third LBx (14 mos after second LBx). At first post-ECP LBx, 24 of 25 patients were on chelation. Of 25 initial post-ECP LBxs, 12 had LIC >15; 8 had LIC <15 but >7; 4 had LIC <7 but >2, and 1 had LIC <2. At second post-ECP LBx; 5 of 13 patients had LIC >15, 2 had LIC of 7–15, 4 had LIC of 2–7, and 2 had LIC <2. After second post-ECP LBx, 6 of 13 patients stayed in the same risk group, 5 decreased one or more risk groups, and 2 increased one risk group.

Conclusions: While ECP limits iron load in some patients, the majority remain at significant risk. Chelation compliance is likely a key factor that affects the efficacy of ECP. Further prospective evaluation of ECP patients with LBxs is needed.

**290 ASSOCIATION BETWEEN ACUTE CHEST SYNDROME AND LUNG FUNCTION ABNORMALITIES AND ASTHMA IN CHILDREN WITH SICKLE CELL DISEASE**

H. Imran1, S. Intzes2, C. Hamu1, A. Rao1, and F. Wilson1. 1University of South Alabama, Mobile, AL and 2Rainbow Babies and Children's Hospital, Cleveland, OH.

**Purpose of Study:** Restrictive lung disease (RLD) is the predominant pulmonary abnormality seen in adults with sickle cell disease (SCD). Restrictive defects have been described in children; however, emerging patterns of obstructive lung disease (OLD) have been observed as well. It has been suggested that the obstructive abnormalities may be contributed by recurrent episodes of acute chest syndrome (ACS). Furthermore, an association has been described between asthma and development of ACS. A study was therefore undertaken to investigate the prevalence of lung function abnormalities including asthma and their association with ACS in children with sickle cell disease followed at the University of South Alabama.

**Methods Used:** This was a cross-sectional study of 122 children with SCD, aged 5–18 years and involved the collection of pulmonary function test (PFT) data and information regarding history of asthma and ACS episodes. Patients were assigned to one of three patterns of lung function (OLD, RLD, normal) based on PFT determinations according to standard definitions. Patients were considered asthmatics if there was a previous clinical diagnosis of asthma and/or if there was history of use of bronchodilators at any time.

**Summary of Results:** A normal PFT pattern was detected in 44%, OLD in 34%, and RLD in 22% of the patients. The odds of being diagnosed with ACS were twice as high for patients with abnormal PFT (OLD and RLD combined) than for those with normal PFT (prevalence odds ratio (POR) 2.4, p= 0.04). However, there was no statistically significant relationship between OLD and ACS (POR 1.99, p= 0.07). The odds of being diagnosed with ACS were almost eight times higher for asthmatic compared to non-asthmatic patients (POR 7.7, p< 0.001) and these results were also clinically relevant (positive predictive value = 80.6%).

**Conclusions:** Children with SCD are more likely to have abnormal rather than normal PFT. There is a higher prevalence of OLD than RLD in such children. Our results suggest a clinically significant association between asthma and ACS. The importance of obtaining a history of asthma or prior use of bronchodilators needs to be emphasized.

**291 ATTITUDES TOWARDS HPV VACCINE EXPRESSED BY PARENTS AND PRE-ADOLESCENTS AND ADOLESCENTS ATTENDING HEMATOLOGY/ONCOLOGY CLINICS IN NEW ORLEANS**

C. Creighton, M.C. Velez, and R.V. Gardner. LSUHSC, New Orleans, LA.

**Purpose of Study:** To assess knowledge and attitudes to HPV and the anti-HPV vaccine among teenagers attending the Hematology/Oncology Clinic at Children’s Hospital of New Orleans.

**Methods Used:** The data was collected using interview-conducted assessments with a survey tool consisting of 15 items used to assess knowledge of HPV and its relationship to cervical cancer, determine attitudes and perceptions about the HPV vaccine, and acceptance of vaccine.

**Summary of Results:** Eighteen subjects attending the Pediatric Hematology/Oncology clinic at Children’s Hospital of New Orleans were surveyed during the summer of 2007. 50% of participants were African American, 39% Caucasian, 6% Hispanic and 6% Asian. The majority of children were >13 years. 78% of parents had heard of HPV but only 43% had received education about the virus. 67% heard about HPV through the television, with 11% being educated through this venue. 82% of parents believed that the vaccine was very important, while 89% felt that the vaccine should be incorporated into their child’s vaccination schedule. Despite the fact that a majority of parents believed the vaccine was important, 22% of the parents stated they did not plan to have their daughter vaccinated either because they felt there was insufficient information about the vaccine, or side-effects were unknow, or they felt that the vaccine would promote promiscuity. 78% of parents were not sure the vaccine was available from their PCP. Only 17% had discussed the vaccine with the PCP. 83% supported statewide-mandated vaccination with the HPV vaccine.

**Conclusions:** While the sample size is small, the survey emphasized the need for better dissemination of information re. HPV, the vaccine, and its availability to the public, as well as the need for physicians to communicate more openly about this issue. The survey size will be expanded and PCPs will also be surveyed about their approach to the education of their patients and the offering of the vaccine to their patients.

**292 NEONATAL SCABIES AND THROMBOCYTOPENIA: AN UNUSUAL PRESENTATION IN A 6-WEEK-OLD INFANT**

A. Martin, D. Becton, and A. Mian. University of Arkansas for Medical Sciences, Little Rock, AR.

**Purpose of Study:** To describe the apparent association between neonatal scabies and thrombocytopenia in an otherwise well child.
Methods Used: Medical records review.

Summary of Results: Six-week-old infant presents with rash and petechiae. He was born at term, via normal vaginal delivery with normal prenatal course. At age 4 weeks, parents noted a generalized rash. Two weeks later, he developed scattered petechiae without bleeding. Family history was negative for any bleeding disorder, thrombocytopenia or connective tissue disease. Physical examination revealed a non-toxic appearing child, no dysmorphism, with a generalized maculo-papular rash, few purpuric eruptions, and scattered petechiae. Exam is otherwise within normal limits. CBC showed a WBC count of 13.6K/µL, hemoglobin and hematocrit of 9.7g/dL and 29% respectively, and platelets of 17K/µL. Peripheral smear showed anisocytosis, few spherocytes, and large granular platelets. Other laboratory findings, including serum chemistry, uric acid, LDH, liver function tests, coagulation profile, and serum immune globulins were normal for age. Neonatal alloimmune antibodies were negative. HIV, RPR, and urine for CMV were negative. EKG, CXR, head and abdominal ultrasound were normal with no vascular lesions. Bone marrow examination showed mildly hypercellular marrow with mixed trilineage hematopoiesis and megakaryocytic hyperplasia. WAS protein level was normal. A Skin biopsy showed live sarcopetes scabiei. He was diagnosed with fulminating scabies and neonatal ITP. Treatment included topical permethrin, cephalexin and a 5-day steroid pulse. His platelets increased to 116K/µL over the next 5 days and skin rash markedly improved. Serial platelet counts remained normal during following 6 months without further therapy. Immune studies will be repeated at age 1 year.

Conclusions: Neonatal ITP is a rare condition and diagnosis of exclusion. The case illustrated here may be the result of immune or antigenic dysfunction. Fulminant scabies in infants is associated with immune deficiency syndromes, which itself may be associated with autoimmune cytopenias such as ITP. Additionally, antigenic stimulation by sarcopetes is reported to cause hemolysis and thrombocytopenia among animals. To our knowledge, this is the first reported case of an infant with ITP and fulminating scabies.

293 NAIVE AND REGULARATORY T CELLS IN HEMOPHILIA A PATIENTS

F. Ganapamo1,2, R. Kruse-Jarres1,2, C. Leissinger1,2, and B.G. Barnett1,2.
1 Tulane Medical School, New Orleans, LA and 2 Tulane Medical School, New Orleans, LA.

Purpose of Study: Hemophilia A (HA) is a sex-linked disorder resulting in defective factor VIII (FVIII), a major cofactor in hemostasis. HA is treated effectively by administration of FVIII concentrates. However, in some cases this treatment leads to patients developing anti-FVIII antibodies (inhibitors). However, not all immune responses to FVIII are pathogenic. Presence of non inhibitory anti-FVIII antibodies has been reported in HA patients without inhibitors and in some healthy individuals. We hypothesized that this pathogenic immune response to FVIII results from failure to activate regulatory CD4+ T cells specific for certain FVIII epitopes. We have undertaken the task to investigate cellular changes that occur in the blood of HA patients with inhibitors.

Methods Used: Peripheral blood mononuclear cell (PBMC) were isolated from HA patients and healthy donors and analyzed by flow cytometry for T and B cell analysis.

Summary of Results: Preliminary results obtained from a limited number of samples have shown a decrease in the proportions of both naive CD4+ and CD8+ T cells in PBMC of HA patients compared to equivalent cell populations from healthy donors. In healthy donors, between 43 to 49% of CD4+ and CD8+ T cells are CCR7+CD45RA+ whereas in HA patients, the proportion is less than 15%. Furthermore, in HA patients, approximately 90% of phenotypic regulatory T cells (Tregs), defined as CD4+CD25hiCD39+CD127low, are positive for the Tregs marker, Foxp3+. In healthy donors, these proportions fluctuate between 68 and 70%. More samples are planned for analysis.

Conclusions: These early preliminary results suggest that development of inhibitors in HA patients may be associated with a reduction of blood naive T cell proportion or diversity. This may lead to a decreased ability to induce antigen specific Tregs, leading to an inability to regulate the immune response to FVIII, thereby leading to inhibitor formation.

294 MULTIPLE MYELOMA IN A PATIENT WITH CASTLEMAN’S DISEASE

A.L. Sumrall1, S. Elkins1, and G. Shumaker2. 1University MS Medical Center, Jackson, MS and 2Jackson Oncology Associates, Jackson, MS.

Case Report: Multiple myeloma (MM) is characterized by malignant plasma cells in the bone marrow, overproduction of a monoclonal protein, and lytic bony destruction. It is an incurable disease accounting for approximately 20 percent of deaths from hematologic malignancy and 2 percent of deaths from all cancers. It has no established relationships with secondary malignancies; and, the exact cause of the disease is unknown.

A previously healthy 37 year old male presented to clinic in April 2001 complaining of a painless lump in his left inguinal region of 6 months’ duration. Excision of the mass revealed Castleman’s disease, hyaline-vascular type. Further laboratory investigation by serum protein electrophoresis showed a small monoclonal IgG gammopathy with normal uninvolved immunoglobulins. Bone biopsy of a lytic lesion in the pelvis revealed a plasmacytoma for which radiation therapy was initiated. After radiation was complete, the monoclonal gammapathy resolved. A bone marrow aspirate was unremarkable. He was doing well until December 2005 when repeat CT scan showed enlargement of the left iliac lesion. Laboratory examination showed recurrence of monoclonal gammapathy. In July 2007, he underwent autologous peripheral stem cell transplant. He tolerated the procedure well and has remained disease-free. This is the first reported case of multiple myeloma in a patient with multicentric Castleman’s disease. A possible etiology due to human herpesvirus-8 (HHV-8) activity, and/or overexpression of IL-6 is proposed.
Methods Used:
CSF on CD34+ cell yields, day to myeloid and platelets engraftment and
Purpose of Study:
Lubbock, TX.
for 2 days followed by aphaeresis beginning on day three. The target
2002 to 2006, G-CSF was administered at a high dose of 20mcg/kg/day
various malignancies during 2001 (n=21) and during 2002 to 2006
result of our trial concluded that G-CSF 20mcg/kg/
Conclusions:
The mean number of CD34+ cells collected was
Our data thus demonstrate a novel molecular pathway in
reduction of DC mediated in vitro responses to toll receptor (LPS) and the
We report the effect of short course, high dose G-
CD34+ hematopoietic stem cells respectively.
Summary of Results: CD133 stem cells prolifereated rapidly in culture
but gradually lost the adult stem cell markers producing proliferating
CD133+ and non-proliferating CD133- populations. After two weeks in
culture, CD133- cells began to express markers of hematopoietic
differentiation while maintaining embryonic stem cell markers through-
out six weeks. CD133+ and CD133- populations maintained multi-
potency throughout two weeks in culture. As CD133 stem cells
proliferated in culture, we discovered a decrease of the Wnt pathway
through an increase of GSK-3β and decrease of TCF-4 protein levels and
activity. Inactivation of GSK-3β resulted in proliferation of the
differentiated CD133- population, increased loss of adult stem cell
markers and gain of differentiation markers compared to the control, and
similar multipotency to control CD133- cells.
Conclusions: Therefore, CD133+ cells in culture divided asymmetri-
cally to produce differentiated daughter cells. Although activation of the
Wnt pathway did not increase self-renewal, we have found a new
phenotype of differentiate cells that retain the ability to proliferate. Our
study represents a critical step to increase our knowledge of hema-
topoietic stem cell differentiation and expansion.

Summary of Results: Pre-treatment with HDAC inhibitors significantly
reduced DC mediated in vitro responses to toll receptor (LPS) and the
stimulation of allogeneic T cells (p<0.05). Mechanistic studies demon-
strated that SAHA and ITF 2357 increased expression of iNOS at both
mRNA and protein levels. Blockade of iNOS induction with specific
small interfering RNA (siRNA) in the wild type (WT) DCs and those
derived from IDO deficient (IDO−/−) animals confirmed a functional
role for IDO in HDAC inhibitor mediated regulation of DCs. DNA-
protein interaction analysis with ChIP assay demonstrated that both
acylactylated histone(H) 4 and STAT3 bound to murine IDO promoter and
analysis of IDO gene promoter demonstrated potential STAT3 binding
sites suggesting that STAT-3 might be critical for regulation of IDO
transcription. To specifically address the in vivo relevance of IDO
induction by HDAC inhibitors in host type DCs, we generated [B6→
B6] and [IDO−/−→B6 → B6] BM chimeras and utilized them in a well
characterized [BALB/c B6] mouse model of acute GVHD. All of
chimera animals received 800 Gy on day -1 and were treated orally with
5mg/ kg of ITF 2357 or diluent on days -1 to +2.Treatment with ITF
2357 resulted in significantly better survival in the allogeneic [B6→ B6]
animals (P < 0.05).

Conclusions: Our data thus demonstrate a novel molecular pathway in
modulation of GVHD through a STAT3 dependent induction of IDO in the
DCs by the HDAC inhibitors. (TT and YS contributed equally to this work).

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COMPARISON OF HIGH DOSE VS. LOW DOSE
G-CSF FOR PERIPHERAL BLOOD STEM CELL
(PBSC) MOBILIZATION: ANALYSIS OF A CASE
CONTROL SERIES
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Tech University, Lubbock, TX; 2Texas Tech University, Lubbock, TX;
3Texas Tech University, Lubbock, TX and 4Texas Tech University,
Lubbock, TX.
Purpose of Study: We report the effect of short course, high dose G-
CSF on CD34+ cell yields, day to myeloid and platelets engraftment and
number of aphaeresis collection for autologous stem cell transplantations
(SCT) as compared with a historical control.
Methods Used: Eighty-six patients underwent stem cell collection for
various malignancies during 2001 (n=21) and during 2002 to 2006
(n=55). During 2001, G-CSF was administered at a low dose of 10mcg/
kg/day for 5 days followed by aphaeresis beginning on day six. During
2002 to 2006, G-CSF was administered at a high dose of 20mcg/kg/day
for 2 days followed by aphaeresis beginning on day three. The target
CD34+ count was 5 × 106 cells/kg. (Coulter flow method) or 2 × 106
cells/kg (Becton Dickinson method). No chemotherapy was used for
mobilization.
Summary of Results: The mean number of CD34+ cells collected was
5.69 × 106/kg (range 4.17 – 9.24) in the low dose group compared to
7.31 × 106/kg (range 3.78 – 25.10) in the high dose group/SCT. The
mean peripheral nucleated cell in the low dose group on day 3 was 25k/
ml vs. 39.3k/ml in the high dose group. The mean aphaeresis in the
low dose group was 3.33 vs. 2.93 in the high dose group. There were no
differences between the low dose and high dose groups in terms of mean
days to myeloid engraftment. However the mean days to platelets
engraftment were much better in the high dose group (14.6 days)
compared to low dose group (18.2 days). Finally, no difference in
adverse effects was noted between the two groups.
Conclusions: The result of our trial concluded that G-CSF 20mcg/kg/
day × 2 days results in improved CD34+ yield (p=0.03) and much
earlier platelets engraftment (p=0.09).

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THE ROLE OF GSK-3β IN SELF-RENEWAL AND
DIFFERENTIATION OF CD133+ UMBILICAL
CORD BLOOD STEM CELLS
M. Howe, J. Zhao, Y. Bodenburg, R. Tilton, R. Urban, and L. Denner.
UTMB at Galveston, Galveston, TX.
Purpose of Study: Determining how to symmetrically expand large
quantities of undifferentiated stem cells is the first step for future tissue
engineering experiments. The mechanism by which the stem cells
undergo self-renewal or differentiation is unknown in CD133+ umbilical
cord blood-derived stem cells (CD133+ cells). Activation of the Wnt
pathway via inhibition of glycogen synthase kinase-3β (GSK-3β) has
been shown to maintain and increase self-renewal of embryonic and
CD34+ hematopoietic stem cells respectively.
Methods Used: Self-renewal of CD133 cells treated with vehicle
control or pharmacological GSK-3β inhibitors were expanded in culture
to analyze cell proliferation, differentiation, and multipotency. Cell
counts via trypan blue staining analyzed proliferation and viability.
Differentiation was determined by flow cytometry and immunocyto-
chemistry for the presence of adult stem cell, hematopoietic differ-
entiation, and embryonic stem cell markers. Wnt proteins levels and
activity were assessed via westerns. Multipotency was determined by
colonies forming assays.
Summary of Results: CD133 stem cells proliferated rapidly in culture
but gradually lost the adult stem cell markers producing proliferating
CD133+ and non-proliferating CD133- populations. After two weeks in
culture, CD133- cells began to express markers of hematopoietic
differentiation while maintaining embryonic stem cell markers through-
out six weeks. CD133+ and CD133- populations maintained multi-
potency throughout two weeks in culture. As CD133 stem cells
proliferated in culture, we discovered a decrease of the Wnt pathway
through an increase of GSK-3β and decrease of TCF-4 protein levels and
activity. Inactivation of GSK-3β resulted in proliferation of the
differentiated CD133- population, increased loss of adult stem cell
markers and gain of differentiation markers compared to the control, and
similar multipotency to control CD133- cells.
Conclusions: Therefore, CD133+ cells in culture divided asymmetri-
cally to produce differentiated daughter cells. Although activation of the
Wnt pathway did not increase self-renewal, we have found a new
phenotype of differentiate cells that retain the ability to proliferate. Our
study represents a critical step to increase our knowledge of hema-
topoietic stem cell differentiation and expansion.

Medical Education and Medical Ethics
Concurrent Session
2:00 PM
Friday, February 22, 2008

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DEVELOPMENT OF A PERFORMANCE
ASSESSMENT CHECKLIST OF THE NEWBORN
HISTORY AND PHYSICAL EXAMINATION
1UTHSCSA, San Antonio, TX and 2UTHSCSA, San Antonio, TX.
Purpose of Study: Competency-based education requires the documenta-
tion of history and physical examination skills of medical students and
residents. Evidence shows that faculty rarely directly observe these skills
and are poor observers. Checklists may improve observation. No
validated newborn history and physical examination performance
assessment checklist exists. Objective: Develop and implement a newborn history and physical examination checklist to assess the performance of medical students and residents.

Methods Used: IRB approval was obtained. The ADDIE (analyze, design, develop, implement, evaluate) model was used in developing our checklist. We scoured the literature and websites for medical schools and professional organizations seeking a validated tool; finding none, we built our own from existing checklists and expert opinion. Local neonatologists and educational specialists reviewed our first draft checklist for structure and content. Revisions were made. The checklist was pilot tested with medical students and residents; their performance was assessed, they were given feedback, and their input was sought in further revisions. The final checklist consists of 59 items assessed in four areas: general approach, history, physical examination, assessment/plan. Each student or resident is scored for completion and accuracy of each item. The checklist has now been utilized with 88 third year medical students and 18 first year Pediatric residents from September 2006-September 2007.

Summary of Results: Third year medical students and first year Pediatric residents rotating in our newborn nursery have been very receptive to direct observation and corrective feedback regarding their newborn history and physicals. Utilizing independent t-tests Pediatric residents achieved statistically higher scores than medical students in all four areas (P<0.05). Two faculty members with divergent styles exhibited 90.2% agreement and a kappa value of 0.74 based on simultaneous assessment of eight trainees.

Conclusions: We have developed a performance assessment checklist and validated it by verifying high interrater agreement, content and construct validity. Trainees are receptive to corrective feedback. A toolkit is being constructed for widespread dissemination.

299 MEDICAL STUDENT PERSPECTIVES ON THE ROLE OF SPIRITUALITY IN END-OF-LIFE DECISION MAKING

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Purpose of Study: During end-of-life (EOL) decisions, spirituality is a common consideration. Unfortunately, communication on spiritual beliefs between patients and health care providers is often limited resulting in a “communication gap.” Our study seeks to identify differences in spiritual beliefs and thoughts on EOL care between the public and first year medical students (MS1), and to assess the effect of physician training on those thoughts and beliefs.

Methods Used: A questionnaire was developed to characterize spiritual beliefs and EOL opinions and to identify variables that predict those beliefs and opinions. To identify differences in various study populations, questionnaires were partially modified for each population, but all questionnaires contained a core of questions addressing spiritual beliefs and EOL issues. Study populations included an MS1 class at WFUSM (n = 88 respondents), the general public (n = 64), local ministers (n = 172) and a prior class of fourth year medical students (MS4, n = 73) with the results from all populations compared to each other.

Summary of Results: All groups agreed (> 89% respondents) that people should have a living will and healthcare power of attorney, and that discontinuation of treatment is acceptable when medical therapy is futile. Life after death, the sanctity of life, and the distinction between body and soul were the “most important” beliefs for all respondents. Concerning the cessation of food and water to the terminally ill, ministers and the public were less likely to agree than both MS1 and MS4 students (p < 0.01). When asked about providing pain medication given the risk of hastening death significantly fewer of the public respondents (p < 0.05) agreed as compared to the minister, MS1 and MS4 respondents. While public, minister and MS1 respondents generally agreed on the importance of hope and belief in miracles, significantly fewer MS4 respondents gave those beliefs equal importance.

Conclusions: Future physicians and patients agree on many issues concerning spirituality at the EOL which provides a framework for EOL communications. However, different opinions within these populations were identified and may contribute to the “communication gap.” These findings provide valuable insights that can be used to enhance public education and physician training.

300 AN OBJECTIVE, STRUCTURED CLINICAL EXAMINATION (OSCE) FOR PEDIATRIC EMERGENCY MEDICINE FELLOWS USED TO EVALUATE THE SIX ACGME CORE COMPETENCIES

T.M. Thompson, H. Farrar, and J. Graham. University of Arkansas for Medical Sciences, Little Rock, AR.

Purpose of Study: Residency programs have recently begun using objective, structured clinical exams (OSCE) to document competency in certain tasks, particularly the 6 competencies of the Accreditation Council on Graduate Medical Education (ACGME). No published works exist documenting the use of OSCEs in post-graduate sub-specialty resident education.

Methods Used: An OSCE was developed for use in a pediatric emergency medicine (PEM) fellowship program to demonstrate mastery of certain tasks in all 6 ACGME competency domains. The exam was administered to the 3 upper level PEM fellows in the program at UAMS as a normal part of their training program in the fall of 2007. The exam consisted of 4 stations combining both high fidelity simulation mannequins and standardized patients or parents (SPs). Tasks evaluated included: choosing appropriate medication and obtaining informed consent for sedation; correctly identifying a fracture, speaking with a consultant, splinting an anxious child; giving advice and arranging transport for a critically ill Tox patient; leading a pediatric trauma code and relaying bad news to a parent. The scenarios were video taped and graded by three emergency medicine faculty using standardized checklists.

Summary of Results: All fellows scored highly on interpersonal skills and professionalism tasks, but there was a great deal of variability in the standardized parent’s feedback of giving bad news. Fellows appeared hesitant or uncomfortable in relaying the news of a child’s death to a parent as reflected in the SPs score. While all three placed the correct splint, only one rechecked the neurovascular status post splint application. All fellows discussed the possible side effects of sedation with the SP, but none asked the nurse to witness that discussion before signing the consent paperwork. None of the fellows offered alternatives to sedation for a painful procedure unless prompted by the SP. Patient Care, Medical Knowledge, and documentation OSCE scores correlated with a fellow’s performance on the ABP in-service exam.

Conclusions: This pilot study demonstrates that an OSCE can provide a standardized method for evaluating ACGME Core Competencies in PEM. Correlations between the OSCE and in-service exam scores may identify fellows in need of remediation.

301 INSTRUCTOR DIRECTED LEARNING OF RHEUMATOLOGY IS SUPERIOR TO STUDENT SELF STUDY

A. Sittig1, C. Mitchell2, P. Bass1, and S. Berney1. 1LSU Health Sciences Center- Shreveport, Shreveport, LA and 2MedStudy, Colorado Springs, CO.
Purpose of Study: Medical curriculum reform has been implemented by the LCME stressing self-instruction as crucial to lifelong learning. One significant adverse effect of the deemphasis of didactic teaching is the potential inability of students to adequately identify a faculty member as a role model, decreasing their interest in and comfort with a particular medical topic and decreasing in the trainees entering a specific field. Our program tests the hypothesis that a didactic experience with a mentor will improve comfort with rheumatology.

Methods Used: Junior medical students were randomized to either a self learning or a directed learning group. All participants took a pretest and completed a series of analogue videos of patients undergoing a variety of rheumatologic maneuvers. The self learners viewed the videos at their own pace and self-assessed their comfort and knowledge of each maneuver. The directed learners viewed the videos but were challenged to perform the maneuver on a patient under the direction of a role model, increasing their comfort with and knowledge of educational concepts and patients. By demystifying rheumatology for these students, this teaching approach may increase the number of trainees who eventually pursue rheumatology careers.

Summary of Results: 26 students initially participated, evenly distributed between the 2 groups. The directed learning group improved their pre to posttest score by an average of 3.6 answers (17.6%) and the self learners by 1.8 +/- 4.7 answers (5.3%) which approached clinical significance (p=0.064). The post course VAS indicated that the directed learners were approximately 40% more comfortable with rheumatology compared with the beginning, while the self learners only became 18% more comfortable (p= .00006). There was no difference between the 2 groups on their standardized patient exam.

Conclusions: This study indicates that direct teaching is superior to self-instruction when assessing knowledge and comfort with many aspects of rheumatology. This data may have long-term implications, because many students and residents choose their ultimate subspecialty based on their comfort with and knowledge of educational concepts and patients. By demystifying rheumatology for these students, this teaching approach may increase the number of trainees who eventually pursue rheumatology careers.

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DO MEDICAL STUDENTS REPORT ACHIEVING CURRICULAR GOALS? SELF-ASSESSMENT IN A COMPETENCY-BASED CURRICULUM

M. Gundlach1, J.C. Rogers2, and B.M. Thompson3. 1Baylor College of Medicine, Houston, TX and 2Baylor College of Medicine, Houston, TX.

Purpose of Study: With an increased focus on competency-based curriculum, educators have been challenged to develop valid evaluation tools that document competency attainment. Baylor College of Medicine (BCM) developed 43 Core Competency Graduation Goals (CCGGs) organized by the 6 ACGME domains. The purpose of this study was to examine self-assessment ratings of BCM students on the CCGGs over time and by gender.

Methods Used: In a repeated measures cohort study design, one medical student class (n = 160) was surveyed at the beginning and the end of their third year, and the end of their fourth year. At each time point, students completed a Likert scale questionnaire self-assessing their perceived achievement on each of the goals (1 = Not Achieved, 7 = Achieved). Mean ratings were determined for each ACGME competency domain. Repeated measures ANOVAs were performed to examine the effects of time and gender on pooled (by domain) and individual self-assessment ratings. Effect size was determined using eta to indicate practical significance (where an eta of 0.05 or 0.10 corresponded to a medium or large effect, respectively).

Summary of Results: A cohort of 108 students completed self-assessment questionnaires at all three time points (overall response rate 67.5%). All six domains showed a statistically significant higher mean self-assessment rating over time. Of the individual competencies, 42 (97.7%) showed a statistically significant higher mean self-assessment rating over time with 37 (86.0%) individual competencies having a medium or large effect size. For two professionalism competencies, women had statistically significant higher mean self-assessment ratings than men with a medium effect size.

Conclusions: The medical students’ self-assessment ratings increased over time as they progressed through the clinical curriculum. Although this study was limited to one cohort at one institution, the data indicate that self-assessment of competency goals may have value, especially at monitoring trends over a longitudinal curriculum. Future research should explore trends across multiple cohorts, examine factors that contribute to gender differences in self-assessment ratings, and correlate self-assessment ratings to more objective evaluation measurements.

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PEDIATRIC JUNIOR CLERKSHIP STUDENTS: DO THEY DO WHAT THEY DOCUMENT? DO THEY DOCUMENT WHAT THEY DO?

D. Rasmussen, M. Broussard, and P.F. Bass. Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose of Study: The primary purpose of this study is to determine if inconsistencies exist between the examination maneuvers and documentation of these maneuvers as documented by junior medical students. An additional purpose is to see whether documentation errors decrease as students progress throughout the clinical 3rd year.

Methods Used: Junior medical students on the outpatient clinic rotation of the Pediatric Clerkship were recorded performing examinations on patients younger than 5 years old with appropriate consent. Each videoed encounter was reviewed independently and results were recorded on a standard physical exam checklist. Exam elements performed incorrectly were also noted on the form. A separate investigator reviewed copies of clinic notes for each patient encounter and recorded results from the clinic note on the checklist. Both checklists were compared to determine if any discrepancies between performed physical examination skills and the corresponding documentation existed.

Summary of Results: Ten student-patient encounters have been recorded and reviewed. All encounters have been performed by junior medical students (n=7) with the same amount of training (second clinic rotation). On the 10 videos, 135 physical exam maneuvers were performed; only 69% were documented. There were 123 items documented in the 10 corresponding clinic notes, 24% of which were not clearly performed on the video. The most common elements documented but not performed were eye and neck examinations. The video reviewer did not see any physical exam elements that were incorrectly performed. Since all students have the same amount of clinical experience, no trends related to this could be identified.

Conclusions: No encounters were completely and accurately documented. Limitations include a single-institution study with a small number of encounters. Data are still being collected.

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A WEB BASED, SELF DIRECTED LEARNING MODULE ON PEDIATRIC PATIENT SAFETY IN A PEDIATRIC CLERKSHIP

J. Graham and B. Latch. University of Arkansas, Little Rock, AR.

Purpose of Study: The Institute of Medicine and other groups have pointed out that medical error is a common cause of morbidity and mortality. Children are at higher risk of adverse events in medical care, thus patient safety is of particular concern in pediatrics. A lack of patient
safety curricula in medical student education has been noted in the literature. The purpose of this study was to develop and evaluate a self directed learning module on pediatric patient safety for use in a pediatric clerkship.

Methods Used: A self directed learning module was developed as a part of a series of modules for use in the 8 week pediatric clerkship at the University of Arkansas. Pre- and post-module multiple choice quizzes were used to assess knowledge. Statistical significance was determined using a Student t-test. The study was approved by the University of Arkansas for Medical Sciences Institutional Review Board.

Summary of Results: The module consisted of a case based slide presentation administered in a web based course management system. Each student has a unique system login which records the student responses. Each student took the pre-module quiz, read through/studied the module content, followed by the post-module quiz. 237 students completed the module in the 2005–2007 classes. The mean pre-module quiz score was 68.2%; the mean post-module quiz score was 98.6% (p<0.0005).

Conclusions: A self directed web based learning module on pediatric patient safety can be used successfully to increase student knowledge. The web based, self directed module can fit into a busy clerkship without adding classroom time and at the timing best suited to the learner.

305 CAN HOSPITALISTS BE EFFECTIVE TEACHERS?
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1Medical University of South Carolina, Charleston, SC; 2Medical University of South Carolina, Charleston, SC and 3USC School of Medicine, Columbia, SC.

Purpose of Study: As more teaching institutions adopt the hospitalist model for inpatient care, a new generation of internists has become responsible for the education of internal medicine house staff, prompting questions about their effectiveness as clinical educators. We aimed to 1) compare teaching skills of hospitalists to traditional academic generalists and 2) identify primary predictors of highly rated teaching skills.

Methods Used: We analyzed house staff evaluations of attendings on the general medicine rotation from 2000–2004 at an academic medical center. We also obtained specific attending characteristics by reviewing faculty Curricula Vita. The primary outcome was the overall rating of the faculty member’s teaching skills from these evaluations. Using bivariate analysis, we compared the scores of dedicated hospitalists to those of traditional academic generalists who served as faculty on the hospitalist services. Finally, we used ordinal regression to determine which of the attending background characteristics predicted better overall teaching skills.

Summary of Results: There were 426 evaluations completed by house staff working with 7 hospitalists and 7 traditional academic generalists. Evaluations were required, resulting in a 100% response rate. Using bivariate analysis, house staff rated the overall teaching skills of traditional academic generalists higher than those of hospitalists (3.80 vs. 3.47, P=0.01). Using ordinal regression, we found that only one factor correlated with highly rated teaching skills: having served as chief resident or a medicine fellow (Parameter estimate =–0.61 for not serving as chief or fellow, P<0.01).

Conclusions: After adjusting for variables in these data, the teaching skills of the hospitalists and those of the traditional academic generalists did not differ. Having undergone faculty training in the form of serving as chief resident or fellow was the predictor characteristic that correlated with highly rated teaching skills. These analyses suggest that faculty development training may provide clinicians with teaching skills that residents find valuable. Future directions could include implementation of a faculty development course to improve teaching skills at our institution.

306 REFLECTIVE EDUCATION AND SIMULATION IN PEDIATRIC MEDICAL EDUCATION
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Purpose of Study: The ability to reflect consciously upon one’s practice promotes the development of medical expertise. Studies suggest that successful physicians engage in reflective practice on a regular basis and the ACGME has incorporated this practice within its core competencies. Medical students acquire skills through “hands-on” training under the supervision of a trained physician. Since the 1999 IOM report to Err is Human, the concept of learning by doing has become less acceptable, particularly when invasive procedures and high-risk care is required. Medical simulators have emerged as a method to teach and improve medical skills without the logistical, legal and emotional concerns associated with “real” patients and are increasingly available at many medical training programs. The purpose of this study is to evaluate the impact of medical simulators, specifically simulations of the neonatal hip examination and lumbar puncture procedure, on two key areas of medical education: individual core procedural knowledge and reflective assessments. We hypothesize that medical students participating in these pediatric simulation experiences will demonstrate improved procedural knowledge, skill, competence, and confidence.

Methods Used: Third year students (n=19) participated in a 4-phase research program: pre and post-test knowledge assessment, simulator introduction and instruction, and reflective assessment of simulator impact on performance of these procedures on future “real” patients.

Summary of Results: Results of procedural knowledge based pre- and post-tests provided to medical students at the beginning and end of their pediatric clerkship indicate a significant increase in knowledge (p<.001, Cohen’s effect size: large at d=.748). A qualitative analysis performed on participants’ responses to a reflective question demonstrated 100% positive comments with confidence as a major outcome. Participants demonstrated confidence in two main categories: lowering anxiety and apprehension about procedural performance and positive self-assurance regarding their ability to perform the procedure.

Conclusions: The utilization of medical simulators improved the procedural knowledge, skill, competence, and confidence of medical students and should be considered as learning tools in pediatric medical education.

307 EVALUATION OF AN INJURY PREVENTION WORKSHOP FOR JUNIOR MEDICAL STUDENTS IN A PEDIATRIC CLERKSHIP
J. Graham, B. Latch, B. Miller, H. Mullins, and M.E. Aitken. University of Arkansas, Little Rock, AR.

Purpose of Study: Injury is a leading cause of morbidity and mortality at all ages, but particularly in children and adolescents. The Association of American Medical Colleges issued a report “Teaching Future Doctors about Injury” in 2005 that noted that injury prevention was missing in the curricula of most medical schools. The purpose of this project was to develop and evaluate an injury prevention workshop for use in with junior medical students in a pediatric clerkship.

Methods Used: A 2–1/2 hour workshop was developed incorporating a didactic lecture followed by small group sessions focusing on passenger safety, home safety, and recreational safety. Student knowledge was assessed using pre- and post workshop multiple choice quizzes; self
Student's perceptions of feedback after implementation of an on-line evaluation system in our pediatric junior clerkship

M. Broussard and P.F. Bass, Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose of Study: We hypothesize that the use of an on-line evaluation system with real-time review by students improves the students’ perceptions about feedback compared to using paper evaluation forms that the students do not review until after completion of the rotation.

Methods Used: Students in our Pediatric Junior Clerkship were evaluated using paper forms in the academic year 2005–6. The students rarely saw the feedback on these forms until after the completion of the 8-week clerkship. Students in 2006–7 were evaluated using www.myevaluations.com. An 11-question survey where students rated statements regarding feedback on a 5-point Likert scale was administered to students completing our clerkship July 2005 through June 2007. The average rating for each statement was calculated for each group. These averages were then compared using a two-tailed T-test.

Summary of Results: Our data, presented in Table 1, includes 69 students from the “paper” group and 43 students from the “on-line” group.

Conclusions: While some of the questions trended toward improvement, it does not appear that real-time evaluation affected students’ satisfaction with feedback in our clerkship. Our pilot study is limited by the timeliness in which on-line evaluations are completed.

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cases were prenatally exposed to more than one drug. After adjusting for confounders, prenatal opiate exposure was significantly associated with lower gestational age (1.4 wk decrease, \( p < 0.002 \)), and a decrease of 280 gm (\( p < 0.005 \)), 0.83 cm (\( p < 0.03 \)), and 1.3 cm (\( p < 0.03 \)) respectively in birth weight, head circumference, and length.

**Conclusions:** Next to tobacco and marijuana, opiates are commonly used by pregnant polydrug users in rural areas. The significant effects on newborn anthropometric measurements need to be considered in the context of possible compounding effects of other drugs also affecting fetal growth.

**311**

**THY-1 NULL NEWBORN MICE EXHIBIT INCREASED LUNG TISSUE RESISTANCE AND DECREASED COMPLIANCE**

T.A. Williams\(^1\), T. Nicola\(^2\), M. Hewitt\(^3\), L. Schwiebert\(^3\), A. Bulger\(^2\), S. Oparil\(^4\), Y. Chen\(^4\), and N. Ambalavanan\(^2\). \(^1\)University of Alabama at Birmingham, Birmingham, AL; \(^2\)University of Alabama at Birmingham, Birmingham, AL; \(^3\)University of Alabama at Birmingham, Birmingham, AL, and \(^4\)University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** In previous studies, we showed that Thy-1 null (TN) mice have inhibited alveolar development and increased interstitial collagen, due to increased transforming growth factor-beta activation. This experiment tested the hypothesis that impaired alveolar development and excessive interstitial collagen in neonatal Thy-1 null mice lead to abnormal pulmonary function.

**Methods Used:** Wild-type (WT) and TN mice (n=6/gp) were tracheally cannulated and pulmonary functions evaluated using a flexiVent apparatus at 2 weeks of age. The forced oscillation technique using tidal volumes of 60 µl (=6 mL/kg) was utilized for determination of pulmonary function. The average of ten measurements per mouse was used.

**Summary of Results:** Total lung volumes were similar in WT and TN mice, but TN mice had increased total lung resistance, primarily due to increased tissue resistance. Airway resistance was similar in WT and TN mice. TN mice also had decreased lung compliance.

**Conclusions:** The structural observation of increased lung collagen is accompanied by the functional correlates of increased resistance and decreased compliance. Therefore, the TN newborn mouse has a lung phenotype similar to bronchopulmonary dysplasia, and may be of use as a mouse model for investigation of abnormalities of lung development in preterm infants.

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**312**

**“WRAPPING INTERVENTION VS. MATTRESS FOR PREVENTION OF HYPOTHERMIA STUDY”**

P. Simon, D. Dunnaway, M. Escobedo, L. Krous, and A. Wlodaver. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

**Purpose of Study:** ELGANs remain vulnerable at birth to hypothermia and associated increased mortality even when dried and placed under a radiant warmer. (Peds 2000;106:659-71) Recent study of polyethylene occlusive wrap immediately after delivery of ELGANs has shown a decrease in the incidence of hypothermia on admission (J Pediatr. 2004 Dec;145(6):750–3). This technique is now recommended in the NRP guidelines. Sodium acetate thermal mattresses are less cumbersome and allow more direct access to the newborn but have not been well studied in the ELGAN. Our primary hypothesis is: Sodium acetate thermal mattresses are equally effective as occlusive polyethylene wrap in preventing hypothermia in ELGANs as measured by mean axillary temperatures upon admission to the NICU. Costs of the two methods will also be compared.

**Methods Used:** For this prospective, randomized study, informed consent is obtained from the parents of any infant being delivered at less than 28 weeks gestation. In the delivery room, the resuscitation team opens a sealed opaque envelope for treatment group assignment. Maternal temperature and delivery room temperatures are recorded prior to delivery. The baby is received from the obstetrician in a pre-warmed towel, placed on a sodium acetate thermal mattress (Infatherm) or wrapped in plastic (NeoWrap), and reuscitated as recommended in NRP. The baby is moved in a transport incubator to the NICU and placed under a radiant warmer. Axillary temperatures are recorded immediately upon arrival to the NICU. The sample size determination was based on the HeLP study (vide supra) which used a standard deviation of 0.9 degrees C between groups on admission as significant temperature difference. For an alpha of 0.05 (2-tailed) and 90% power to detect a mean difference of 0.9 degrees C between groups, will require approximately 18 babies per treatment group in our study.

**Summary of Results:** We have enrolled 15 of 40 patients currently. Mean admission temps for both groups have been similar. We have enrolled 15 of 40 patients currently. Mean admission temps for both groups have been similar.

**Conclusions:** Preliminary data indicate that occlusive polyethylene wrap and sodium acetate thermal mattresses appear to be equally effective in preventing hypothermia in ELGANs. Polyethylene wrap may be less costly, but the thermal mattresses may be preferable in some circumstances.

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**313**

**ETIOLOGY, DEMOGRAPHICS, AND OUTCOME OF MASSIVE ANASARCA IN THE NEWBORN INTENSIVE CARE UNIT**


**Purpose of Study:** Massive anasarca is an increasing problem in the NICU. To date there have been no systematic analyses of the incidence, causes, demographic characteristics, or outcome of infants who develop severe edema.

**Methods Used:** We searched the computerized medical records of all infants admitted to the Regional Newborn Intensive Care Unit at UAB and those transferred from UAB to the Neonatal Intensive Care Unit at The Children’s Hospital of Alabama for the period 1/1/06 to 12/31/06. Graphic plots of the infant’s daily weights were produced. Infants who manifested an increase in body weight of at least 30% over a ten day period were selected for analysis. Charts were retrieved and a determination made as to whether the infants did develop massive anasarca. We then extracted information regarding patient demographics,
presumptive cause(s) of the condition, as well as outcome data. Data collection forms were numbered with a unique number and did not contain personal identifiers. This project was approved by the UAB IRB.

**Summary of Results:** We identified 19 infants out of 1,393 admissions (1.3%) who developed massive anasarca. 12 (63%) were male, 9 were white, 9 black, and one was hispanic. Mean BW was 1,359g (range 430–3920g), and GA 29wks (23–39wks). Mean age at onset was 24d (1–88d), and average time to maximum weight after onset was 14d (2–39d). Overall, 14 of 19 (74%) died. The average weight gain from baseline was 104% (33–315%); in survivors it was 77% (45–174%) versus 114% (33–315%) in non-survivors. Renal failure was diagnosed in 9 babies, 8 (89%) of whom died. Necrotizing enterocolitis occurred in 6, with 4 (67%) deaths. 7 of the 8 (88%) infants with clinical or confirmed sepsis died, while all 3 of the infants with congenital heart disease expired. (N = 19 due to multiple diagnoses in some infants.)

**Conclusions:** Massive anasarca is an uncommon condition in the NICU but is associated with very high mortality. Death rates exceed 65% regardless of etiology. Massive anasarca likely contributes to the morbidity and mortality of these infants. A better understanding of the physiologic basis of anasarca and more effective remedies could lead to a reduction in morbidity and mortality from this severe complication.

### 314 CEPHALIC HEMORRHAGE IN STILLBIRTHS

**D.M. Padgett and D.R. Shanklin. University of Tennessee, Memphis, TN.**

**Purpose of Study:** Cephalic hemorrhages are often alleged to be due to obstetrical misfeasance, delivery force errors, prolonged labor, excessive oxytocin/prostaglandins in labor, and other factors presumably controlled by professional attendants.

**Methods Used:** We reviewed 500 comprehensive stillborn autopsies from departmental archives for 1983–2006 (excluding global brain anomalies). The number and location of these lesions, the weight and surface area of the hemispheric and infratentorial contents, the estimated duration of post-demeis fetal retention, gestational age, and the presence of premature rupture of the membranes (PROM) were recorded.

**Summary of Results:** Overall prevalence of these lesions was surprisingly high, at 30% (150 cases). There were 248 individual lesions over a range of 1–5 sites, an average of 1.65 lesions per case. Marked or excessive bleeding was present in 14.4%. When comparing hemispheric to infratentorial location, the risk of hemorrhage was proportional to the contact surface with the calvarium, rather than to the weight. The ratio of hemispheric to infratentorial mass was 17.54. The equivalent surface area ratio was only 6.76, similar to the distribution of lesions at 6.26. This suggests that pressure from or against the calvarium plays an important role. Comparison of the lesion score (number of foci + severity) to fetal retention showed retention intervals had no effect. Similarly, presence or absence of PROM made no difference in lesion score.

**Conclusions:** Cephalic hemorrhages are very common in stillborns. They appear to be affected by surface area contact with the calvarium, but not by post-demeis fetal retention or PROM. This prevalence calls into question the common medicolegal assignment of such lesions to forces of labor and management. Other factors, e.g., low ascorbic acid levels, dehydration from placental abruption, and trauma need to be considered, both to explain an origin earlier in gestation and their pattern, with implications for similar lesions in newborns.

### 315 FENALDOPAM USE IN THE NEONATAL ICU

**S.E. Yoder1, and B.A. Yoder2. 1UT-Houston HSC, Houston, TX and 2University of Utah HSC, Salt Lake City, UT.**

**Purpose of Study:** Fenaldopam (FDM) is a dopamine1-receptor agonist. Its primary effect is selective renal and splanchnic vasodilation.

Neonatal FDM use has recently increased but few studies have analyzed effectiveness and safety. This study evaluates effect of FDM therapy on electrolytes, renal function, blood pressure, and urine output in neonates.

**Methods Used:** Retrospective review of 20 neonates treated with FDM in two NICU’s. Gestation ranged from 24–39 wks (35 ± 5, mean ± SD), weight from 1040–5212 gms (3097 ± 1120) and postnatal age 1 to 89 days (20 ± 26) at start of FDM. Values for electrolytes, BUN, creatinine, fluid in, urine out, and blood pressure were compared for 24-hrs prior to and initial 48-hr period of FDM therapy.

**Summary of Results:** Major indications for FDM were pre-renal oliguria and anasarca. Eight infants were on ECMO. FDM therapy was provided for 2–23 days. FDM dose increased from initial median 0.10 mcg/kg/min (range 0.03–0.50) to 0.20 (range 0.06–1.00) at 48 hrs. FDM therapy had no effect (repeated measures ANOVA) on electrolytes, calcium, glucose, or blood pressure. FDM use did not alter serum creatinine, but was associated with increased BUN (P = 0.008), primarily due to babies on ECMO. Total fluid intake (P = 0.004) significantly decreased between 24-hrs prior and 24–48 hrs after initiation of FDM. During this time urine output increased significantly (P = 0.037), with the effect primarily due to babies not on ECMO.

**Conclusions:** FDM use was associated with increased urine output and decreased fluid intake over initial 24–48 hrs of FDM therapy, but did not improve renal function. There were no apparent adverse cardiopulmonary or metabolic effects from FDM use in this limited population. Prospective, randomized trials are indicated for FDM use in oliguric neonates.

### 316 COMPLICATIONS OF PERCUTANEOUSLY INSERTED CENTRAL VENOUS LINES IN LOW BIRTH WEIGHT INFANTS

**S. Duncan1, D. Stewart1, and J. Corneal2. 1University of Louisville, Louisville, KY and 2University of Louisville, Louisville, KY.**

**Purpose of Study:** Protracted hospitalization in the preterm infant often necessitates extended periods of intravenous access, including percutaneously inserted central venous catheters (PICC). There is a paucity of information regarding the complications of PICCs in the preterm infant. We hypothesized that: 1. In preterm infants < 1500 grams, there will be no difference in complication rates between infants with a number 1 French vs. infants with a number 2 French PICC. 2. In preterm infants < 1500 grams, there will be no difference in complication rates between infants with an indwelling PICC < 21 days vs. infants with an indwelling PICC > 21 days.

**Methods Used:** We performed a retrospective closed cohort study of infants admitted to Kosair Children’s Hospital during 2005–2006. Preterm infants < 1500 g who had a PICC placed were enrolled. Demographic data and details of the initial PICC were recorded, including insertion, duration of use and complications. Data was entered into an Excel spreadsheet and analyzed using SPSS. The primary outcome variable was the rate of all complications. Secondary variables included rates of specific complications.

**Summary of Results:** 274 patient medical files were reviewed. GA and BW were less for those infants with a no. 1 Fr PICC. There was no difference in the duration of use. The majority of PICC lines were placed in the forearm, followed by the scalp. The overall complication rate was 31%.
Individual complication rates included malposition 11%; infiltration 7.7%; infection 6.6%; breakage 1% and occlusion 8.3%. Infection occurred in younger infants (p<0.05). Malposition tended to occur in smaller infants (p=0.05). Patients with a no. 1 Fr PICC had a higher complication rate (p<0.05). Occlusions were noted with no. 1 Fr PICCs (p=0.001). Complication rates increased if the initial PICC was used for >28 days (p=0.01). Occlusion was noted if the line was in place >21 days (p<0.05). Line breakage was more frequent if the line was in place >28 days (p=0.01).

Conclusions: PICCs can be problematic when used in the preterm infant. Prolonged usage requires a heightened level of vigilance in this population. Attention to maintaining line patency and position appear paramount. Additional study is required to further identify risk factors related to complications.

317 APPLICATIONS OF REGIONAL SATURATION MONITORING BY NEAR INFRARED SPECTROSCOPY IN THE NICU
S. Duncan, T. Anschutz, and S. Pepple. University of Louisville, Louisville, KY.

Case Report: Traditional vital signs in the neonatal patient include temperature, heart rate, respiratory rate, and blood pressure. Invasive monitoring in the neonate is technically challenging. Shock often remains under-recognized and treated late, with resultant ischemic end-organ damage, which may lead to death.

Tissue perfusion and vascular resistance is a balance between autonomic tone and autoregulation, which contributes to global, regional and local control of the vascular supply. Shock typically progresses through four stages, including regional hyperperfusion, global hypoperfusion, hypotension, and cerebral hypoperfusion. The INVOS® cerebral and somatic oximeter measures mixed venous and capillary oxygenation, reflective of end-organ (regional) oxygenation. By measuring cerebral and somatic regional saturation, early aberrations in regional blood flow can be identified, allowing for interventions prior to the development of the major manifestations of shock.

Near infrared spectroscopy (NIRS) has been utilized in the intraoperative and postoperative management of the neonate with congenital heart disease for over 10 years, demonstrating improved outcomes with cerebral monitoring. Applications of NIRS technology is now expanding outside of the operative suite in the pediatric and neonatal patient. Utilization of cerebral and somatic oximetry includes 1) early detection of shock states, 2) guidance and assessment of therapeutic interventions, and 3) predicting complications and outcomes.

In July, 2007, Kosair Childrens Hospital NICU began utilization of the INVOS® cerebral and somatic oximeter. To date, approximately 30 patients have been monitored. Several cases will be presented to illustrate the potential benefits of cerebral and somatic oximetry in the NICU. As cerebral and somatic oximetry becomes more commonplace in the NICU, patient management and outcomes should improve. As a research tool, the use of regional oxygenation monitoring will provide valuable insights to the unique physiology of the term and preterm infant.

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318 SEQUENTIAL OXIDATION OF PLASMA CYSTEINE/CYSTINE AND GLUTATHIONE/GLUTATHIONE DISULFIDE REDOX STATES IN

A MOUSE MODEL OF ENDOTOXIN-INDUCED LUNG INJURY
S. Iyer1,3, D.P. Jones1,2, K.L. Brigham2,3, and M. Rojas2,3. Emory University, Atlanta, GA; 2Emory University, Atlanta, GA and 3Emory University, Atlanta, GA.

Purpose of Study: Oxidant/antioxidant imbalance is a hallmark of Acute Lung Injury (ALI), and several lines of evidence indicate that perturbations in the extracellular redox environment correlate with the progression and severity of ALI. The redox state of the Cys/CySS couple is an important determinant of redox balance in the extracellular compartment, and Cys homeostasis is adversely affected during the inflammatory response to infection and injury. While much emphasis has been placed on the GSH system, little is known about the regulation of the Cys/CySS system in ALI. The purpose of the present study was to determine whether endotoxin causes a decrease in Cys and/or an oxidation of the Cys/CySS redox state and to determine whether these changes were associated with GSH/GSSG redox state changes.

Methods Used: Mice received endotoxin intraperitoneally, and plasma GSH and Cys redox states were measured at time points known to correlate with the progression of lung injury. Cys and GSH levels were quantified by fluorescent HPLC. The redox potentials (Eh) for the thiol/disulfide pools was calculated using the Nernst equation.

Summary of Results: We observed distinct effects of endotoxin on the GSH and Cys redox systems during the acute phase; plasma Eh Cys/CySS was selectively oxidized early in response to endotoxin while Eh GSH/GSSG remained unchanged. Unexpectedly, oxidation of GSH redox state at later time points occurred as a consequence of endotoxin-induced anoxia. Effects in the lung lining fluid also showed greater effects on the Cys/CySS system than on the GSH/GSSG system.

Conclusions: Given the previously established role of oxidized Cys/CySS redox state in mediating inflammatory signaling events, our findings suggest that early therapeutic targeting of the Cys/CySS system may be useful for controlling the sequellae of pathological events, and that treatments such as N-acetyl cysteine and procysteine may provide benefits independent of the GSH pathway.

319 TRAFFICKING OF BONE MARROW DERIVED MESENCHYMAL STEM CELLS AFTER LUNG INJURY
J. Xu, A. Mora, E. Torres, K. Brigham, and M. Rojas. Emory University, Atlanta, GA.

Purpose of Study: It has been documented that fibrocytes with CD45 CXCR4+Col I+ markers trafficked to lungs and contributed to lung fibrosis. However, there is no report regarding whether bone marrow derived mesenchymal stem cells (BMDMSC), with markers for CD45-CD105+, migrate to lungs during the injury process.

Methods Used: To determine BMDMSC migration and differentiation, researchers usually transplant BMDMSC from a donor to a recipient mouse which differs genotypically or phenotypically. This approach usually requires myeloablation or immunosuppression in the recipient mice. An alternative to bone marrow transplantation is using a technique named as parabiosis which links circulatory systems of 2 distinguishable mice. In the present study, we used parabiosis to determine the trafficking of BMDMSC after lung injury.

Summary of Results: Two C57BL/6 mice, one GFP+ and the other GFP-, were linked together to share the same circulatory system. After one month of recovery, the GFP- mouse was treated with a single dose of bleomycin or saline intratracheally. After 3 and 7 days, the lung tissues from the GFP- mouse were harvested and flow cytometry analysis performed to determine the expression of BMDMSC. BMDMSC, characterized with CD45-CD105+GFP+CXCR4+ markers, were undetectable in the control mouse lung. After bleomycin treatment,
the levels of CD45−CD105+GFP−CXCR4+ cells were significantly increased on both days 3 and 7. Immunohistochemical studies also revealed the presence of BMDMSC in the lung.

Conclusions: These results demonstrated for the first time that BMDMSC directly traffic to the lung during the injury process and palabiosis is an effective tool for investigating the mechanisms of diseases.

320 ZINC SUPPLEMENTATION IMPROVES ALVEOLAR MACrophage IMMUNE FUNCTION IN THE ALCOHOLIC RAT LUNG
A.J. Mehta, P. Joshi, and D. Guidot. Emory University and the Atlanta VA, Decatur, GA.

Purpose of Study: Chronic alcohol abuse produces a myriad of defects within the lung and renders the affected individual susceptible to pneumonia and acute lung injury. This phenomenon may be explained in part by studies showing that alveolar macrophages from the alcoholic lung respond poorly to inflammatory stresses and/or invasion by infectious organisms. However, a comprehensive mechanism by which alcohol abuse predisposes an individual to infection and injury has yet to be elucidated. Alcoholics are known to be deficient in the essential micronutrient zinc, which is critical for diverse cellular functions within the respiratory tract including stabilization of membranes and immune responses. Therefore, we hypothesized that zinc deficiency in the alveolar space may contribute significantly to the macrophage dysfunction in the alcoholic lung, and that these defects could be corrected by zinc supplementation.

Methods Used: To test this hypothesis, we examined zinc homeostasis and its effects on alveolar macrophage function in an experimental model in which rats were fed a liquid diet for 6 weeks with either alcohol or maltin-dextrin (control).

Summary of Results: First, the alveolar epithelial lining fluid and alveolar macrophages from alcohol-fed rats had lower levels of zinc. In parallel, alveolar macrophages from alcohol-fed rats had decreased expression of both a key zinc transporter (ZNT4) and the zinc-binding protein, metallothionein. Further, and consistent with previous findings in our lab, alcohol dampened alveolar macrophage GM-CSF receptor expression and signaling, and impaired bacterial phagocytic function. Importantly, in this new study we determined that dietary zinc supplementation up-regulated membrane GM-CSF receptors, and increased bacterial phagocytosis, in alveolar macrophages from alcohol-fed rats.

Conclusions: These results suggest that zinc deficiency, in part through changes in alveolar macrophage function, may be one of the mechanisms by which alcohol abuse impairs alveolar immune function and increases susceptibility to lung infections. Based on our findings, we speculate that zinc supplementation could improve alveolar macrophage function and decrease the incidence and/or severity of respiratory infections in this highly vulnerable patient population.

321 ROSIGLITAZONE ATTENUATES CHRONIC HYPOXIA-INDUCED PULMONARY HYPERTENSION: ROLE OF PTEN
R.E. Nisbet, J. Bland, E. Walp, D.J. Kleinhenz, R. Sutliff, and C.M. Hart. Emory University and Atlanta VA Medical Center, Atlanta, GA.

Purpose of Study: We previously showed that the PPARγ ligand, rosiglitazone, attenuates chronic hypoxia (CH)-induced pulmonary hypertension in mice. Because rosiglitazone increased PTEN (phosphatase and tensin homolog deleted on chromosome 10) expression and activity, and because hypoxia reduces PTEN expression in various cancer cells, we hypothesized that rosiglitazone attenuates CH-induced pulmonary hypertension by increasing expression of PTEN.

Methods Used: Male C57BL/6 mice were exposed to CH (FiO2 10%) or room air for 3 or 5 weeks. During the last 10 days of each CH exposure regimen, mice were treated with either the PPARγ ligand, rosiglitazone (10 mg/kg/day) or with an equal volume of vehicle (100 μl 0.5% methyl cellulose) by gavage daily.

Summary of Results: Our previous work demonstrated that CH exposure for 3 weeks caused pulmonary hypertension that was attenuated by treatment with rosiglitazone. Exposure to CH for 5 weeks caused further increases in pulmonary hypertension indicated by elevation of right ventricular systolic pressure and right ventricular weight. Treatment with rosiglitazone during the final 10 days of CH exposure reversed established CH-induced pulmonary hypertension. CH also significantly decreased lung levels of PTEN protein expression, and rosiglitazone attenuated this effect.

Conclusions: These preliminary data demonstrate that rosiglitazone reverses established CH-induced pulmonary hypertension in the mouse and that PPARγ ligands attenuate pulmonary vascular remodeling and hypertension, in part, through upregulation of PTEN. We postulate that PTEN suppresses hypoxia-induced proliferative signaling pathways in the lung that mediate pulmonary vascular remodeling and lead to pulmonary hypertension. These results further clarify mechanisms of action and suggest that PPARγ represents a novel therapeutic target in pulmonary hypertension.

322 ASSOCIATION OF BODY MASS INDEX (BMI) AND AIRWAY ADIPOKINES IN ADULTS WITH AND WITHOUT ASTHMA
B.A. Taylor1, M. Rojas1, A. Fitzpatrick2, L. Brown2, A. Anderson1, and F. Holguin. 1Emory University, Atlanta, GA and 2Emory University, Atlanta, GA.

Purpose of Study: Body weight has been shown to affect the distribution of airway leptin and adiponectin in murine models. However, the airway concentration of these adipokines and its modification by BMI in humans is unknown. In this study, we will examine how BMI affects airway adipokine concentrations in humans.

Methods Used: In an ongoing observational study, clinically stable, non-smoking adults with moderate-severe persistent asthma (GINA III-IV) of all BMI categories, along with healthy controls, were recruited to participate in an observational study to evaluate airway adipokines. All subjects underwent bronchoscopy with bronchoalveolar lavage (BAL), with measurement of BAL adipokines performed via Luminex assay. To date, 10 patients have been enrolled and studied: 2 subjects of normal BMI (BMI < 25; mean BMI 21.6), both with asthma, and 8 obese subjects (BMI ≥ 30; mean BMI 36.0), 3 of whom had asthma and 5 of whom were controls.

Summary of Results: Compared with normal weight controls, obese subjects had lower mean levels of both leptin (4800 pg/ml vs. 5870 pg/ml) and adiponectin (71,900 pg/ml vs. 452,000 pg/ml). However, the ratio of leptin to adiponectin was greater in obese subjects compared with normal weight controls (0.067 vs. 0.013). Further, among obese subjects, there was no difference observed in the leptin to adiponectin ratio between asthmatics and controls (0.066 vs. 0.067).

Conclusions: Obesity appears to differentially impact the expression of leptin and adiponectin in the airways of humans. This differential expression may play a role in the pathogenesis of the obese asthma phenotype.

323 SHORT WALK TEST PROVIDES PHYSIOLOGICALLY RELEVANT INFORMATION
REGARDING CARDIOVASCULAR FUNCTION IN CLINIC PATIENTS
R. Raj, R. Nipp, N. Pardue, D. Guerra, S. Sehli, R. Alalawi, and K.M. Nugent. Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose of Study: The purpose of the present study was to investigate if short clinic-based evaluations which are cost effective and easy to perform can provide physiologically relevant information in clinic patients.

Methods Used: 184 patients completed a medical questionnaire, a timed 100-foot walk test to measure gait speed and a Tinetti test (tests mobility and balance). 53 patients completed a standard treadmill exercise test and 7 patients completed a six minute walk test (6MWT). Physiological parameters collected during walking included heart rate (HR), respiratory rate (RR), O2 saturation (SaO2), and Borg dyspnea score.

Summary of Results: There was a significant correlation between gait speed and the number of mets achieved on the treadmill (p=0.026), and on distance walked on a 6MWT (p=0.035). The average change in HR during testing was 8 beats/minute; the HR change in the upper 20th percentile was 21 beats/minute. The average change in RR was 3 breaths/minute; the RR change in the upper 20th percentile was 8 breaths/minute. 11% of patients had SaO2 fall by >4% from baseline. The change in HR, change in RR, Borg score and change in SaO2 correlated with each other in a statistically significant manner (Table). The patients in the upper 20th percentile of HR change and of RR change had slower gait speeds and lower Tinetti test scores than patients in each comparator group. There was a significant correlation between gait speed and Borg score before and after the walk (p<0.05), handgrip strength (p<0.001), Tinetti score (p<0.001), number of comorbid illnesses (p<0.001), functional status (p<0.001) and the probability of a recent fall (p=0.043).

Conclusions: A 100 foot walk test provides sufficient stress to identify patients who have an excessive HR and RR response during walking, who have dyspnea on walking and who desaturate on walking, thus identifying patients who need further evaluation. Serial tests with gait speed measurements could provide a method to monitor disease progression and response to treatment in outpatients.

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324 PREVALENCE OF ALCOHOL USE DISORDERS AMONG PATIENTS ADMITTED TO THE MEDICAL INTENSIVE CARE UNIT
M. Prout, D. Guidot, and G. Martin. Emory University, Atlanta, GA.

Purpose of Study: Alcohol is the most commonly used and abused drug in the world and its use is linked to many health problems. In the U.S., 7-20% of outpatients abuse alcohol and 20-26% of hospitalized patients have a significant history of abuse or are admitted for a problem related to alcohol. Similar rates have been found internationally. Prior studies have shown that 9-21% of medical ICU admissions are alcohol-related. However, the prevalence of alcohol use disorders has never been measured in all admissions to a medical ICU in the U.S. using a validated questionnaire. Further, it is unknown how often an alcohol history is obtained by the admitting physician in the ICU setting.

Methods Used: All patients admitted to the medical ICU (or their surrogates) during a six month time period were asked to participate. A questionnaire composed of the Alcohol Use Disorders Identification Test (AUDIT) and short Michigan Alcoholism Screening Test (SMAST) was administered to determine alcohol use and abuse. These questionnaires have high sensitivity and specificity and outperform other measures of alcohol abuse.

Summary of Results: From February 1, 2007 to June 30, 2007, excluding May, we enrolled 143 patients with 150 ICU admissions. Using an AUDIT score cutoff of 8 or more and an SMAST score cutoff of 3 or more, 51 of the 143 patients (35.6%) had an alcohol use disorder by AUDIT and 50 of 143 (34.9%) by SMAST. In 15 patients, the AUDIT was negative and the SMAST was positive. In 16 patients, the AUDIT was positive and the SMAST negative. Combining the screen positives, 66 of 143 patients (46.2%) had a current or prior alcohol use disorder. The admitting team was unable to obtain an alcohol history in 16 patients due to patient incapacity. 18 patients had no recorded alcohol history. Therefore, in 34 of 143 (23.8%) patients admitted to the medical ICU no alcohol history was obtained.

Conclusions: Current and prior alcohol use disorders in patients admitted to the medical ICU are more common than previously reported for general inpatients. Additionally, almost 1 in 4 patients admitted have no information known about their alcohol history, either due to patient incapacity at admission or physician oversight. These combine to make alcohol use disorders common and under-diagnosed, and therefore, under-treated.

325 PREVALENCE OF PSYCHIATRIC DISORDERS IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA WHO ARE UNABLE TO TOLERATE NASAL CONTINUOUS POSITIVE AIRWAY PRESSURE TITRATION

Purpose of Study: A large number of patients with sleep-disordered breathing undergo split night studies or continuous positive airway pressure (CPAP) titration. However, some of them do not tolerate the use of CPAP during initial exposure to this type of therapy. An association between low compliance with CPAP therapy and psychiatric disorders has been reported in previous studies. However, the prevalence of psychiatric disorders in veterans with sleep disordered breathing who were unable to tolerate the initial CPAP titration has not been reported.

Methods Used: Retrospective review of a sample of (N=160) patients undergoing sleep studies at the Veterans Administration Medical Center Sleep Laboratory in Memphis from January 2006 to April 2006. The VA IRB approved the data collection. Other data obtained from computerized patient records included demographic parameters. A patient was considered to have a psychiatric condition if a psychiatric diagnosis was listed under the problem list and/or if the patient was on any psychiatric medications. Analysis was performed with a chi-square test. A p-value of 0.05 was considered significant.

Summary of Results: Mean age was 57.29 (±11.6 S.D); 93.94% were males, 33.3% African Americans, and 54% Caucasians. One hundred sixteen patients had obstructive sleep apnea of which 81 patients underwent CPAP titration or split night study. Of the 81 patients who underwent CPAP titration, 14 patients were unable to tolerate CPAP titration. Of these 14 patients, 9 had psychiatric disorders. Chi - square = 0.007 with 1 degree of freedom; P = 0.932.

Conclusions: There is not a significant difference in the prevalence of psychiatric disorders between patients unable to tolerate CPAP and patients who tolerated CPAP during CPAP titration or split night studies. The results of our study suggest that the presence of a psychiatric disorder does not preclude the use of CPAP as a therapeutic
alternative for the management of sleep disordered breathing in patients with psychiatric disorders.

Renal, Electrolyte and Hypertension I
Concurrent Session
2:00 PM
Friday, February 22, 2008

326 COLLECTING DUCT RENIN CONTRIBUTES TO INCREASE ANG II LEVELS IN THE MEDULLA OF BOTH KIDNEYS FROM GOLDBLATT HYPERTENSIVE RATS
M.C. Prieto-Carrasquero1, F.T. Botros1, H. Kobori1, D.E. Casarini2, D.M. Seth1, and L.G. Navar1. 1 Tulane University, School of Medicine, New Orleans, LA and 2University Federal of Sao Paulo, Sao Paulo, Brazil.

Purpose of Study: Renin is up-regulated in principal cells of collecting ducts (CD) of Ang II-infused and Goldblatt (2K1C) rats. In this study, we tested the hypothesis whether CD renin leads to increases in Ang I, and ultimately Ang II in 2K1C rats.

Methods Used: In 2K1C (n=15; clip=0.25 mm for 25 days) and sham-operated (n=12) rats, renin and pro-renin activities were determined by the amount of Ang I generated in kidney medullary tissues only to avoid the contribution of renin from juxtaglomerular cells. ACE and ACE2 mRNA levels, as well as the contents of Ang I, Ang II, and Ang 1–7 measured by HPLC, were also determined.

Summary of Results: Systolic blood pressure (184±9 vs 121±6 mmHg) and plasma renin activity (13±2 vs 6.7±1 ngAng I/ml/hr) were increased in 2K1C rats compared to sham. Angiotensin peptide levels, were increased in 2K1C rats compared to sham: Ang I: (CK=120±18; NC-K=129±13 vs. sham=67±6 pg/g; p<0.05); Ang II: (CK=150±32; NC-K=123±21 vs. sham=90±12 pg/g). In contrast, Ang 1–7 levels decreased in kidneys from 2K1C rats (CK=18±2; NC-K=19±2 pg/g) compared to sham rats (63±10 pg/g; P<0.05). Importantly, the activity of renin and pro-renin as well its transcript were higher in the medulla of both kidneys from 2K1C rats compared to sham [Renin (CK=8.6; NC-K=8.3; sham=3.4 ug Ang I/ug protein); pro-renin (CK=2.7; NC-K=3.6; sham=1.5 ug Ang I/ug protein); Renin mRNA:[(CK=10±0.4; NC-K=4.3±2.6 vs. sham=1.0±0.0; P<0.05)]. Nonetheless, the levels of ACE mRNA were increased and the ACE2 mRNA decreased in these medullary tissues of 2K1C rats compared to sham [ACE: (CK=2.3±0.5; NC-K=1.9±0.1)]; ACE2: (CK=0.7±0.3; NC-K=0.4±0.1) vs. sham=1.0±0.1].

Conclusions: Augmentation of CD renin in both kidneys of 2K1C rats may contribute to the differential regulation of ACE/ACE2 mRNA, thus helping to increase Ang II levels in medullary tissues. Enhanced CD renin associated with the reciprocal changes in ACE and ACE2 mRNA in the kidney medulla may synergize with the intrarenal Ang II/Ang 1–7 imbalance, thereby allowing a greater influence on the progression of high blood pressure during Goldblatt hypertension.

327 EFFECTS OF ANGIOTENSIN BLOCKADE ON URINARY VASCULAR ENDOTHELIAL GROWTH FACTOR LEVELS IN EARLY NEPHROPATHY OF A DIABETIC RAT MODEL
O.A. Izzaola1, K. Phitsikul1, K. McMahon1, S. Prabhakar1, 1Texas Tech University Health Sciences Center, Lubbock, TX and 2Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose of Study: Angiotensin inhibition with converting enzyme inhibitors or angiotensin receptor blockers (ARB) is known to decrease the proteinuria and slow the progression of human diabetic nephropathy (DN). We tested the hypothesis that initiation of proteinuria is associated with an increase in renal vascular endothelial growth factor (VEGF) and that the effects of angiotensin blockade are mediated at least in part by inhibition of VEGF in the kidney.

Methods Used: Obese ZSF rats, a newly characterized model of DN were used to test this hypothesis, while a group of lean ZSF rat served as controls. ZSF rats are phenotypically normal at 7 weeks and manifest progressive obesity, hypertension, hyperglycemia and proteinuria by 12th week of age. Urinary protein, VEGF, N-acetyl-beta-D-glucosaminidase (NAG, a marker of tubulo-interstitial injury) and creatinine were measured at 8th week and 12th week and compared to another group of rats that were given losartan at 25 mg/L in drinking water.

Summary of Results: As shown in the table, urinary protein, and VEGF levels were normal at 8th week in both lean and obese ZSF rats while they were increased at 12th week only in obese and not lean ZSF rats. Losartan administration reduced proteinuria, VEGF levels and serum creatinine in obese ZSF rats at 12th week. NAG levels were elevated at 12th week compared to 8th week in obese (and not lean) rats but losartan effects on lowering NAG in obese rats at 12th week were statistically insignificant.

Conclusions: These observations suggest that early DN is associated with activation of VEGF in the kidney and that ARBs decrease proteinuria by a mechanism that might involve VEGF pathway in the kidney.

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<th>12th week</th>
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<tr>
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</tr>
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<td>Obese ZSF + losartan</td>
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</table>

328 MORTALITY IN HOSPITALIZED PATIENTS WITH SEVERE HYPERNATREMIA
F. Babar1, T.M. Mangold2, and B.M. Wall3. 1University of Tennessee, Memphis, TN and 2VAMC, Memphis, TN.

Purpose of Study: Hypernatremia is associated with high mortality rates (40–66%). The purpose of the current study was to determine whether or not the rate of correction of severe hypernatremia influences mortality rate. Treatment guidelines recommend correction rates of <0.5 meq/l/hour.

Methods Used: A retrospective chart review of 131 consecutive hospitalized patients with severe hypernatremia (serum sodium>155 meq/l) from 2004 to 2006 was performed. Computerized medical records were reviewed to obtain the following data: serum concentrations of sodium, BUN, glucose, creatinine, and heart rate, diastolic and systolic blood pressure, age, gender, and ethnicity. Serial sodium concentrations at 24, 48 and 72 hours were recorded and average hourly rates of sodium correction were calculated. 30 day mortality after the onset of hypernatremia was recorded. Paired t-tests and chi-square statistics were used to compare variables between 30 day survivors (n=79) and non-survivors (n=52).
Summary of Results: The mean serum sodium was 158 +/− 3 meq/l on admission. The average rate of correction was 0.15 meq/l/hour. Correction rates >0.5 meq/l/hour were extremely rare. The mean age of patients was 73 +/− 14 yrs. 98% were men. 30 day mortality rate was 40%. Non-survivors compared to survivors had similar serum sodium on admission (158 +/− 2 vs 159 +/− 4 meq/l, p=0.05), were older (76 +/−12 vs 70 +/−14yrs, p<0.03), had higher heart rates (100 +/−24 vs 93 +/−18p<0.05), and had lower diastolic blood pressures (65mmHg +/−14 vs 70mmHg +/−13, p<0.03). Non-survivors had slower rates of correction (0.062 vs 0.165 meq/l/hour) with consistently higher serum sodium at 24,48, and 72 hr (p<0.05).

Conclusions: Hypernatremia continues to have a high mortality rate. Physicians are following current treatment guidelines to correct hypernatremia at rates of < 0.5meq/l/hour. Overly rapid correction of hypernatremia did not contribute to the high mortality rate. Indeed, non-survivors had slower rates of correction with more persistent hypernatremia.

329 HEPATITIS C AND CIRRHOSIS AS RISK FACTORS FOR BACTEREMIA IN HEMODIALYSIS PATIENTS

1University of Florida, Jacksonville, FL and 2University of North Florida, Jacksonville, FL.

Purpose of Study: Bacteremia (BAC) is an important cause of morbidity and mortality in hemodialysis (HD) patients.

Methods Used: We recently queried the DMMS dataset from the USRDS and showed that hepatitis C (HCV) infection is associated with an increased risk of BAC in HD patients (Reddy, JASN, in press). It was unclear from this work whether the presence of cirrhosis (CIR) in HCV (+) patients was the reason for the BAC or whether HCV was an independent risk factor. To address this question, we re-queried patients in the DMMS for the presence of CIR, HCV and BAC and assessed compared the incidence and relative risk of BAC from each variable (SAS 9.1).

Summary of Results: 18,295 patients were studied of median age 66 yrs, 37% black, and 52% male. 3009 (16.5%), 784 (4.3%), and 633 (3.5%) of patients had a diagnosis of BAC, HCV or CIR, respectively, p=0.0001) conferring a relative risk of BAC in HCV (+) patients of 1.7 (95% CI 1.5 – 1.9). In addition, when compared to CIR negative patients, CIR (+) patients had significantly more BAC (25.4 vs 16.1% for CIR (+) vs CIR (−), respectively, p<0.0001) conferring a relative risk of BAC in CIR (+) patients of 1.6 (95% CI 1.4 – 1.8). Patient numbers and HCV and CIR status were: 17,006, 505, 656 and 128 in patients who were HCV(−)/CIR(−), HCV(−)/CIR(+), HCV(+)/CIR(−), and HCV(+)/CIR(+), respectively. In these groups, the frequency of BAC was 16, 25, 27 and 28% in patients who were HCV(−)/CIR(−) (N=2668), HCV(−)/CIR(+) (N=125), HCV(+)/CIR(−) (N=179) or HCV(+)/CIR(+) (N=36), respectively (p<0.001). These data suggest that HCV and CIR are risk factors for BAC in HD patients. In addition, the presence of HCV and CIR was uncommon in this population, and implies that HCV and CIR are independent risk factors for BAC.

Conclusions: The presence of HCV or CIR increase the risk of BAC in HD patients and each appear to be an independent risk factor. These data further suggest that therapy of HCV in HD patients may help diminish infectious complications.

330 CANDESARTAN AUGMENTS THE COMPENSATORY CHANGES IN MEDULLARY TRANSPORT PROTEINS IN THE DIABETIC RAT KIDNEY

M.A. Blount, J.M. Sands, K.J. Kent, T.D. Smith, and J.D. Klein. Emory University, Atlanta, GA.

Purpose of Study: Urine concentrating ability is impaired in patients with uncontrolled diabetes mellitus (DM). In the streptozotocin-treated rat, a DM model, the major transport proteins involved in urine concentration (UT-A1 urea transporter, NKCC2/BSC1 Na-K-2Cl cotransporter, AQP2 water channel) are up-regulated. These compensatory changes reestablish the hypertonic interstitium required for urine concentration, thus lessening solute and water loss. Angiotensin II receptor blockers, like candesartan, slow the progression of chronic kidney disease and are very effective in diabetic patients. In normal rats candesartan reduced UT-A1 and UT-A3. ACE knockout mice, which have minimal angiotensin II, have reduced UT-A1 and NKCC2. If candesartan reduced UT-A1 and NKCC2 in DM rats, this would blunt the compensatory increase and exacerbate the volume depletion that occurs in uncontrolled DM.

Methods Used: Effects of candesartan on UT-A1, UT-A3, NKCC2, and AQP2 in control, candesartan-treated, DM, and candesartan-treated DM rats were examined by western blot analysis.

Summary of Results: Aldosterone levels in control (0.36±0.06 nM) and candesartan-treated rats (0.34±0.14 nM) were equal. DM rats had higher aldosterone levels (1.48±0.37 nM) that were decreased by candesartan (0.97±0.26 nM). UT-A1 expression was increased in DM rats compared to controls in inner medullary (IM) tip (158±13%) and base (120±25%). In DM rats, UT-A3 abundance was increased in IM tip (123±11%) and base (146±17%) vs control (100%) and, in candesartan treated DM rats, UT-A3 was increased in IM tip (160±14%) and base (210±19%). Candesartan treated DM rats had higher AQP2 in IM (46%) than rats receiving candesartan. NKCC2 was increased 45±10% in the OM of DM vs control rats and increased a further 41% by candesartan treatment in DM rats.

Conclusions: In contrast to control rats: 1) candesartan does not down-regulate UT-A1, UT-A3, AQP2, or NKCC2 in DM rats and 2) candesartan causes a further increase in NKCC2 and UT-A3 vs untreated DM rats. We conclude that candesartan amplifies compensatory changes in medullary transport proteins involved in urine concentration, thereby further reducing solute and water loss in uncontrolled DM. These changes may represent a previously unrecognized beneficial effect of angiotensin II receptor blockers in diabetes.

331 DETERMINING THE OPTIMAL METHOD FOR QUANTIFYING PROTEINURIA IN SPINAL CORD INJURY

H.M. Alshayed1, J.D. Walton1,2, T.M. Mangold1, and B.M. Wall1.
1VAMC, Memphis, TN and 2UTHSC, Memphis, TN.

Purpose of Study: Proteinuria (>0.5gm/day) is associated with increased all cause mortality in the chronic spinal cord injury (SCI) population. Routine urinalysis is too insensitive to reliably detect this level of proteinuria. This study was designed to assess the accuracy of random protein to creatinine (P/Cr) ratios in predicting clinically significant proteinuria.

Methods Used: 24 hr urine collections and random urine specimens were collected in 52 SCI patients. Sensitivity, specificity, predictive values (PV) and likelihood ratios (LR) of P/Cr ratio in predicting proteinuria were calculated.
Summary of Results: A random P/Cr ratio of < 0.3 is highly sensitive with high -PV, good +PV, low -LR in detecting > 0.5 gm/24 hr proteinuria. A ratio of > 0.8 is highly specific with high +PV, good +LR, and relatively low sensitivity and low -PV in detecting > 0.5 gm/24 hr proteinuria. A random P/Cr ratio between 0.3 to 0.8 has an intermediate sensitivity and specificity for clinically significant proteinuria. ROC curve indicates that a random P/Cr ratio of 0.51 has the best combination of sensitivity and specificity.

Conclusions: A P/Cr ratio<0.3 is predictive of the absence of clinically significant proteinuria, while a P/Cr ratio>0.8 is predictive for the presence of clinically significant proteinuria. P/Cr ratios in these ranges do not require confirmation with 24 hr urine collections. A random P/Cr ratio between 0.3 to 0.8 needs further evaluation by 24 hr urine collections to confirm proteinuria >0.5 gm/day.

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332 CARDIAC ANGIOTENSIN II AND ALDOSTERONE LEVELS INCREASE IN GUANYLYL CYCLASE/ NARIETRIPEPTIDE RECEPTOR A GENE TARGETED MICE: EFFECT OF SALT-DIETS

D. Zhao, E. Vellaichamy, and K.N. Pandey. Tulane University Health Sciences Center, New Orleans, LA.

Purpose of Study: The disruption of guanylyl cyclase/natriuretic peptide receptor-A (GC-NPRA) gene (Npr1) leads to elevated arterial blood pressure, cardiac hypertrophy, congestive heart failure, and sudden death in mice lacking NPRA. NPRA signaling is known to counteract the renin-angiotensin-aldosterone system (RAAS). We determined whether Npr1 gene copy number affects cardiac angiotensin II (ANG II) and aldosterone (ALDO) levels in a gene-dose dependent manner in Npr1 gene-targeted mice.

Methods Used: Cardiac ANG II and ALDO levels were measured with radioimmunoassay.

Summary of Results: Cardiac ANG II and ALDO levels increased in 1-copy (gene-disrupted heterozygous allele, 26.8%, p<0.05, 24.7%, p<0.05) mice as compared with 2-copy (wide type) mice, but decreased in 3-copy (gene-disrupted homozygous allele, 25.5%, p<0.05, 32.7%, p<0.05), and 4-copy (gene-duplicated homozygous allele, 30.9%, p<0.05, 55.2%, p<0.01) mice, respectively. Plasma ANG II levels decreased in 1-copy (35.1%, p<0.001), 3-copy (29.5%, p<0.001), and 4-copy (32.4%, p<0.001) mice as compared with 2-copy mice. On the other hand, plasma ALDO levels increased in 1-copy (32.5%, p<0.05) mice as compared with 2-copy mice, but decreased in 3-copy (36.4%, p<0.05) and 4-copy (48.1%, p<0.01) mice. High-salt diet increased cardiac ANG II (51.7%, p<0.05) and ALDO (25.4%, p<0.05) levels only in 1-copy mice; however, it did not increase either cardiac ANG II or ALDO levels in 3-copy and 4-copy mice. On the other hand, high-salt diet suppressed plasma ANG II and ALDO levels in 1-copy (45.0%, p<0.001, 77.9%, p<0.001) and 2-copy (37.8%, p<0.01, 51.1%, p<0.01) mice. Interestingly, low-salt diet stimulated plasma ANG II and ALDO levels in 1-copy (100%, p<0.01, 89.2%, p<0.05), 2-copy (25.9%, p<0.05, 142.5%, p<0.05), 3-copy (76.4%, p<0.01, 267.6%, p<0.01), and 4-copy (98.7%, p<0.001, 347.6%, p<0.01) mice.

Conclusions: The results suggest that increased cardiac ANG II and ALDO levels may play an important role in cardiac hypertrophy and congestive heart failure in Npr1 gene-disrupted mice. Our findings implicate that NPRA signaling antagonizes cardiac ANG II and ALDO levels in pathophysiology of hypertension and cardiovascular disease states.

333 RENIN ANGIOTENSIN SYSTEM (RAS) BLOCKADE IMPROVES GRAFT SURVIVAL IN ADULTS TRANSPLANTED WITH A SINGLE PEDIATRIC KIDNEY - A RETROSPECTIVE ANALYSIS

S. Balamuthuswamy1, R.G. Shenava1, A. Brent1, R. Zhang1, and A. Paramesh2. 1Tulane, New Orleans, LA and 2Tulane, New Orleans, LA.

Purpose of Study: Renin Angiotensin System (RAS) blockade is known to decrease albuminuria in patients with chronic kidney disease (CKD). The role of RAS blockade in adult patients transplanted with a single pediatric kidney has not yet been elucidated. Hyperfiltration may lead to an increased incidence of proteinuria and FSGS in adult patients transplanted with a pediatric kidney. The goal of this study was to evaluate the effects of RAS blockade on graft survival and proteinuria in adults transplanted with a single pediatric kidney.

Methods Used: A retrospective analysis of 75 adult patients transplanted with a single pediatric kidney from July1996 to August 2006. Two groups were evaluated: patients treated with RAS blockade and patients who did not receive RAS blockade. The primary outcome was renal allograft survival. The secondary outcome was the reduction of proteinuria, as determined by urine dipstick analysis. Death censored graft survival was estimated with Kaplan Meier survival curves.

Summary of Results: Seventy-five recipients (mean age 44) of single pediatric kidney (mean donor age=5) were included for the analysis. Graft survival was 92% in patients with RAS blockade compared to 50% of those who did not receive it (p<0.01). Thirty patients (40%) developed proteinuria (>30 mg/dl) and 13 patients (17.3%) had significant proteinuria (>300 mg/dl). The mean onset of proteinuria was 8.09 (± 33.5) months. Thirty-eight patients (51%) were started on RAS blockade at 12.32 (± 14.32) months post transplant. Of these, 14 patients had proteinuria and six of them (42.8%) showed improvement with RAS blockade (p<0.06). The above-mentioned effects of RAS blockade persisted after controlling for blood pressure. Multivariate analysis of graft survival for age, gender and BMI of recipient did not alter the outcomes.

Conclusions: RAS blockade is significantly associated with improved graft survival in adult patients transplanted with a single pediatric kidney. RAS blockade therapy did not decrease proteinuria when compared to patients who did not receive it. Therefore, we hypothesize that the improvement in graft survival in patients treated with RAS blockade was beyond its anti-proteinuric and antihypertensive effect.

Southern Society for Clinical Investigation and International Academy of Cardiovascular Sciences—NA

Chapter Joint Session II: Mentored Oral Presentations

12:30 PM
Saturday, February 23, 2008
GLOBAL ANALYSIS OF DIFFERENTIALLY EXPRESSED GENES IN THE AORTA OF APOE-DEFICIENT MICE INFUSED WITH INSULIN-LIKE GROWTH FACTOR I: NOVEL MECHANISMS OF THE ANTI-ATHEROGENIC EFFECT OF INSULIN-LIKE GROWTH FACTOR I

C. Vaughn, S. Sukhanov, and P. Delafontaine. Tulane University School of Medicine, New Orleans, LA.

Purpose of Study: We have previously shown that insulin-like growth factor-I (IGF-1) suppresses the progression of atherosclerosis in ApoE-deficient mice, potentially through anti-oxidant effects and the stimulation of vascular repair. To further investigate the anti-atherogenic effect of IGF-1, we examined the expression of atherosclerosis-related genes of interest (GOI).

Methods Used: We isolated mRNA from the aortas of IGF-1 and saline infused ApoE-deficient mice (an animal model of atherosclerosis) and analyzed the relative expression of 84 GOIs using PCR arrays and qRT-PCR. Then, TNF-α expression in plaque was identified by immunostaining with TNF-α antibody, and quantified by Image-Pro software. Apoptosis was quantified with Tunel assay of aortic valve cross sections. Lipoprotein Lipase (LPL) activity was measured utilizing a LPL-degradable fluorescent substrate.

Summary of Results: Our data indicate that IGF-1 infusion suppressed mRNA expression of pro-apoptotic molecules (Bax, 0.62, BID, 0.26, Becl2, 0.37), adhesion molecules (integrin β2, 0.32, integrin α2, 0.28, VCAM-1, 0.43), pro-inflammatory cytokines (TNFα, 0.22, interferon γ, 0.30), and LPL (0.69) (all gene expression data shown as a fold difference in GOI relative expression vs. saline control =1.00). We detected a 58.3% reduction in TNFα-positive aortic plaque area in IGF-1-infused mice compared to control (0.040±0.006 mm² vs. 0.106±0.019 mm²; P<0.05). Furthermore, IGF-1 reduced cell apoptosis (3.36±0.66% apoptotic cells per plaque, vs. 5.85±0.54%, P<0.05), and inhibited serum LPL activity (1250±100 vs. 3700±700; P<0.05).

Conclusions: In Summary, IGF-1 suppressed the aortic expression of LPL and serum LPL activity and decreased mRNA levels of pro-inflammatory cytokines, adhesion molecules, and pro-apoptotic molecules. These changes were associated with a reduction in atherosclerotic plaque cell apoptosis and TNFα levels. Our findings indicate that IGF-1 has distinct anti-inflammatory and anti-apoptotic effects on the vasculature, and the suppression of LPL activity provides a potential mechanism to explain the anti-atherosclerotic effect of this growth factor.

TISSUE 65ZINC DISTRIBUTION IN A RAT MODEL OF CHRONIC ALDOSTERONISM

Y. Selector, R.B. Parker, Y. Sun, W. Zhao, S.K. Bhattacharya, and K.T. Weber. University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: Zinc is an essential micronutrient that plays an important role in numerous biological functions, including metalloprotease function, antioxidant defenses, and wound healing. Hypozincemia has been reported in patients with congestive heart failure (CHF). Recent evidence using a rat model of aldosterone/salt treatment (ALDOST) suggests enhanced fecal and urinary excretory Zn losses are involved in the appearance of hypozincemia (Am J Physiol Heart Circ Physiol 2007;293:H2361-H2366.). The purpose of this study was to determine the effects of ALDOST on the plasma elimination and tissue distribution of 65Zn.

Methods Used: Eight-week-old male Sprague-Dawley rats were maintained on standard laboratory chow containing 78.8 mg of Zn/kg chow. The ALDOST model uses uninephrectomized rats that receive aldosterone (0.75 μg/h) by implanted osmotic minipump together with 1% NaCl/0.4% KCl in drinking water. Three groups (n=20 per group) of animals were evaluated: 1) 1 week of ALDOST; 2) 4 weeks of ALDOST; 3) unoperated, untreated age-matched controls. Each group received 1.0 μCi 65ZnCl₂ intravenously via the tail vein. Four animals from each group were sacrificed and blood and tissue samples collected at each of the following time points after 65Zn administration: 1, 4, 8, 24, and 48 hours. The total radioactivity in each sample was determined by gamma scintillation counting.

Summary of Results: Compared to age/gender-matched controls, with wk 1 and 4 ALDOST we found: reduced plasma 65Zn; an accumulation of 65Zn in heart and kidneys with increased metallothionein (MT)-1 expression, a Zn-binding protein, and where a well-known vascuopathy involves intramural vessels, and in incised skin at wk 1; an increase in tissue Zn in liver, in keeping with upregulated MT expression; and a fall in bone and healed skin Zn at wk 4.

Conclusions: Thus a disturbance in Zn homeostasis appears during ALDOST to include its redistribution from plasma to injured heart, kidneys and incised skin and noninjured liver, together with a resorption of stored Zn from bone and healed skin at wk 4. Its redistribution to sites of injury, in keeping with increased local expression of MT, further implicates Zn in tissue repair.
TRANSCRIPTIONAL UPREGULATION AND EXPRESSION OF NATRIURETIC PEPTIDE RECEPTOR-A GENE BY ETS-1 AND ALL-TRANS RETINOIC ACID SIGNALING

P. Kumar, G. Bolden, and K.N. Pandey. Tulane University Health Sciences Center and School of Medicine, New Orleans, LA.

Purpose of Study: Atrial natriuretic peptide (ANP) exerts its antihypertensive effects by binding to guanylyl cyclase/natriuretic peptide receptor-A (GC-A/NPRA), which generates the second messenger cGMP. The molecular mechanism mediating Npr1 (coding for NPRA) gene regulation and expression is not well understood. The present study was aimed at gaining insight into the function of transcription factor Ets-1 in its regulation of Npr1 gene transcription and expression.

Methods Used: Npr1 promoter-reporter deletion constructs were transiently transfected in mouse mesangial cells (MMCs) and transcriptional activity was measured by dual luciferase assay. To determine the effect of Ets-1 and all-trans retinoic acid (ATRA) signaling on Npr1 expression, chromatin immunoprecipitation assay, RT-PCR, and cGMP assays were performed. To further confirm the role of Ets-1 in Npr1 gene transcription small inhibitory RNA (siRNA) studies were performed.

Summary of Results: Overexpression of Ets-1 enhanced Npr1 promoter activity by almost 12-fold, whereas mutagenesis of the two Ets-1 binding sites decreased the promoter activity by 90%. Chromatin immunoprecipitation assays confirmed the in vivo binding of Ets-1 to Npr1 promoter. Overexpression of Ets-1 significantly induced NPRA mRNA levels, as well as ANP-stimulated intracellular accumulation of cGMP. Depletion of endogenous Ets-1 by small interfering RNA decreased promoter activity by almost 80%. All-trans retinoic acid (ATRA) greatly enhanced Npr1 gene transcription using Ets-1 binding sites in a dose-dependent manner. Knockdown of Ets-1 expression by siRNA significantly abrogated ATRA-induced Npr1 gene transcription. ATRA also enhanced the expression of NPRA mRNA levels and the ANP-dependent intracellular accumulation of cGMP.

Conclusions: The results demonstrate that Ets-1 is an essential mediator of retinoic acid-induced Npr1 gene transcription and expression. The identification of Ets-1/retinoic acid signaling as a regulator as well as a mediator of Npr1 gene transcription and expression is likely to have important implications in hypertension and cardiovascular regulation.

Cardiovascular II Concurrent Session
2:00 PM Saturday, February 23, 2008

HYPOVITAMINOSIS D AND VALVULAR CALCIFICATION IN PATIENTS WITH A DILATED CARDIOMYOPATHY

D.A. Dishmon1, J.L. Dotson1, R.C. Davis1, I.A. D’Cruz2,3, M.D. Nelson1, and K.T. Weber1. 1University of Tennessee Health Science Center, Memphis, TN and 2Veterans Administration Medical Center, Memphis, TN.

Purpose of Study: Vascular calcification occurs in patients with atherosclerosis, an ischemic cardiomyopathy, osteoporosis, or chronic kidney disease, where it is associated with increased cardiovascular risk. In patients with a dilated (idiopathic) cardiomyopathy (DCM), little is known about the presence of valvular calcification and its association with hypovitaminosis D, which may predispose to tissue calcification. Our objectives were twofold: to conduct a retrospective assessment of echocardiographic evidence of valvular calcification in patients with a DCM, who were known to have hypovitaminosis D (25(OH)D <30 ng/mL); and to conduct a prospective assessment of serum 25(OH)D in patients with a DCM, who were known to have echocardiographic evidence of valvular calcification.

Methods Used: The retrospective study consisted of 48 patients (34M; 52±1.5 yrs) who had a DCM and ejection fraction (EF) <35% with serum creatinine <2.0 mg/dL and serum 25(OH)D <30 ng/mL; and 20 patients in the prospective study (20M; 71±3.0 yrs) who had a DCM and EF <35% with serum creatinine <2.0 mg/dL (and GFR >30 mL/min/1.73m2) and echocardiographic evidence of valvular calcification. In the retrospective study, a transthoracic echocardiogram was obtained to assess mitral valvular and annular calcification, aortic valvular calcification, and sinotubular calcification. In the prospective study, serum 25(OH)D levels were monitored in patients with established valvular calcification.

Summary of Results: In the retrospective study, conducted in 48 younger patients with a DCM and hypovitaminosis D, 19 (31%) patients were found to have valvular calcification. In the prospective study, 17 of 20 elderly patients (85%) with known DCM and valvular calcification were found to have serum 25(OH)D <30 ng/mL.

Conclusions: In younger patients with the presence of a DCM, without a marked impairment in renal function, valvular calcification was seen frequently and associated with hypovitaminosis D. In elderly patients with valvular calcification, hypovitaminosis D is common. The duration of vitamin D deficiency may have a role in the appearance of valvular calcification.

INSULIN-LIKE GROWTH FACTOR-I REDUCES INFLAMMATORY RESPONSES, SUPPRESSES OXIDATIVE STRESS AND DECREASES ATHEROSCLEROSIS PROGRESSION IN APOE-DEFICIENT MICE

S. Sukhanov, Y. Higashi, S. Shai, C. Vaughan, J. Titterington, and P. Delafontaine. Tulane University, New Orleans, LA.

Purpose of Study: Atherosclerosis is a chronic inflammatory disease that is responsible for most cardiovascular disease-related death. We have previously shown that expression of insulin-like growth factor-1 (IGF-1) and its receptor is reduced in areas of advanced human plaque suggesting that decreased IGF-1 activity could contribute to disease progression. This study was designed to investigate the potential role of IGF-1 in atherogenesis.

Methods Used: IGF-1 (1.5 mg/kg/d) or saline control was infused into ApoE-deficient mice, an animal model of atherosclerosis. Oil Red O staining (atherosclerosis quantification), ELISA (serum cytokines and IGF-1 levels, 8-isoprostane), HPLC (lipid profiling), Griess assay (nitrate/nitrite), immunostaining/Mac-3 antibody (macrophages), dil- dithiothreitol (vascular superoxides), immunoblotting (pAKA), RT-PCR (gene expression) and FACS analysis (endothelial progenitor cells) were performed.

Summary of Results: IGF-1 infusion doubled circulating IGF-1 levels compared to control (665±93 vs. 283±8 ng/ml) but did not change body weight, blood glucose and lipid profile. IGF-1 induced a 27% reduction in aortic valve lesion size (0.259±0.018 vs. 0.356±0.031 mm2, P=0.01), a 28% reduction in whole aorta lesion size (8.61±0.53 vs. 12.01±2.76%, P=0.22), a 36% decrease in plaque macrophage content (0.050±0.003 vs. 0.078±0.007 mm2, P<0.01), a 39% reduction in urine 8-isoprostane levels, and a 27% increase in GFR (1.90±0.31 vs. 2.45±0.43 ml/min/1.73m2, P=0.01). These findings suggest that IGF-1 therapy could be an option for preventing atherosclerotic lesions in ApoE-deficient mice.
levels, an index of systemic oxidative stress (P<0.01), a 85% decrease in aortic superoxides (P<0.001) and a reduction of aortic mRNA levels of the pro-inflammatory cytokines (IL-6 and TNF-α, 2.9-fold and 4.2-fold decrease, respectively). IGF-1 upregulated aortic pAkt (2.5-fold), eNOS (4.4-fold), increased by 67% urinary nitrate/nitrite levels (P<0.05), an index of nitric oxide bioavailability and increased levels of circulating endothelial progenitor cells (3.58±0.82 vs.1.61±0.42%, P=0.06).

Conclusions: IGF-1 markedly suppresses inflammatory responses, inhibits systemic and vascular oxidant stress and reduces atherosclerosis progression in ApoE-deficient mice. These findings establish a new paradigm for biological effects of IGF-1 and has major implications for treating atherosclerosis.

340 PLASMA D-DIMER LEVELS AS INDIRECT EVIDENCE FOR ANTITHROMBOTIC EFFECTS OF MITRAL REGURGITATION AGAINST LEFT ATRIAL THROMBOGENESIS

C. Cevik and K. Nugent. Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose of Study: Mitral stenosis and atrial fibrillation are two common hypercoagulable states; severe mitral regurgitation has been reported to prevent left atrial thrombus formation. Plasma D-dimer levels have been used as a biochemical marker for fibrinolytic activity in prothrombotic states. We measured the prothrombotic burden in patients with mitral valve disease and/or atrial fibrillation using plasma D-dimer levels.

Methods Used: Our study population included 89 patients with mitral valve disease, 21 patients with atrial fibrillation but normal valves, and 15 healthy controls. The mitral valve group was subdivided into mitral stenosis (n=27), severe mitral regurgitation (n=26), and mitral stenosis with concomitant with severe mitral regurgitation (n=36) subgroups. These subgroups are subdivided according to the atrial rhythm.

Summary of Results: The mean left atrial size was increased in all groups with cardiac disease. D-dimer levels were highest in the mitral stenosis with atrial fibrillation subgroup (527±134 μg/l). Patients with mitral stenosis and atrial fibrillation, mitral stenosis and sinus rhythm, and nonvalvular atrial fibrillation had significantly higher D-dimer levels than controls (p<0.01 by anova). Atrial rhythm did not influence D-dimer levels in the mitral stenosis/regurgitation subgroup or in the pure mitral regurgitation subgroup (p=ns).

Conclusions: Plasma D-dimer levels closely correlate with the procoagulant risk in mitral valve disease and nonvalvular atrial fibrillation. Severe mitral regurgitation decreased the D-dimer levels in mitral stenosis and/or atrial fibrillation to control levels. However, the prognostic value of D-dimer levels as a predictor of left atrial thrombosis and/or systemic embolism remains to be determined.

341 ATRAUMATIC BONE FRACTURES IN MEN WITH CONGESTIVE HEART FAILURE. RESCUE WITH SPIRONOLACTONE

K. Ahmad1, L.D. Carbone1,2, J. Cross2, S. Raza2, R. Sepanski1, S. Dhaswan2, B. Khan1,2, M. Gupta1,2, R. Khouzami1,2, D. Dishmon1,2, J. Nesheiwat1,2, W. Chihtri1,2, A. Hajjar1,2, W. Nasser1,2, M. Khan1,2, C. Womack1,2, T. Cho1,2, A. Haskin1, and K.T. Weber1. University of Tennessee Health Science Center, Memphis, TN and Veterans Affairs Medical Center, Memphis, TN.

Purpose of Study: The congestive heart failure (CHF) syndrome has its origins rooted in a salt-avid state mediated by the renin-angiotensin-aldosterone system (RAAS). Secondary hyperparathyroidism (SHPT) is a covariant of CHF. In rats receiving aldosterone/salt treatment, a resorption of bone and fall in bone strength accompanies SHPT, is accentuated by furosemide, and rescued by spironolactone (Spiro), an aldosterone receptor antagonist. Persons living with CHF, including those managed long term with furosemide, are a population at risk for osteoporosis and atraumatic fractures. In this translational study, the presence of incident fractures was addressed in men with CHF and their association with Spiro use.

Methods Used: The medical records of all male patients with ICD-9 diagnosis consistent with CHF from 1999-2005 (n=4735) treated at our VAMC were reviewed. Cases were defined as men with CHF who had an atraumatic fracture during this 5 year period; controls were men with CHF without such fractures between these years. CHF controls were randomly selected with age and race matched to CHF cases. Clinical characteristics and medication use was recorded. Hazard ratios (HRs) with 95% confidence intervals for incident fractures were estimated from Cox proportional hazard models.

Summary of Results: We identified 189 CHF cases with an incident fracture and matched these by age and race to 844 CHF controls without fractures. After adjustment for body mass index, smoking, prevalent fractures, and medications for osteoporosis and CHF, Spiro use was associated with a lower risk of all fractures (HR 0.481; 95% CI=0.307-0.754). Both short- (<6 mo) and long- (>6 mo) term Spiro use was associated with a reduced risk for all fractures (p=0.019 for both) in both systolic and diastolic heart failure.

Conclusions: Short- and long-term use of Spiro was associated with a reduced risk of osteoporotic-related fractures in men with CHF. Further longitudinal studies of Spiro use on osteoporosis and fractures in CHF are warranted.

342 PERIAORTAL AND ADVENTITIAL ACCUMULATION OF MACROPHAGES IN LDLR KNOCKOUT MICE; MODULATION BY LOX-1 DELETION


Purpose of Study: Atherosclerosis is believed to be associated with accumulation of macrophages and immune cells. Further, LOX-1, a receptor for oxLDL, is believed to play a central role in atherogenesis. The objective is to determine localization of immune cells in wild type, LOX-1 knockout (KO), LDLR KO, LOX-1 and LDLR double KO mice fed a high cholesterol diet over a period of 20 weeks.

Methods Used: Paraffin embedded sections of aortas from different groups of mice (n=3-4 in each group) were immunoreacted with anti-CD68 (monoclonal DAKO) and anti-CD-3 (monoclonal DAKO) antibodies. Positive cells were counted in six high power fields of the adventitia and associated periaortal fat, medial and intimal regions.
Migration assay was performed on human macrophages, particularly in response to anti-LOX-1 antibody.

**Summary of Results:** LDLR KO mice had several-fold greater CD68, but not CD3, positive cells in the aortic sections (P<0.01, LDLR KO mice vs. wild-type mice), and the CD68 positivity increased over time. The periaort al fat and adventitia appeared to harbor macrophages (CD68 positivity), more so than the medial and intimal regions (P<0.02). This pattern was also evident in the non-atherosclerotic areas. Importantly, LOX-1 KO and and LDLR-LOX-1 double KO mice showed decreased levels of CD68 positivity in comparison to wild type and LDLR KO mice, respectively (P<0.02). These results of fluorescent microscopy were confirmed by flow cytometry.

**Conclusions:** The periaortal fat and adventitial localization of CD68 positive cells in LDLR KO mice suggest that macrophage migration in the atherosclerotic regions might be coming from the outer layer of the artery. Our results also indicate that macrophage accumulation is modulated by the presence of LOX-1, and point to the role of LOX-1 as an immune modulatory protein.

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**343 DO THE PATIENTS WITH CHRONIC KIDNEY DISEASE RECEIVE MORE ICD THERAPIES?**

J.K. Bissett1,2 and Z. Matin1. 1University of Arkansas for Medical Sciences, Little Rock, AR and 2University of Arkansas for Medical Sciences, Little Rock, AR.

**Purpose of Study:** The purpose of this study was to compare the incidence of implantable cardioverter defibrillator (ICD) therapies in patients with chronic kidney disease (CKD) and patients with normal renal function (NRF).

**Methods Used:** Data was obtained from a interrogation of stored electrograms in a web ICD database and computerized medical record system to determine the presence or absence of ICD shocks or antitachycardia pacing (ATP) in patients with a glomerular filtration rate <60, (CKD, n=24) and GFR≥60 (NRF, n=36).

**Summary of Results:** (1) Patients with CKD were slightly older (71.7±11.4 vs. 67.9±12.4, p=0.50). (3) Patients with chronic kidney disease had a Glomerular Filtration Rate (GFR) of 43±14.4. Patients with normal renal function (NRF) had GFR >60 (p=0.01) and Serum Creatinine (1.88±0.903 vs. 1.09±0.239, p=0.01); (4) Patients with CKD had significantly more ICD therapies 62.5% (15/24 vs. 25.9±11.4%, p<0.02). These results of fluorescent microscopy were confirmed by flow cytometry.

**Conclusions:** Patients with ICDs at risk for sustained ventricular arrhythmia received a greater number of ICD therapies despite similar left ventricular ejection fractions. Additional studies are required to determine the mechanism and optimal therapy.

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**344 ARE CHILDREN STILL AT RISK FOR LEAD POISONING?**

J.R. Roberts1, C. Allen2, and J.R. Reigart1. 1Medical University of South Carolina, Charleston, SC and 2Medical University of South Carolina, Charleston, SC.

**Purpose of Study:** The national prevalence of elevated blood lead levels (EBLL) in children aged 1–5 years has decreased during the past decade from 4.4% to about 1.6%. In areas considered high risk, particularly in pre-1950 housing, there continue to be reports of children with EBLLs. The purpose of this study was to determine the percentage of children with EBLL who live in a community that has historically been considered a high risk area for lead poisoning.

**Methods Used:** Children aged 9 months through 6 years were recruited based on residence in neighborhoods that historically has had a high prevalence of lead poisoning. Most of these children lived in one of two ZIP Codes of downtown Charleston. Others were identified as living in a pre-1950 house as identified by a geographic information system (GIS). Subjects were screened with a finger stick blood lead at the visit. Parents completed a 3 page questionnaire that queried about children’s risk factors and parental knowledge of lead risks. A nurse visited the home of approximately 1/3 of the sample to check the house for visible lead hazards. Successful visitation was determined based on parents agreeing and keeping the home visit appointment. Data were analyzed with descriptive statistics using SPSS.

**Summary of Results:** Seventy-nine child-parent pairs were screened with a blood lead test and a parental questionnaire. Of the 79, 28 kept the appointment for the home visit. Four of 79 had a finger stick BLL ≥10 mcg/dL. One child had a confirmatory venous blood lead >10 mcg/dL, two others had venous tests <10, and 1 parent refused a venous test. The percentage of the sample with confirmed elevated BLL was 1.3%, near the US prevalence, but less than the historic prevalence for this region. Of homes that were visited, 25% had evidence of leaded paint deterioration. On the parental survey, 39% reported some peeling paint in the home, greater than what the subset of home visits would have predicted.

**Conclusions:** Confirmed EBLL in this sample did not exceed the national mean. Children living in a region with a predominance of pre-1950 housing continue to have the presence of risk factors for EBLLs including evidence of peeling paint by history or objective observation.

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**345 MORBID OBESITY IN CHILDREN WITH SPECIAL NEEDS: VICTIMS OF SPECIAL CIRCUMSTANCES?**

D. Preud’Homme, C. Morris, L. Phelps, and J. Blair-Elortegui. University of South Alabama, Mobile, AL.

**Purpose of Study:** To identify the prevalence of children with special needs in the patients of the Pediatric Healthy Life Center (a physician directed weight management center designed for children and young adults).

**Methods Used:** We retrospectively reviewed all patients’ records to identify special needs defined as severe physical or mental health barriers to daily activities of living. Data collection was approved by the Institution Review Board.

**Summary of Results:** A total of 333 children were evaluated in our center to date. 107 children (32%) were classified as special needs: 51 (48%) females, 62 (58%) African Americans. The mean (±SD) BMI was 39.1 (±11.6) kg/m2. Mean age (±SD) was 12.7 (±3.5) years old. Eight categories of special needs were identified for a total number of 153 incidences. Hematology/oncology: 7 (5%), Cardiac: 10 (7%), Endocrine 21(14%), Orthopedic 23(15%), Psychological/psychiatric 51 (33%), Genetics 8 (5%), Developmental Delay 29 (19%) and others 43(3%). Amongst the 107 children with special needs 48(45%) had 2 or more.

**Conclusions:** Children with special needs represent a substantial number of patients in our center. Although this could be related to a selection bias, this particular group of children is afflicted with severe obesity and associated co-morbidities in addition to these special needs. These categories may represent absolute contraindications to exercise...
(cardiac) or limitation to daily activities (wheelchair bound, sickle cell disease). Genetic disorders (such as Trisomy 21, Prader Willi), psychological barriers (ADHD, ODD, PPD) and developmental delay (prematurity) are a unique challenge to the implementation of lifestyle changes. Additional treatment options must be available to these patients.

346 INJURY SEVERITY ON HOME PLAYGROUNDS VERSUS PUBLIC PLAYGROUNDS
J.E. McCain1, W.D. King1, K.W. Monroe1, and S.N. Lycans2. 1UAB, Birmingham, AL and 2UAB, Birmingham, AL.

Purpose of Study: More than 200,000 children with playground injuries are evaluated in US emergency departments annually. A minority of injuries (23%) occur on home playgrounds while 70% of playground deaths occur at home. Little data exists to further describe injuries, which are not life-threatening, that occur on home and public playgrounds. In this study we sought to determine if more serious injuries occur on home playgrounds as compared to public playgrounds.

Methods Used: Injury surveillance forms are used in our ED to identify types of injuries and to describe the circumstances leading to injury occurrence. Epidemiologic data was extracted from injury surveillance forms of children with playground injuries and was entered into Epistat®. The z test of proportions was used for statistical analysis.

Summary of Results: Between March 2006–July 2007, 347 children were identified as having playground injuries. Of these, 57% were male, and ages ranged from 1–15 with a median age of 6. Most injuries occurred on public playgrounds (70%). Admission was necessary for 8% of children injured on playgrounds. The majority of injuries sustained were fractures (42%), lacerations (22%), and closed head traumas (17%). A minority of injuries (17%) were minor musculoskeletal injuries (sprains, abrasions, etc). When comparing admission rates, 8.1% of children injured on public playgrounds were admitted while 5.9% of those injured on home playgrounds were admitted. This is not statistically significant (z=0.48, p=0.63, (-4, 8)). There was a significant difference in numbers of closed head traumas between the two groups: public playgrounds 18.7% vs home playgrounds 7.9% (z=2.34, p=0.02, (2, 19)). No statistical difference was found between the two groups in numbers of fractures (z=0.73, p = 0.46 (-17, 7)) or in numbers of lacerations (z=0.96, p=0.34, (-4, 15)).

Conclusions: In our population the types of injuries that occur on home playgrounds do not result in more admissions than those which occur on public playgrounds. When comparing types of injuries, we do see more closed head traumas from injuries on public playgrounds but equivalent numbers of fractures and lacerations. Significant injuries do occur on both home and public playgrounds; increased effort should be applied to making playgrounds safer for children in both environments.

347 DROWNING EVENTS IN ALABAMA EVALUATED

Drowning is the second leading cause of unintentional death in children. Our objective was to describe drowning events in Alabama that resulted in an assessment at The Children’s Hospital.

Methods Used: All patients diagnosed at Children’s Hospital with submersion injury, near drowning, or drowning in the years 2005–2006 were reviewed (patients were identified by ICD9 codes). Demographics, circumstances of the drowning and the treatment were collected. Data were entered into Epistat®.

Summary of Results: Patients (n=54) had a mean age of 5.5 years (median 3.0) with a range of one year to seventeen years. 42 of the patients were Caucasian (78%) and 11 African American. Thirty-three were male (61%). Twenty-seven patients (50%) had private insurance, eleven (20%) had Medicaid, and sixteen had no insurance. Drowning events occurred in various locations with patients’ home pools being the most frequent site (33%), followed by recreational center pools (18%) and lakes (12%). Of note, the setting involved three “pool parties” and three at camp. Four cases had documented instances of caregiver leaving for “moments” to answer phone or chase sibling. Twenty-six of the drownings were observed. Forty-four received CPR at the scene. Forty-five (86%) drowning victims were admitted to the hospital. Average length of admission was 3.7 days (range 0–29 days). Eight of the victims died.

Conclusions: Drownings can be unpredictable and occur in a variety of settings, yet could be prevented with proper supervision and interventions. Studies such as this one allow for local epidemiology and guide intervention programs.

348 LOW SOCIO ECONOMIC STATUS (SES) CORRELATES WITH INCREASING BODY MASS INDEX (BMI) IN CHILDREN WITH EXTREME OBESITY
D. Preud’Homme, C. Morris, L. Phelps, and J. Blair-Elortegui. University of South Alabama, Mobile, AL.

Purpose of Study: To evaluate the prevalence of children within the morbid obesity range according to their SES.

Methods Used: We retrospectively reviewed all patients’ data at the first visit in the Pediatric healthy life center. Billing records were obtained and matched to identify children in the Low SES. Children with Medicaid and S-CHIPS recipients were bundled together. They were compared to children with commercial insurance. Deciles of BMI were determined to classify degrees of level of BMI. Logistic regression analysis was performed with BMI deciles and Insurance coverage.

Summary of Results: A total of 290 children’s records were available for review to date. The mean (±SD) age was 11.8 (±3.6) years old. The mean (±SD) BMI was 37.6 (±10.7) kg/m2. There were 155 (54%)
African American Children and 169 (58%) female. BMI correlated significantly with Medicaid coverage (p = 0.0004).

Conclusions: In our patient population, low SES indicated higher BMI deciles. Low SES has been linked to decreased resources and access to medical care. Children in the higher BMI deciles constitute a major challenge to the implementation of Therapeutic Lifestyle Changes. Their needs may only be met through a multidisciplinary program dedicated to facilitating access to care for children with obesity in the low SES.

349 UTILIZING LINKS TO IMPROVE IMMUNIZATION STATUS OF CHILDREN ADMITTED TO THE CHILDREN’S HOSPITAL OF LSUHSC-SHREVEPORT

W.H. Wells, D. Sheperd, L. Anderson, and J.A. Bocchini. Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose of Study: This study was designed to evaluate the effectiveness of the LSUHSC-S LINKS immunization policy and to document the immunization status of patients admitted to the hospital.

Methods Used: Louisiana Immunization Network for Kids Statewide (LINKS), a statewide internet based immunization registry instituted in 2001, was developed to manage immunization information, improve immunization rates and reduce the potential for extra doses. LSUHSC-S utilizes LINKS to record all pediatric immunizations. The pediatric department policy states that the LINKS record of every child must be reviewed during each admission to the Children’s Hospital and his immunization status updated prior to discharge. LINKS records were reviewed for patients up to 18 years of age, admitted to any LSUHSC-S service in April 2006 and April 2007. Infants less than two months of age, non-Louisiana residents, and those not registered with LINKS were excluded.

Summary of Results: In April 2006, 159 of 273 inpatients qualified for the study and in April 2007 154 of 316 inpatients qualified. Table 1 shows the number of patients with immunization deficiencies. In 2006, many patients ages 11 to 18 had not received meningococcal conjugate vaccine due to a nationwide shortage. In 2007, 10 of the 62 (16%) were OB/GYN patients. The age groups most noted to not be up to date in LINKS were those patients less than 2 years of age and those patients between the ages of 16 and 18. Five children 2 to 3 years of age and less than 7 children 4 to 6 years of age required additional doses of vaccines.

Conclusions: Further chart reviews are underway to determine how effective our policy is in providing immunizations to inpatients who are not up to date. Primary care physicians should use the LINKS system to keep immunization records updated and use hospital admissions as an opportunity to catch up patients who are not up to date. Efforts must be made to improve adolescent immunization rates. Pediatrics and OB/GYN should coordinate their efforts to improve postpartum vaccinations for adolescent patients.

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<td>April 2006</td>
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350 PREVALENCE OF VITAMIN D DEFICIENCY AND INSUFFICIENCY IN NORTHEAST TENNESSEE

R. Kuriacose and K.E. Olive. East Tennessee State University, Johnson City, TN.

Purpose of Study: Vitamin D deficiency is increasingly being recognized as a highly prevalent and under treated problem. Vitamin D deficiency is associated with many other medical conditions such as colon cancer, type 1 diabetes mellitus and hypertension. This study was conducted to determine the prevalence of vitamin D deficiency/insufficiency in hospitalized adults in Northeast Tennessee.

Methods Used: A prospective cohort study was conducted on 99 inpatients admitted to an internal medicine teaching service from July – October 2006 at a single private hospital in Johnson City, Tennessee. They included patients irrespective of their age, gender, reason for admission, medical problems or medications. Exclusion criteria were unwillingness to participate, children, pregnant females, those who could not speak English and those who were not competent to give consent. A single measurement of 25-hydroxyvitamin D was done on all patients.

Summary of Results: Of the 99 patients, 53% were vitamin D deficient or insufficient (30% deficient with a level of < 20 ng/ml and 23% insufficient with a level of < 30 ng/ml). Approximately 63% of females’ levels (39 of 62) were below 30 ng/ml, compared with 38% for males (14 of 37). The highest frequency of deficiency was in females < 50 years.

Conclusions: Vitamin D deficiency is highly prevalent in all age groups and in both females and males in this population. It is recommended that clinicians be aware of the problem and have a low threshold for ordering a simple blood test like 25-hydroxyvitamin D to rule out vitamin D deficiency in their patients. It would be helpful to consider measurement of vitamin D level on a routine basis in all inpatients.

351 CARDIOVASCULAR RISK FACTOR PREVALENCE IN RURAL ECUADOR

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Purpose of Study: Traditionally malnutrition and infectious diseases have been the principal causes of morbidity and mortality in developing countries. Studies in large cities in Latin America have shown a significant increase in the incidence of cardiovascular (CV) disease over the last decade. Little data exists on the prevalence of CV risk factors in rural areas of Latin America but such data is essential to provide guidance to public health officials regarding education and prevention of myocardial infarction and cerebrovascular accidents in this large population.

Methods Used: A randomized cross sectional sample of patients attending a primary care facility in rural Ecuador was analyzed according to the Systematic Coronary Risk Evaluation (SCORE) formula to attain an estimated 10-year risk of coronary events. Inclusion criteria were patients over 40 who had medical records available and had lipid levels checked in the hospital laboratory. A computer generated randomized sample of these patients was chosen for analysis. Variables assessed were age, sex, blood pressure, anti-hypertensive therapy, diabetes, smoking, total, LDL, and HDL cholesterol.

Summary of Results: Of 450 patients chosen, full chart review yielded 226 patients with complete data. Among the subjects there were 89 (39%) men and 137 women (61%); the average age was 53 years, 14.1% had diabetes, 14.6% hypertension, 11.5% smokers, mean total cholesterol 199 ± 36 md/dl, triglycerides 189 ± 129, HDL 40 ± 12 mg/dl, LDL 121 ± 36 mg/dl. According to the SCORE system 16.8% of the patients were candidates for cholesterol lowering medication and 8.8% were at high risk for a cardiovascular event within 10 years.

Conclusions: This study is one of the first of its kind performed in rural Latin America and provides much needed baseline epidemiologic data.
regarding the prevalence of cardiovascular risk factors and predicted cardiovascular events. The implications regarding the need for cholesterol lowering agents and other risk factor modification, along with the future need for cardiovascular disease care are important for public health officials to consider. This type of study needs to be replicated in other rural areas with attention to overcome the limitations of this study.

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WEIGHT REQUIREMENTS, HEALTH RISKS AND CHRONIC CONDITIONS AMONG THOROUGHBRED JOCKEYS

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Purpose of Study: Thoroughbred horse racing is a multi-billion dollar industry in which horses may be more important than jockeys who ride them. Witness the interest in replacing natural with artificial track surfaces to protect the horse while no action is taken to provide insurance adequate to cover the costs of jockey’s health problems and frequent injuries. Nevertheless, there is no data documenting how jockeys make mandatory weight limits or how weight limiting behaviors effect acute and chronic health conditions as well as their fitness to ride and likelihood of injury. The purpose of this study was to estimate the prevalence of weight limiting behaviors and related chronic and acute health outcomes.

Methods Used: We surveyed jockeys at the Annual Meetings of the Jockeys’ Guild. The 'Jockey’s Health Initiative’ study was described to conference attendees by the Medical Director and other Guild officials.

Summary of Results: The mean age of 53 respondents was 39 (SD=7.4) with a mean of 18 years (SD=8.1) experience. At their lowest weight for the year their mean BMI was 19.3 (SD = 1.7) while at their highest weight their mean was 20.9 (SD = 1.6). At least 8% and as many as 32% had BMIs ≤ 18.5 at some time during the year. About 60% take diet or water pills, laxatives, or other drugs to control weight while 70% say their jockeys' room has a 'flipping bowl' for purging. Half use the 'hotbox' or whirlpool at least 4 times a week and 41% said they have felt dizzy before a race. Two-thirds report injuries during AM exercise periods that prevented them from racing that day while 40% report being taken to the ER in the preceding month. Some 13% report a diagnosis of arrhythmia (probably related to dehydration and/or electrolyte imbalance), 15% report a history of kidney stones (other data suggest the prevalence may >40%), 13% report difficulties having children, 77% report low back pain and 36% said they have severe headaches or migraines in the past 3 months.

Conclusions: Jockeys are the most injury prone professional athlete. Nearly all engage in behaviors to make weight limits that put them at risk of serious health conditions. Data about their occupational risks, health behaviors and health status is necessary to formulate policies and regulations to protect this vulnerable population.

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DIGITAL SCREENING FOR DIABETIC RETINOPATHY...TO SEE OR NOT TO SEE, THAT IS THE QUESTION

C. Brady1, W.P. Moran1, R. Velez2, D. Garrow1, and S.W. Miller3. 1Medical University of South Carolina, Charleston, SC; 2Wake Forest University Health Sciences, Winston-Salem, NC and 3Medical University of South Carolina, Charleston, SC.

Purpose of Study: To perform a systematic literature review of digital retinal photography as a screening method for diabetics and perform a meta-analysis of this review.

Methods Used: Comprehensive literature review of articles which utilized digital camera photography for screening retinopathy in diabetics. Serial literature searches using PubMed (1998 to June 2006) as the search engine were reviewed. We were able to utilize ten articles for the meta-analysis with a total of 3404 eyes. Retinopathy significant enough to warrant a diagnosis of retinopathy included those with an Early Treatment Diabetic Retinopathy Study score (ETDRS) of > or = to 35. Sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios were calculated from each study. 95% confidence intervals for the pooled sensitivity, specificity, positive and negative predictive values and positive and negative likelihood ratios were calculated. Summary receiver operator characteristic (SROC) curves were obtained. We calculated both un-weighted and weighted estimates to account for the level of confidence in each estimate. Potential confounding variables were screened individually. The variables examined were slit lamp, film photography, mydriasis, 30 degree and 45 degree imaging fields.

Summary of Results: Available studies suggest a trend toward the increased effectiveness of digital photography as opposed to traditional film photography or manual slit-lamp examinations in rapidly assessing diabetic patients for further ophthalmologic intervention.
Conclusions: Digital retinography is a useful method for screening diabetics for underlying, and potentially sight-threatening, pathologic processes. Studies reflect that digital images tend to be more sensitive and specific for delineating true retinopathy (ETDRS score of >35) versus “mild” disease such as macular edema when compared to film photography. Mydriasis and larger field images optimize these outcomes. Resources, in terms of cost, training and whether to simultaneously perform manual ophthalmologic exams will need to be evaluated on an individual basis.

Endocrinology and Metabolism
Concurrent Session
1:00 PM
Saturday, February 23, 2008

355 NONALCOHOLIC FATTY LIVER AND METABOLIC SYNDROME IN HYPOPITUITARY PATIENTS
S. Williamson-Baddorf1, E. Nyenwe1, B. Waters1,2, and S.S. Solomon1,2
1University of Tennessee Health Science Center-COM, Memphis, TN and 2VA Medical Center, Memphis, TN.

Purpose of Study: Hypopituitarism has been associated with rapidly worsening liver disease due to nonalcoholic steatohepatitis. Metabolic syndrome, including obesity and Diabetes Mellitus 2 (DM2), is known to be an independent risk factor for complications of metabolic syndrome, and its components among hypopituitary patients. Hypopituitarism may be associated with both of these conditions.

Methods Used: We performed a cross-sectional case-control retrospective chart review using Computerized Patient Record System (CPRS) on 141 confirmed hypopituitary patients and 141 control patients matched for age, gender, race, and BMI. Patients were analyzed statistically using mean +/- SD and chi-squared tests. Among our patient population, 96% had gonadal insufficiency, 75% had growth hormone insufficiency, 67% had thyroid insufficiency, and 64% had adrenal insufficiency. Ten percent of the patients were insufficient in one pituitary axis, 33% in two, 29% in three, and 28% were insufficient in all four pituitary axes.

Summary of Results: Hypopituitary patients in this series had high rates of metabolic syndrome, 89% compared with 71% of controls (p < 0.0002); hypertension, 88% of hypopituitary patients compared with 78% of controls, (p = 0.027); low HDL, 84% of hypopituitary patients compared with 70% of controls, (p = 0.007); and a trend towards high triglycerides, 80% of hypopituitary patients compared with 70% of controls (p = 0.054). Hypopituitary patients had evidence of both impaired liver function, i.e. elevation of liver enzymes, and decreased impaired liver function, i.e. elevation of liver enzymes, and decreased liver metabolism, i.e. decreased albumin levels. Ten percent of the patients were insufficient in one pituitary axis, 33% in two, 29% in three, and 28% were insufficient in all four pituitary axes.

Conclusions: There are increased prevalences of metabolic syndrome and its components among hypopituitary patients. Hypopituitarism may be an independent risk factor for complications of metabolic syndrome, DM2, and hepatic dysfunction.

356 A MODEL OF DIABETIC METABOLIC SYNDROME; ANALYSIS OF GENES INVOLVED IN TNF-α INDUCED INSULIN RESISTANCE
S.S. Solomon1,2, W. Odunusi1, G. Majumdar1,2, N. Lenchik1,2, and I. Gerling1,2
1University of Tennessee Health Science Center, Memphis, TN and 2VA Medical Center, Memphis, TN.

Purpose of Study: Metabolic Syndrome, is a variant of Diabetes Mellitus 2 (DM2), in which a major component is insulin resistance (IR). Obese individuals generate excessive amounts of the cytokine, TNF-α, a major cause of IR in man.

Methods Used: We modeled IR in H411E liver cells in tissue culture, using Control (C), Insulin alone (I) and TNF-α + Insulin (T + I). Three independent samples of RNA was extracted from each group (n=3) and analyzed on expression arrays (rat, Affymetrix).

Summary of Results: The array contained 31042 probesets, of which only 20,867 were expressed and subjected to a 1-way ANOVA that found 5764 probe sets with significant (p < 0.05) difference between groups. Using the Benjamini-Hochberg MTC, the list was reduced to 429 genes where at least one group was different from the other. Hierarchical clustering (of the 429 genes) was used to identify 33 genes that were changed by insulin, and that change was reversed by TNF-α. An additional 12 genes, that followed the same pattern of expression as the 33 highly significant genes, were added, for a total of 45 genes. Those 45 genes were subjected to Ingenuity pathway analysis and 26 of them created a single molecular network. This network was centered around: insulin receptor; TNF-α; Akt, p38-MAPK, TGFβ1, MYC; and transcription factors SMAD and STAT1.

Conclusions: When we created a network from the 45 genes identified as responding to insulin and reversed by TNF-α, central players in the network included: Insulin receptor, TNF-α, Akt, MAP Kinase and selected transcription factors. From the analyses, it is clear that the affected genes regulate: (a) signal transduction, including traditional 2nd messengers and cytokines; (b) transcription, translation, protein synthesis and degradation; and (c) energy balance, oxidation-reduction reactions and oxidative stress.

S.S. Solomon1,2, W. Odunusi1, G. Majumdar1,2, N. Lenchik1,2, and I. Gerling1,2
1University of Tennessee Health Science Center, Memphis, TN and 2VA Medical Center, Memphis, TN.

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Conclusions: When we created a network from the 45 genes identified as responding to insulin and reversed by TNF-α, central players in the network included: Insulin receptor, TNF-α, Akt, MAP Kinase and selected transcription factors. From the analyses, it is clear that the affected genes regulate: (a) signal transduction, including traditional 2nd messengers and cytokines; (b) transcription, translation, protein synthesis and degradation; and (c) energy balance, oxidation-reduction reactions and oxidative stress.
Methods Used: T- cells from normal subjects were isolated and incubated with 5, 100, and 300 μM palmitic acid, and 5, 15, and 30 mM glucose with and without 5, 100, and 300 μM linoleic acid.

Summary of Results: The addition of linoleic acid partially reversed the effects of glucose and palmitate-induced T cell activation. The table below summarizes the results from this study.

Conclusions: Linoleic acid provides salutary and protective effects against deleterious actions of saturated fatty acids and hyperglycemia.

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358 ABNORMALITIES IN GENE EXPRESSION IN NON OBESE DIABETIC (NOD) MICE: EARLY COMMON LESIONS IN SPLEEN AND ISLET TISSUES

D. Kakoola1, J. Wu1, N. Lenchik1, D.R. Marshall2, and I.C. Gerling1.
1UT Health Science Center, Memphis, TN and 2Meharry Medical College, Nashville, TN.

Purpose of Study: To gain a more comprehensive understanding of the early defects in Type 1 DM we studied early lesions in NOD mice leading to initiation of the autoimmune pathology in this mouse model of DM1. We evaluated gene expression patterns in both the target tissue of autoimmunity (islets of Langerhans) and the autoimmune effector cells (spleen leukocytes).

Methods Used: We used Affymetrix MOE430A and MOE430B expression arrays to evaluate expression of 44,000 mouse genes/ESTs in mouse spleen leukocyte and islet at 2–4 weeks of age. Transcriptomes of tissues samples from NOD, NON, and C57BL/6 female mice were evaluated and compared (n=10 for each strain and tissue). By conducting a combined analysis of all data, we identified genes that have similar patterns of strain differences in two completely different tissues.

Summary of Results: Analysis by 2-way-ANOVA (tissue x strain) with a Bonferroni multiple test correction (p<0.05) defined 258 probesets (genes) with expression differences between at least one of the 3 strains. Hierarchical clustering of these 258 probesets refined the list to 71 probesets in which the expression in NOD was unique compared to both control strains (66 lower and 5 higher in NOD). These 71 probesets represented 43 different genes for which the ingenuity database contained information, and 38 of those genes could be connected in a single large molecular network using the ingenuity software. The network was centered around a number of transcription factors (Pax3, SREBF1, TBP and NFYB) several of which have been known to be involved in the pathogenesis of diabetes.

Conclusions: These 71 probesets represented 43 different genes that play a role in the pathogenesis of diabetes.

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359 EFFECT OF SATURATED FAT ACIDS AND UNSATURATED FAT ACIDS ON FATTY ACID RECEPTORS AND TRANSPORT PROTEINS IN AORTIC ENDOTHELIAL CELLS

A. Alouch, F.B. Stenz, and A.E. Kitabchi. University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: We previously have shown that saturated free fatty acids (SFA) such as palmitic acid induce activation of human aortic endothelial cells (HAEC) with production of reactive oxygen species (ROS) and lipid peroxidation. Unsaturated fatty acids (UFA) such as linoleic acid do not induce this activation and have a salutary effect on the activation induced by the SFA. Since HAEC play an important role in the atherogenic process, it is of importance to understand the mechanism of this effect of UFA on the SFA activation of these cells.

Methods Used: We incubated HAEC obtained from normal subjects with 5, 100 and 300 μM concentrations of palmitic and/or linoleic acid and 5mM glucose from 0 to 72 hours. The effect of these fatty acids on the induction of the free fatty acid receptor 1 protein (GPR40) and the free fatty acid transport protein 1 (FATP1) was determined using western blot.

Summary of Results: Palmitic acid at 100 and 300 μM concentrations induced the expression of both the GPR40 and FATP1 during the 72 hour incubation. Linoleic acid did not induce GPR40 or FATP1 and caused a reduction in the expression of both of these proteins in the cells incubated with both palmitic and linoleic acid.

Conclusions: We conclude that the salutary effect of UFA (linoleic) can reverse the deleterious effect of SFA (palmitic).

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360 IS THE COMBINATION OF SULFONYLUREAS AND METFORMIN ASSOCIATED WITH AN INCREASED RISK OF CARDIOVASCULAR DISEASE OR ALL-CAUSE MORTALITY?

A. Rao1, N. Kuhadiya1, K. Reynolds2, and V. Fonseca1. 1Tulane University Health Sciences Center, New Orleans, LA and 2Southern California Permanente Medical Group, Pasadena, CA.

Purpose of Study: To evaluate the effects of combination therapy of sulfonylureas and metformin on risk of all-cause mortality and cardiovascular disease among people with type 2 diabetes compared with either diet alone or metformin or sulfonylurea monotherapy.

Methods Used: A MEDLINE search (1966–July 2007) was conducted to identify observational studies that examined the association between combination therapy of sulfonylureas and metformin on risk of cardiovascular disease or all-cause mortality. Bibliographies of all relevant articles were also searched. From 299 relevant reports, 14 observational studies were included in the systematic review and nine were included in the meta-analysis. In these studies, combination therapy of metformin and sulfonylurea was assessed, the risk of cardiovascular disease and/or mortality was reported, adjusted relative risk or equivalent (hazard ratio, odds ratio), and corresponding variance or equivalent was reported and diagnosis of type 2 diabetes mellitus was established using the standard criteria for the time of the study.

Summary of Results: Data from nine studies met the inclusion criteria and were analyzed using a random-effects model. The pooled relative risks (95% confidence intervals) of outcomes for individuals with type 2...
diabetes prescribed combination therapy of sulfonylureas and metformin were 1.19 (0.88–1.62) for all-cause mortality, 1.29 (0.73–2.27) for cardiovascular disease mortality, and 1.43 (1.10–1.85) for a composite endpoint of cardiovascular disease hospitalizations or mortality (fatal or non-fatal events). 

Conclusions: The combination therapy of metformin and sulfonylurea significantly increased the relative risk of a composite of cardiovascular hospitalization or mortality (fatal and nonfatal events) irrespective of the reference group (diet therapy, metformin monotherapy or sulfonylurea monotherapy); however, there were no significant effects of this combination therapy on either cardiovascular disease mortality or all-cause mortality alone.

361 INTERNALIZATION OF GUANYLYL CYCLASE/ NATRIURETIC PEPTIDE RECEPTOR-A VIA CLATHRIN-MEDIATED ENDOCYTOTIC PATHWAYS

E. Wu, N.K. Somanna, and K.N. Pandey. Tulane University Health Sciences Center, School of Medicine, New Orleans, LA.

Purpose of Study: Cardiac hormones atrial and brain natriuretic peptides (ANP and BNP) are released into the circulation and elicit natriuretic, diuretic, vasorelaxant, and antiproliferative effects, all directed to the reduction of blood pressure and blood volume. Guanylyl-cyclase/natriuretic peptide receptor-A (GC-A/NPR-A) is the principal biologically active receptor for ANP and BNP. The objective of the present study was to determine whether NPRA is internalized involving receptor-mediated endocytotic mechanisms with formation of clathrin-coated pits.

Methods Used: In these present studies, we utilized human embryonic kidney-293 (HEK-293) cells stably transfected with murine NPRA cDNA clone. Cells were cultured in Delbeco’s modified Eagle’s medium containing 10% bovine calf serum at 37°C and under an atmosphere of 5% CO2/95% O2. Receptor internalization studies were performed utilizing 125I-ANP binding assays in intact HEK-293 cells. To test the role of clathrin-coated pits in NPRA internalization process, we treated the cells with inhibitors of clathrin-coated vesicle formation such as chlorpromazine and monodansylcadaverine. 

Summary of Results: The results showed that internalized 125I-ANP radioactivities were drastically reduced in cells treated with both chlorpromazine and monodansylcadaverine by almost 90%, as compared with untreated control HEK-293 cells. Thus, a major portion of 125I-ANP radioactivities were present on the cell surface in chlorpromazine- and monodansylcadaverine-treated cells as compared with control cells.

Conclusions: The results of the present study indicate that NPRA undergoes internalization via clathrin-mediated endocytotic mechanisms as part of its normal trafficking and metabolism. The present findings are important towards the understanding the role of natriuretic peptides and their receptor signaling, which plays a critical role in the regulation of blood pressure and cardiovascular homeostasis.

362 PRO-INFLAMMATORY CYTOKINES IN RESPONSE TO INSULIN-INDUCED HYPOGLYCEMIC STRESS IN NORMAL SUBJECTS

L. Razavi1, A.E. Kitabchi1, W. Jim1, M. Tehrani2, M. Gozashti2, K. Omidifar2, E. Taheri2, and B. Larjani3. 1University of Tennessee, Memphis, TN and 2University of Tehran, Tehran, Iran.

Purpose of Study: We have previously shown that elevated counter-regulatory hormones are associated with increased pro-inflammatory cytokines (TNF-α, IL-6, IL-8 and IL-1β) in hyperglycemic crises. These values returned to normal after 24 hours of insulin therapy. We proposed such a prompt response in patients with no history of cardiovascular diseases or acute infection might be due to non-specific response to stress.

Methods Used: To assess if elaboration of cytokines could be produced in other stressful situation, we induced hypoglycemic stress by the standard insulin tolerance test (IV injection of insulin; 0.1 U/Kg) in healthy normal weight subjects with no clinical cardiovascular or metabolic abnormalities. We measured pro-inflammatory cytokines, GH, epinephrine (Epi), norepinephrine (NE), cortisol and ACTH at 0, 30, 45, 60, 120,240 minutes.

Summary of Results: Counter-regulatory hormones and cytokines were increased significantly from their baseline values (Table). By regression analysis and comparing the AUC of counter-regulatory hormones and cytokines, it was demonstrated that AUC of cortisol was significantly correlated with the AUC of IL-1β (P <0.05). AUC of Epi was correlated with the AUC of TNF-α and IL-8 (P =0.05 and p=0.027, respectively).

Conclusions: We conclude that observed elevation of pro-inflammatory cytokines may be the adaptive responses of hypothalamus-pituitary-adrenal and sympathoadrenal systems.* StenZe F, Umpierrez GE, Cuervo R, Kitabchi AE. Diabetes. 2004;53:2079–86.

Table 1

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Baseline ±SD</th>
<th>peak ±values± SD, Time,(P value)</th>
<th>Values at 240±SD SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose (mg/dl)</td>
<td>102±10.2</td>
<td>38.2±19.9 30’ (&lt;0.001)</td>
<td>90.1±13.7</td>
</tr>
<tr>
<td>Cortisol (µg/dl)</td>
<td>11.4±4.9</td>
<td>17.25±6.8 60’ (&lt;0.05)</td>
<td>7.9±0.4</td>
</tr>
<tr>
<td>Epinephrine (µg/ml)</td>
<td>70.1±28.3</td>
<td>1190±103.45’ (&lt;0.001)</td>
<td>91.3±23.4</td>
</tr>
<tr>
<td>TNF-α (µg/ml)</td>
<td>6.1±2.8</td>
<td>11.1±2.8 45’ (&lt;0.025)</td>
<td>6.2±0.9</td>
</tr>
<tr>
<td>IL-6 (µg/ml)</td>
<td>2.1±1.2</td>
<td>4.1±1.2 120’ (&lt;0.001)</td>
<td>3.6±1.7</td>
</tr>
<tr>
<td>IL-8 (µg/ml)</td>
<td>8.4±3.3</td>
<td>18.8±7.6 60’ (&lt;0.03)</td>
<td>8.9±5.3</td>
</tr>
<tr>
<td>IL-1β (µg/ml)</td>
<td>0.7±0.04</td>
<td>2.4±1.0 60’ (&lt;0.05)</td>
<td>1.1±0.9</td>
</tr>
</tbody>
</table>

363 INCIDENCE OF DIABETES AFTER TRANSPLANTATION IN NON-DIABETIC LIVER RECIPIENTS

L. Aigueule1, M. Sheikh-Ali1, B. McNeil2, A. Keaveny3, and S. Meek1. 1Mayo Clinic, Jacksonville, FL; 2Mayo Clinic, Jacksonville, FL and 3Mayo Clinic, Jacksonville, FL.

Purpose of Study: To evaluate the incidence of diabetes in non-diabetic liver transplant recipients.

Methods Used: This is a retrospective review of 275 orthotopic liver transplants (OLT) conducted at the Mayo Clinic in FL from 2004 to 2005. Patients were followed for 12 months. Exclusion criteria included: Known diabetes (DM) prior to transplant, treatment with non-prograft immuno-suppressant, renal failure prior to OLT, prior history of solid organ transplant or re-transplantation within 1 year of OLT. Only 122 patients met exclusion criteria. The final non-diabetic study population consisted of patients whose liver disease was either secondary to autoimmune disease 20% (n=25), hepatitis C 39% (n=47), alcohol 15% (n=18) and other causes 26% (n=32). DM was defined by either the need for antidiabetic medication, a one time fasting blood glucose level >200mg/dL, 2 different fasting blood glucose measurements >126 mg/dL at the time of pre-OLT evaluation, and at 1 week, 4 months and 1 year post OLT.

Summary of Results: The overall incidence of DM after OLT was 95% at 1 week (n=114), 38% at 4 months (n=38) and 34% at 1 year (n=37). We divided patients into groups based on the cause of liver failure (Table 1). The overall incidence of new-onset DM after OLT was 95% at 1 week (n=114), 38% at 4 months (n=38) and 34% at 1 year (n=37).
Interestingly, 35% (n=43) of patients were classified as diabetic at both 1 week and 4 months post-OLT; of the 41 of these patients who were followed to 1 year, 7% (n=3) were not diabetic at 1 year, 75% (n=3) were pre-diabetic, and 85% (n=35) remained diabetic.

**Conclusions:** Patients undergoing orthotopic liver transplant are at high risk for developing DM even if they do not have a history of DM prior to liver transplant. The risk of persistent diabetes is particularly high if the patient has a diagnosis of diabetes at both 1 week and 4 months post-OLT, or a history of alcohol end-stage liver disease.

<table>
<thead>
<tr>
<th>Cause of liver disease</th>
<th>1 week</th>
<th>4 months</th>
<th>1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoimmune (n=25)</td>
<td>25 (100%)</td>
<td>9 (36%)</td>
<td>5 (22%)</td>
</tr>
<tr>
<td>Hepatitis C (n=47)</td>
<td>45 (96%)</td>
<td>14 (32%)</td>
<td>11 (26%)</td>
</tr>
<tr>
<td>Ethanol (n=18)</td>
<td>16 (94%)</td>
<td>12 (80%)</td>
<td>12 (80%)</td>
</tr>
<tr>
<td>Other (n=32)</td>
<td>28% (90%)</td>
<td>8 (27%)</td>
<td>9 (32%)</td>
</tr>
</tbody>
</table>

**DYSLIPIDEMIA IN WOMEN WITH POLYCYSTIC OVARIAN SYNDROME FROM A COUNTY HOSPITAL**

A. Jones2, and A. Chang1. 1 UT Southwestern Medical Center, Dallas, TX and 2 UT Southwestern Medical Center, Dallas, TX.

**Purpose of Study:** Polycystic Ovarian Syndrome (PCOS) is a common disorder that occurs in 6–8% of women in the United States. PCOS is characterized by hirsutism, irregular menses and insulin resistance. PCOS is also associated with obesity, hypertension and dyslipidemia. However, obese women with PCOS from the population-based Dallas Heart Study did not have a higher prevalence of dyslipidemia than controls. This retrospective review is designed to characterize dyslipidemia in a second multi-ethnic patient sample of PCOS women from Dallas.

**Methods Used:** A retrospective chart review was conducted of Parkland Hospital outpatient visits over a 3 year period. We verified the PCOS diagnosis based on history of irregular menses, physical exam findings of terminal hair on face, chest, back or abdomen or “hirsutism”, testosterone concentrations and/or ultrasonography of the ovaries. A control group matched for age, body mass index and ethnicity was selected from the Dallas Heart Study. Continuous variables were compared using the non-parametric Wilcoxon rank-sum test. Categorical variables were compared using the Chi-square test.

**Summary of Results:** From a 3 year ICD-9 search, 159 potential females with PCOS were identified. Of these, 40 charts were available for review, and we made the diagnosis of PCOS in over half of these women (55%, n=22). This was a morbidly obese group with a median BMI of 44.2. Lipid values were obtained in 77% of the confirmed PCOS cases. Among the women with PCOS, the median LDL 120 [inter-quartile range 99, 126] and TG 130 [101, 209] were significantly higher than the controls 92 [70, 108] and 89 [45, 142], respectively.

**Conclusions:** Our results demonstrate that a retrospective ICD-9 search strategy at a county hospital could successfully identify patients with PCOS. This morbidly obese referral sample had a significantly dyslipidemic profile compared to matched population-based controls. Interestingly, despite the known associations of PCOS with insulin resistance and CV risk, not all women with PCOS are getting fasting glucose or lipid panels. Given the high prevalence of dyslipidemia in this sample, the clinical implication is that all women with PCOS should be screened for both glucose and lipid abnormalities.

**ABNORMALITIES IN MITOCHONDRIAL PROTEIN EXPRESSION IN NON OBSE DIABETIC (NOD) MICE**

A. Weber1, D. Kakoo1, N. Lenchik1, R. Ahokas2, and I.C. Gerling1.
1 UT Health Science Center, Memphis, TN and 1 UT Health Science Center, Memphis, TN.

**Purpose of Study:** NOD mice spontaneously develop autoimmune diabetes (DM1). These mice are known to have defects in apoptosis, a process executed by mitochondria. Furthermore, our studies of gene expression in several tissues from NOD mice have shown reduced expression of some genes associated with oxidative phosphorylation. Based on that, we hypothesized that NOD mice have generalized mitochondrial defects. These defects would manifest themselves both in abnormalities in the mitochondrial proteome and a higher level of free radical production that would also be reflected by increased systemic levels of markers of oxidative stress.

**Methods Used:** We measured free radical damage to lipids, by measuring levels of 8-isoprostane using a commercial kit (Cayman Chemical, MI). The proteomes of purified mitochondria from NOD mice and the control strains, NOR and C57BL/6, were characterized on 2D-gels (n=5 for each strain). Image analysis programs were used to identify protein spots differentially expressed between the 3 strains (1-way-ANOVA, p<0.05). MALDI mass spectrometry was used to identify the proteins in these spots.

**Summary of Results:** Our data suggests a higher level of free radical damage in the NOD mice than either of the control strains. Plasma 8-isoprostane levels were ≥45 pg/ml plasma in 91% (10/11) NOD mice, and 40% (4/10) in the two control strains, at age 3–4 weeks. The analysis of the proteomes of mitochondrial preparations from 3-week old NOD and controls, identified 15 protein spots that were different between one or more of the 3 strains of mice. So far we have identified 5 of these proteins: Ndufs1 (a Complex 1 subunit), Uqcrcl (a Complex III component), Slc26a5 (an anion channel protein), Desmin (a filament protein) and ATP5b (an ATP synthase subunit).

**Conclusions:** Based on these observations we conclude that abnormalities in NOD mice affect unique proteins involved in the respiratory chain and ATP production. Since ATP production is associated with the production of free radicals, the increased presence of 8-isoprostane in the plasma of these mice is likely a peripheral manifestation of these mitochondrial abnormalities and could serve as a circulating biomarker. The potential use of similar preclinical biomarkers in human DM1 remains to be investigated.

Gastroenterology and Clinical Nutrition II

**Concurrent Session**

1:00 PM

Saturday, February 23, 2008

**DEVELOPMENTAL DEFICIENCY OF TGF-β ACTIVITY PREDISPOSES THE PREMATURE NEONATE TO NECROTIZING ENTEROCOLITIS**

A. Maheshwari1, L. Smythies3, N. Ambalavanan1, T. Nicola1, P. Smith3, and R. Ohls2. 1 UAB, Birmingham, AL; 2 UNM, Albuquerque, NM and 3 UAB, Birmingham, AL.

**Purpose of Study:** NEC is believed to occur when mucosal injury allows bacterial translocation into the lamina propria, causing leukocyte recruitment and tissue destruction. This model is inconsistent with observations in the adult that intestinal cells such as macrophages are ‘anergic’ to bacterial products. Because NEC is seen almost exclusively in the premature infant, we hypothesize that NEC occurs because normal mucosal mechanisms of tolerance to bacterial products are developmentally regulated, and hence, deficient in the premature neonate.
Methods Used: Fetal and adult intestinal macrophage TNF-α expression was determined by immunostaining human tissue and direct measurements in cultured murine cells. Because intestinal macrophage tolerance to bacterial products results from extracellular matrix factors, we prepared tissue-conditioned media (TCM) from 12–24 wk human fetal (n=25) and adult intestinal tissue (n=3) to investigate developmental changes. Monocytes were treated with TCMs x 2h and LPS-stimulated cytokine production was measured by ELISA and microarray. TGF-β isoforms and activators were measured in TCMs by qPCR, ELISA, and standard bioassays. We also measured TGF-β2 and MMP2 expression in normal fetal and NEC tissue. Finally, we compared platelet-activating factor-1-LPS-induced gut injury in wild-type and TGFβRII-deficient mice (lack all TGF-β signaling).

Summary of Results: Unlike in adult, fetal intestinal macrophages respond to LPS and produce TNF-α. Intestinal TCMs suppressed monocyte TNF-α production in a gestation-dependent manner (TNF-α: 552±245 with media alone, 4174±719 at 11–17 wks, 2518±462 at 18–24 wks, and 876±546 pg/mL with adult T-CM). Intestinal TCMs similarly suppressed IL6, IL1β, IL8 production, neutrophil chemotaxis, and NFκβ activation. TCM effects correlated with TGF-β bioactivity (p<0.01), TGF-β2 concentrations, and MMP2 activity. Both TGF-β2 and MMP2 are significantly downregulated in NEC. PAF-LPS-induced injury was more severe in TGFβRII-deficient mice (injury score 1.13±0.16 in WT vs. 3±0.45, p<0.01).

Conclusions: Normal mucosal tolerance to bacterial products is developmentally regulated and is related to TGF-β2 expression. In premature infants, deficient TGF-β activity may predispose to mucosal inflammation, as seen in NEC.

367 A2B RECEPTOR REGULATES INTESTINAL MOTILITY: CRITICAL ROLE OF A2B RECEPTOR IN INHIBITORY NEUROTRANSMISSION

B.P. Chandrasekharan, V.L. Kolachala, G. Dalmasso, D. Merlin, S.V. Sitaranan, and S. Srihivasan. Emory University, Atlanta, GA.

Purpose of Study: Adenosine receptors are widely expressed in the enteric nervous system and have been shown to regulate mucosal secretion and neural sensory and motor reflexes. However, precise role of adenosine 2b receptor subtype in the enteric nervous system is unknown. The aim of the present study was to understand the role of adenosine 2b receptor in colonic motility.

Methods Used: Distal colons from age and sex matched wild type and A2bKO mice were stained for NADPH diaphorase neurons and scored per unit area to assess nitricergic neurons. Distal colonic motility was examined by the bead expulsion test. Neurally-mediated colonic relaxation was assessed by performing isometric muscle recording in intestinal longitudinal muscle strips from the distal colon.

Summary of Results: A2bKO mice showed a significant decrease in the number of NADPH Diaphorase positive neurons (12.2 ± 0.54) compared to WT mice (19.03 ± 0.52, p<0.001, n=3). Consistent with this loss of nitricergic neurons, colonic relaxation, as assessed by the isometric muscle recordings, was significantly reduced in the distal colon of A2b KO mice (16.97±4.9%) when compared to the WT (54.01±5.2%) mice. Distal colon emptying as assessed by the time taken to expel beads was significantly higher in the A2bKO mice (8.4±1.0 minutes) compared to WT mice (4.98±0.6 minutes, p<0.001, n=6) indicating delayed colonic emptying.

Conclusions: Together these data suggest that A2b receptor in the distal colon regulates enteric inhibitory neurotransmission. Targeting the A2b receptor might be of therapeutic interest in treating colonic motility disorders.

368 MATRIX METALLOPROTEINASE-9 DETERMINES INTESTINAL CELL DIFFERENTIATION BY ACTIVATING NOTCH 1: ROLE OF MMP-9 IN THE PATHOGENESIS OF COLITIS

A. Ravi, C. Marin, L. Wang, D. Merlin, and S. Sitaraman. Emory University, Atlanta, GA.

Purpose of Study: MMP-9, a zinc-dependent protease, has been shown to play a critical role in the development of intestinal inflammation. The purpose of our study was to examine whether MMP-9 directly activates Notch-1 and Notch-downstream signaling pathways (hes-1) leading to the differentiation of intestinal stem cells into absorptive cells rather than secretory cells. Methods Used: Immunoblotting, immunohistochemistry, luciferase assay and salmonella invasion studies were employed. CHO cells and HT-29 16E cells were used for in vitro studies. WT and MMP-9−/− mice were used for in vivo studies.

Summary of Results: Transfection of CHO cells with different deletion constructs of full length Notch-1 was used to determine the MMP-9 cleavage site on Notch-1. Increased expression of NICD and hes-1 were found in cells cotransfected with MMP-9 and the truncated Notch-1 construct retaining the ectodomain cleavage site compared to the cells cotransfected with vector/MMP-9 and the truncated Notch-1 lacking the ectodomain cleavage site. An eight fold increase in hes-1 tagged luciferase activity was found in cells co-transfected with MMP-9 and truncated Notch-1 having the ectodomain cleavage site compared to the respective vector transfected cells. Overexpression of MMP-9 in HT-29 16E cells decreased the expression of mucin, MUC-2 and IFT-3. There was increased invasion of Salmonella typhimurium in MMP-9 overexpressing cells compared to vector transfected cells. Our in vivo studies demonstrated increased expression of NICD and hes-1 in WT mice compared to MMP-9−/− mice. MMP-9−/− mice were resistant to invasion and sepsis in response to Salmonella typhimurium.

Conclusions: MMP-9 regulates epithelial differentiation by cleaving Notch-1 at the ectodomain cleavage site to generate NICD leading to the activation of hes-1, an established marker of absorptive cell lineage. Our data suggest that overexpression of MMP-9 during colitis may skew epithelial differentiation towards absorptive lineage instead of secretory lineage and increases susceptibility to bacterial invasion and tissue injury. Therefore, targeted inhibition of MMP-9 in the intestine could be a potential therapy for IBD.
the non-adherent cells were harvested and 2×105 cells/well inoculated in 96 well plates. BMDC were treated with media alone, E. coli LPS (1 µg/ml) or murine CpG (20 µM) for 24 hours, after which cytokine supernatant was harvested for cytokine ELISA. BMDC were stained for cell surface markers of activation and analyzed by flow cytometry.

**Summary of Results:** LPS treated FVB.mdr1a−/− BMDC cultures had greater amounts of IL-12 (679±149 vs. 488±73, pg/ml) but similar levels of TNF-α compared to FVB.WT. FVB.mdr1a−/− BMDC cultured with CpG also produced more IL-12 (98±28 pg/ml vs. non-detectable) and TNF-α (418±91 vs. 207±40, pg/ml). The percentage and absolute number of CD11c+CD11b+ cells were greater in CpG treated FVB.mdr1a−/− BMDC. The levels of BMDC activation as determined as being CD11c+ CD80+ and CD11c+ CD80+, were greater in the LPS and CpG treated FVB.mdr1a−/− BMDC.

**Conclusions:** TLR4 and TLR9 ligand treatment results in a greater activation of BMDC from FVB.mdr1a−/−. Since these TLRs are present in the intracellular compartment the absence of p-glycoprotein (an ATP-dependent pump) to expel LPS or CpG from intestinal dendritic cells could contribute to the mechanism of colitis in FVB.mdr1a−/− mice.

Health Care Research

**Concurrent Session**

**1:00 PM**

Saturday, February 23, 2008

**370**

**THE IMPACT OF LITERACY ON PATIENT HYPERTENSION KNOWLEDGE AND SELF-EFFICACY**

S. Thurmon1, S.C. Bailey2, M.V. Bocchini1, K. Davis3, T. Davis3, and M. Wolf4

1LSUHSC-S, Shreveport, LA and 4Northwestern University, Chicago, IL.

**Purpose of Study:** Prior studies have demonstrated significant associations between limited literacy and health outcomes, although causal pathways are not entirely clear. The purpose of this study was to assess the relationship between literacy, hypertension knowledge and self-efficacy among hypertensive patients.

**Methods Used:** Patients were recruited from safety net clinics in Grand Rapids, MI; Chicago, IL; and Shreveport, LA. Eligible participants were at least 18 years old, had a diagnosis of hypertension in their medical record, and a clinic appointment between July 2005 and August 2007. Research assistants conducted in-person interviews to determine hypertension knowledge and self-efficacy. Literacy was assessed with the short version of the Test of Functional Health Literacy in Adults (S-TOFHLA). Patients were classified as having either inadequate literacy or marginal/adequate literacy.

**Summary of Results:** Of 330 patients, 69% were female, 79% were African American and 76% were low income. Age ranged from 21–84 years (mean 53±6); 30.3% had inadequate literacy. In multivariate models adjusting for age and income, patients with inadequate literacy had poorer hypertension knowledge than patients with marginal or adequate literacy. Specifically, patients with inadequate literacy were less likely to know that losing weight could decrease blood pressure (adjusted odds ratio (AOR) 2.7, 95% confidence interval (CI) 1.4–5.2, p=0.003), to recognize that high blood pressure can cause a stroke (AOR 4.5, 95% CI 1.5–14.1, p=0.009) or to recall their last blood pressure reading (AOR 3.6, 95% CI 2.0–6.5, p=0.001). Inadequate literacy was significantly associated with poorer self-efficacy to communicate with healthcare providers (β=−0.9, 95% CI −1.1–−0.7, p=0.019) but not self-efficacy to engage in self-care activities (β=−1.6, 95% CI −4.2–−0.9, p=0.214).

**Conclusions:** Hypertensive patients with inadequate literacy had a poorer functional understanding of their disease and less confidence about communicating with their health care providers. No differences by literacy were noted for self-efficacy to perform self-care, which could suggest that lower literate patients are less aware of deficiencies in their management of hypertension.

**371**

**IMPROVING PATIENT UNDERSTANDING OF PRESCRIPTION DRUG INSTRUCTIONS**

K. Davis1, M. Bocchini1, T. Davis1, M. Wolf2, A. Federman3, P. Bass1, R.H. Jackson1, and P. Ruth1

1LSUHSC-S, Shreveport, LA; 2Northwestern University, Chicago, IL and 3Emory University, Atlanta, GA.

**Purpose of Study:** The purpose of this study was to evaluate best practices for writing prescription medication dosing instructions for container labels.

**Methods Used:** Dosage instructions for three commonly prescribed medications (Glyburide, Metformin, and Atenolol) were written in four different variations. Structured interviews with 359 patients included demographic information, the REALM literacy test, and patient comprehension of 10 randomly assigned Rx dosing instructions. Patients were shown ten prescription bottles one at a time and asked “How would you take this medicine?” Answers were recorded verbatim. A panel of physicians independently coded answers as correct or incorrect. The study took place from May to December 2006 in university based primary care clinics in Shreveport and in New York City and a community clinic in Chicago.

**Summary of Results:** Patients were 72% female, 62% African American; mean age was 48 years. 15% read < 6th grade (low literacy) and 30% read at a 7th-8th grade level (marginal literacy). The majority of patients (78%) misunderstood one or more dosage instructions; over one-third (37%) misunderstood at least three labels. Rates of misinterpreting one or more prescription labels among patients with low, marginal, and adequate literacy were 93%, 84%, and 71% respectively (p<0.001). Patients were most likely to make errors with instructions that used hourly intervals e.g. every 12 hours (47%) or times per day e.g. twice daily (39%); they were less likely to misinterpret instructions using specific periods of day e.g. morning (12%; p<0.001). Literacy level was not associated with interpreting instructions that used specific periods of day (p=0.21). In multivariate analysis, instructions that used specific periods of day or specific times of administration (e.g. 9am and 5pm) were significantly less likely to be misinterpreted compared to instructions using times per day (e.g. twice daily) (ARR 0.42, 95% CI 0.34–0.52; ARR 0.62, 95%CI 0.49–0.74 respectively). However, literacy remained a significant independent predictor of misinterpretation.

**Conclusions:** More precise wording can greatly improve patient comprehension of dosage instructions on Rx drug labels. However, efforts beyond improved wording are needed to remediate patients with low literacy skills.

**372**

**DO PATIENT CENTERED DRUG WARNING LABELS IMPROVE COMPREHENSION?**

M. Bocchini1, S. Bailey2, K. Davis1, J. Webb2, M. Wolf2, P. Bass1, C.L. Arnold1, R. Parker3, and T.C. Davis1

1LSUHSC-S, Shreveport, LA; 2Northwestern University, Chicago, IL and 3Emory University, Atlanta, GA.

**Purpose of Study:** This research team previously reported that text and icons on warning labels (WL) are not understood by many patients. The purpose of this study was to: 1) develop simplified WL using patient feedback, 2) evaluate comprehension of these compared to currently
used labels and 3) determine whether the inclusion of icons improved comprehension of the simplified WL.

**Methods Used:** Ten focus groups (N=85 patients) elicited feedback in the development of simplified warning messages and icons. Two simplified WL were developed, one with and one without icons, for each of the 9 most commonly used labels by one national drug store. 250 patients were recruited from academic medical centers in Chicago and Shreveport, and randomly assigned to review 3 bottles, 1 with 3 standard labels, 1 with 3 simplified text-only labels, and 1 with 3 simplified text and icons. In individual interviews, patients were asked, “In your own words, what does this mean to you?” Responses were transcribed. Literacy was assessed with the REALM test.

**Summary of Results:** Patients ranged in age from 19–81 years; 45% were female; 46% AA; 48% white; and 14% had low literacy (read ≤6th grade). Mean comprehension of the 9 WL was 65% (range = 57% to 74%). Patients with low literacy were significantly more likely to misinterpret drug WL compared to patients with marginal or adequate literacy (53% v. 63% v. 68%, p<0.001). Comprehension was highest for WL using simplified text and icons, followed by simplified text only, and standard labels (69% v. 66% v. 61%, p<.05). The simplified text and icon labels were especially helpful for patients with low literacy. Comprehension for this group was 64% v. 59% v. 45 (p<.05). Literacy was not associated with comprehension of simplified text and icon labels (p=0.21). In multivariate logistic regression models adjusting for demographic and socioeconomic characteristics, the association between the use of simplified text and icons and comprehension approached significance (ARR 1.6, 95% CI 1.0 – 2.6) but literacy was not significantly associated with comprehension (p=0.14).

**Conclusions:** Incorporating patient feedback in developing simplified warning messages and icons improved comprehension. More research is needed to ensure adequate health literacy and medication safety.

**374 QUALITY IMPROVEMENT PROJECT TARGETING RESIDENT PERCEPTIONS OF A CONTINUITY CLINIC**

T.J. Hundley, A. Amato, M. Peters-Harris, A. Westbrook, B. Keller, and J. Blair-Elortegui. *University of South Alabama, Mobile, AL.*

**Purpose of Study:** An area of concern in internal medicine (IM) residency is the educational experience of residents in the ambulatory setting, specifically the continuity clinic. The goal of this study is to evaluate perceptions of residents, nurses, and patients of our resident-based continuity clinic in an effort to improve both patient and resident satisfaction and efficiency of the clinic.

**Methods Used:** A committee was composed of a chair (PGY-3), a chief medical resident, one categorical resident from each level of training within the IM resident program, and a faculty advisor. Satisfaction surveys developed by the committee were distributed to all IM residents (excluding committee members), nurses, and patients in the resident continuity clinic. Patient surveys were serial over two months. The surveys were anonymous and used a scale of “Very Poor, Poor, Adequate, Good, Very Good, and No Opinion”. Categories were unsatisfactory if the combined “Very Poor” and “Poor” ratings exceeded 20 percent. A patient-flow study was performed for a two-month period. Time slips were utilized to track patients through pre-decided set points: arrival, nurse, exam room, physician entry, and clinic check-out. A subset of physician to clinic check-out was subdivided to assess time spent in ancillary services. Statistical analysis was done with Minitab 15® statistical software.

**Summary of Results:** Resident survey response rate was 88% (46/52). Unsatisfactory areas were related to patient flow, particularly the amount of time needed to document and check-out a patient, and ancillary services. Residents also felt inpatient and clinic responsibilities were not coordinated. Nursing surveys had no unsatisfactory responses. Patient surveys (259 from 1005 visits) had no unsatisfactory areas. 307 separate encounters were in the patient-flow study. The average time a patient spent in clinic was 115.2 ± 28.6 minutes. The largest impact was the physician to clinic check-out (56.8 ± 28.6 minutes) of which only 13.6 minutes were ancillary services.

**Conclusions:** Resident perceptions of continuity clinic were more negative than their patients and nurses. The patient flow data demonstrates that some resident perceptions are correct. Collectively, these demonstrate opportunities for future improvement.
Purpose of Study: Patient-held vaccination records recommended part of the Standards for Child and Adolescent Immunization Practices. The effect that the records have on immunization rates is largely undefined. Do patient-held vaccination records improve vaccination rates?

Methods Used: The public use files of the 2005 National Immunization Survey (NIS), a national validated survey of households with children 19–35 months of age, were used. The outcome was provider record of up to date (UTD) defined as 4:3:1:3:3 (4 DTP, 3 Polio, 1 Measles, 3 Hib, and 3 Hepatitis B). Main outcome was the use of a patient-held vaccination record (RECORD). All comparisons presented are significantly different unless otherwise noted. Potential confounders examined included race/ethnicity, maternal education, language and number of health care providers giving vaccines.

Summary of Results: Overall, 80.7% of children were UTD and 43% of children had a RECORD. UTD was modestly higher for the survey population with RECORD (83.6 vs 78.6). Having multiple providers of vaccines was associated with lower UTD compared to 1 vaccine provider (76.9 vs. 82.8). In children with multiple providers having a RECORD was protective (82.2 vs. 71.4) however even those with one provider having a RECORD was associated with UTD (84.5 vs. 81.7). For all race/ethnicities, those with the patient-held vaccination records had higher UTD. In logistic regression predicting UTD controlling for race/ethnicity, maternal education, language and number of vaccine providers having a patient-held vacation record was associated with a 48% increase in the odds of UTD (1.48, 95% CI 1.28–1.72).

Conclusions: Patient-held vaccination record is associated with improved immunization rates. A greater effect is seen in those of mid language and number of vaccine providers having a patient-held record (RECORD). All comparisons presented are significantly different unless otherwise noted. Potential confounders examined included race/ethnicity, maternal education, language and number of health care providers giving vaccines.

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S.A. Saced, D.C. Barnhart, D. Creel, A. Landeros, J.M. Hardin, and T.C. Wall, University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** The purpose of our study was to characterize the population of children who receive gastrostomy tubes in a national network of children’s hospitals and to examine factors which predict the type of procedure performed (PEG vs. laparoscopic or surgical gastrostomy).

**Methods Used:** We used the Pediatric Health Information System (PHIS) data of the Children’s Hospital Corporation of America (CHCA) which contains inpatient data (demographics, diagnoses and procedure codes) from member hospitals. We included patients from the time period January 2000 through September 2005 whose age was 1 month to 18 years and had a procedure code for g-tube placement; all inpatient data for each patient before and after procedure were selected and matched. Neurological impairment was identified based on the presence of an ICD-9 code for cerebral palsy or anoxic brain injury. Other diagnoses of interest included gastroesophageal reflux, failure to thrive, aspiration pneumonia, feeding difficulties, vomiting, bronchopulmonary dysplasia, esophagitis, and asthma. We used logistic regression to determine which factors predict type of g-tube procedure performed.

**Summary of Results:** For the 13,537 patients who underwent gastrostomy tube placement, the mean age was 41 months (median 15 months), and 56.2% were male. Neurological impairment was identified in 2810 (20.8%) patients and GER in 58.9%. Most of the gastrostomies performed were non-PEGs (12,343, 91.2%), with a higher rate of PEGs being performed in neurologically impaired children (10.7% vs. 8.3% in neurologically normal, p<0.001) and in older children (10.1% in children >1 year vs. 7.2% in children <1 year old, p<0.001). Using logistic regression, both age and neuroimpaired status continued to be significant predictors of choice of procedure. Children <1 year had a higher rate of non-PEG gastrostomies (Odds ratio = 1.43, 95% confidence interval 1.26–1.63), while being neuro-impaired was associated with a lower rate (OR = 0.82, CI 0.71 – 0.94) of surgically placed gastrostomy tubes.

**Conclusions:** Gastrostomy tubes are performed most often in young children, with many being performed in neuro-impaired patients. PEG tubes are more likely to be the procedure of choice in older children and neurologically normal patients.

Hematology and Oncology II

Concurrent Session

1:00 PM

Saturday, February 23, 2008

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**380**

**SPERM PROTEIN 17 IS EXPRESSED IN PRIMARY AND METASTATIC BREAST CANCER**

M. Chiriva-Internati1-3, R. Ferrari2, Y. Yu2, L. Baglioni1,3, M. Borri1-3, B. Chen1,6, N. D’Cunha2, N. Gagliano2,3, F. Grizzli1,2, M. Jenkins3, E. Frezza5, and E. Cobos1,2-4. 1Texas Tech University Health Sciences Center and the Southwest Cancer Treatment and Research Center, Lubbock, TX; 2German Cancer Research Center, Heidelberg, Germany; 3University of Milan, Milan, Italy; 4Istituto Clinico Humanitas IRCCS, Milan, Italy; 5Texas Tech University Health Sciences Center, Amarillo, TX and 6Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX.

**Purpose of Study:** Breast carcinoma (BC) is a major health concern for millions of women. Tumor-specific gene products, such as cancer-testis (CT) antigens, are promising targets for developing T-cell vaccines. A CT antigen, Sperm protein 17 (Sp17), has been identified at the mRNA level (except spermatogonia), in the ciliated epithelia of the respiratory airways and in male and female reproductive systems. This study evaluated Sp17 in both normal breast tissue and primary invasive ductal BC.

**Methods Used:** We analyzed 7 normal breast tissues (mean age: 40 years) and 22 primary BCs (mean age: 48 years) by standardized immunohistochemical technique. Sp17 was recognized in three human cell lines purchased from ATCC (Manassas, USA): 184B5 originated from a normal mammary epithelium, HCC70 originated from a primary ductal carcinoma and MDA-MB-361 originated from a breast metastasis using Western blotting (WB).

**Summary of Results:** No immunoreactivity was recognized in normal breast while a strong homogenous cytoplasmic immunoreactivity was shown in the BCs neoplastic cells. The analyzed tumor samples did show 15 of 22 positive cases (70%) for Sp17 protein. WB showed that Sp17 was expressed in both HCC70 and MDA-MB-361, while expression was slower in 184B5.
Conclusions: The data demonstrate the expression of Sp17 in breast cancer. Further studies will elucidate the role of Sp17 in BC, and its potential as a BC immunotherapeutic target.

381 SCREENING MAMMOGRAPHY USE IN MEDICARE BENEFICIARIES REFLECTS 4-YEAR MORTALITY RISK
D. Koya1, S. Koya2, J.G. Chen1, and W.P. Moran1. 1Medical University of South Carolina, Charleston, SC and 2University of Alabama, Birmingham, AL.
Purpose of Study: The net mortality benefits from screening mammography depend on life expectancy. Breast cancer screening guidelines recommend that women and physicians consider life expectancy when making screening decisions in older women. However, prior studies suggest that screening mammography patterns are dependent on age rather than health status or mortality risk of women. The objective of our study is to determine the relationship between 4-year mortality risk and use of screening mammography in women ≥ 65 years in a cross-sectional study.
Methods Used: We used Medicare Current Beneficiary Survey 2002 data to analyze recent mammography use across 4 categories of 4-year mortality risk: 4-year mortality risk is an ordinal variable with 4 strata of increasing probability of death derived from a published and validated prognostic index {risk group 1 (4% 4-year mortality), risk group 2 (15% 4-yr mortality), risk group 3 (42% 4-yr mortality) and risk group 4 (64% 4-year mortality)}. Multivariate logistic regression was used to assess the independent association between mortality risk and mammography.
Summary of Results: There was a significant decreasing trend in the use of mammography with mortality risk groups 1,2,3 and 4 (62.7%, 36.6% and 24% respectively ; trend test p < 0.001). No significant differences were found in mammography use across age groups within each mortality risk group. The adjusted odds of mammography use were greatest in the low mortality risk group and show a gradual decline with increasing mortality risk ((OR (CI) for risk groups 1,2,3 and 4 were 1.00, 0.69 (0.53 - 0.90), 0.37 (0.27 - 0.49), and 0.22 (0.13 - 0.36) respectively ). Other factors significantly associated with higher rates of receipt of mammography were greater, higher income, number of office visits in the current year, receipt of influenza or pneumonia vaccines and receipt of Pap testing.
Conclusions: Screening mammography use in older Medicare beneficiaries seems to reflect their 4-yr risk of mortality rather than age alone, suggesting that patients and providers consider prognosis in mammography screening decisions. Prospective studies are needed to explore the use of the 4-year mortality risk prognostic index as a mammography screening decision tool.

382 TOXICITY OF ADJUVANT CHEMOTHERAPY IN ELDERLY BREAST CANCER PATIENTS
F. Rana1, P. Garg2, and T. Guthrie3. 1University of Florida, Jacksonville, FL, 2University of Florida, Jacksonville, FL and 3Baptist Cancer Center, Jacksonville, FL.
Purpose of Study: Though adjuvant chemotherapy clearly improves survival in early stage breast cancer, women older than 70 years have been underrepresented in breast cancer adjuvant chemotherapy trials due to concerns about toxicity. The aim of our study is to evaluate toxicity profile and tolerance of adjuvant chemotherapy in elderly breast cancer patients.
Methods Used: Retrospective chart review of early stage (Stage 1 and 2) breast cancer patients older than 70 years from Jan 1998 to Dec 2004. Summary of Results: 62 patients older than 70 years treated with adjuvant chemotherapy were identified. 82% patients received anthracycline based regimens. Demographics are displayed in table 1. 89% completed planned chemotherapy. Table 2 displays the outcomes and toxicity due to adjuvant chemotherapy. There was no association between increasing age and noncompletion of chemotherapy (p=0.19). Patients with poor functional status and higher co-morbidity scores were less likely to complete chemotherapy, have dose reductions and breaks in chemotherapy.
Conclusions: Our study suggests that increasing age is not a risk factor for increased toxicity in elderly breast cancer patients treated with adjuvant chemotherapy. Poor functional status, increased comorbidities and development of severe neutropenia are associated with early termination of chemotherapy.

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<tr>
<th>Age (years)(mean)</th>
<th>74</th>
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<tbody>
<tr>
<td>Ethnicity: Caucasians</td>
<td>28(44%)</td>
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<tr>
<td>African Americans</td>
<td>34(56%)</td>
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<tr>
<td>Stage I</td>
<td>II</td>
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<td></td>
<td>11(18%)</td>
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<td></td>
<td>51(82%)</td>
</tr>
<tr>
<td>ER/PR Status: Positive</td>
<td>Negative</td>
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<tr>
<td></td>
<td>18(29%)</td>
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<td>44(71%)</td>
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<tr>
<td>Regimen Type: AC/AC-T</td>
<td>CMF</td>
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<tr>
<td></td>
<td>51(82%)</td>
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<tr>
<td></td>
<td>11(18%)</td>
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<td>Charlson Co-morbidity Index:</td>
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<tr>
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<td>50(81%)</td>
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<tr>
<td>1</td>
<td>10(16%)</td>
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<tr>
<td>2</td>
<td>3(5%)</td>
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<td>ECOG Status:</td>
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<td>37(60%)</td>
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<td>25(40%)</td>
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<tr>
<td>G-CSF</td>
<td>43(69%)</td>
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<tr>
<td>Erythropoetin</td>
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<td>Type of Surgery</td>
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<td>Lumpectomy</td>
<td>Mastectomy</td>
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<tr>
<td></td>
<td>30(48%)</td>
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<tr>
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<td>32(52%)</td>
</tr>
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Completed chemotherapy 55(89%)
Reduction in dose 13(21%)
Breaks in chemotherapy 11(18%)
NCICTC Neutropenia Grade3/4 13(21%)
NCICTC anemia Grade3/4 8(13%)
NCICTC constitutional symptoms Grade3/4 13(21%)
Febrile Neutropenia 4(6%)
incidence of diabetes was 12%. Diabetes was present for an average stage 2 and 5 patients were in Stage 1. 14 patients (17%) had diabetes at patients were in Stage 4, 13 patients were in Stage 3, 10 patients were at pain (31/76). In 11 patients, pancreatic cancer was noted as an incidental available on 76 patients. Mean age at diagnosis was 66 years. There was 83 patients were identified. Complete data was 100 age and sex matched patients.

ville since Jan 2000 Dec 2005. The control group consisted of similar pancreatic cancer. However, as many as, 13 patients (60%) required months. Only 4 patients were on insulin therapy before the diagnosis of pancreatic cancer. When compared to controls. Whether the new onset diabetes in the elderly population is result of early but yet undiagnosed pancreatic cancer or true risk factor for the development of pancreatic cancer remains to be determined in large prospective multi-centre randomized control trials.

385 ANALYSIS OF ASTROCYTE-GLIOMA INTERACTIONS IN A CO-CULTURE EXPERIMENTAL MODEL

N. Gagliano1,2, M. Chiriva-Internati3, S. Pluchino4, F. Costa1, L. Pettinari1, C. Moscheni1, C. Cossetti4, R. Ferrari2,3, R. Bassi5, E. Coboz1,2, and M. Gioia1, 1University of Milan, Milan, Italy; 2Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX; 3Texas Tech University Health Sciences Center and Southwest Cancer Treatment and Research Center, Lubbock, TX; 4San Raffaele Scientific Institute, Milan, Italy and 5University of Milan, Milan, Italy.

Purpose of Study: Malignant gliomas derive from neoplastic transformation of astrocytes and are characterized by an unfavorable prognosis due to their high invasive phenotype. As the majority of brain tumours arise through malignant transformation of astrocytes, we aimed at investigating the interaction between malignant glioma cells and astrocytes in a co-culture experimental model.

Methods Used: Co-cultures of human neural stem cell-derived astrocytes and U87 astrocytoma cells were performed in a transwell system. Gene expression and protein analyses were evaluated, respectively, by real time RT-PCR and SDS-zymography.

Summary of Results: Matrix metalloproteinase-2 (MMP-2) is involved in extracellular matrix remodeling during tumor invasion. Its expression correlates with the progression and the degree of glioma malignancy. MMP-2 mRNA and protein levels were increased in astrocytes co-cultivated with U87, and were highly up-regulated in U87. By contrast, tissue inhibitor of MMP-2 (TIMP-2) and SPARC mRNA decreased in astrocytes co-cultivated with U87, and were highly up-regulated in astrocytes co-cultivated with U87, showing the lower expression in U87. SPARC is a key multifunctional glycoprotein that influences several biological processes including cell proliferation. In particular, SPARC has an antiproliferative effect in glioma cells.

TGF-β1 is a multifunctional cytokine that controls proliferation of tumor cells, including glioblastoma. Its gene expression resulted up-regulated in human neural stem cell astrocytes co-cultivated with U87 and U87, compared to astrocytes.

Conclusions: Our results suggest that U87 may elicit phenotype modifications in the neighbouring resident astrocytes. Glioma/astrocytes interaction could possibly induce an astrocyte phenotype modification consistent with a malignant transformation, very likely mediated by soluble factors.

386 ASSESSMENT OF OBSTACLES TO SCHOOL REENTRY AMONG CHILDREN WITH CANCER


Purpose of Study: We performed this study to evaluate the effect of different treatment modalities for cancer on children’s school performance and to determine if treatment modalities for cancer alter children’s behavior.

Methods Used: Parent of patients having survived cancer and being followed in the outpatient Pediatric Hematology/Oncology clinic at Children’s Hospital of New Orleans were surveyed about the diagnosis, treatment, and adverse consequences of therapy; the difficulties experienced by their children upon reentering school after undergoing...
therapy for cancer. Children were between ages 6 and 21 years and had attended school prior to the start of treatment.

Summary of Results: 70% of children were white, 18% African-American and 12% Hispanic. 65% were male and 35% female; 18% were 6–10 years, 29% were 11–15 years, and 53% were 16–21 years. 35% had a solid tumor, 47% leukemia, 6% lymphoma, and 12% other diagnoses. None had been diagnosed with a brain tumor. 64% received chemotherapy, 18% chemotherapy and surgery, 12% chemotherapy with radiation (incl. 6% receiving surgery. 76% of patients lost more than 12 weeks of school. After returning to school 46% lost more than 10 days of school due to clinic visits. 47% of patients had no change in grades after returning to school, while 29% saw a drop in grades and 12% had improvement. 53% reported more difficulty understanding new material in school; 65% had more difficulty completing assignments. Children with solid tumors were more likely to see academic changes. 59% of parents reported changes in their child’s behavior, while 41% of children required professional counseling. 35% had fewer friends and 41% enjoyed school less. 29% reported increased behavioral difficulties, incl. detentions +/- suspensions.

Conclusions: The group surveyed was small, but there need to be strategies devised to facilitate the reentry of children into school after their treatment for life-changing cancers.

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387 IMMUNOTRANSPLANTATION FOR HEMATOLOGIC MALIGNANCIES USING ALLOGENEIC PERIPHERAL BLOOD STEM CELL TRANSPLANTATION

S. Shah, E. Santos, J. Rink, and H. Safah. Tulane University, New Orleans, LA.

Purpose of Study: To decrease toxicity of allo-HCT in patients with hematologic malignancies while allowing the benefit of graft-versus-tumor effect by using a non-myeloablative HCT approach.

Methods Used: Patients were newly diagnosed or previously treated MM patients of any stage, NHL patients who failed 2 chemotherapies regimens, CLL refractory to standard chemotherapy, and MDS with high-risk cytogenetics. Conditioning regimen consisted of fludarabine 30 mg/m2/day on days −5, −4, −3 and melphalan 80 mg/m2 x 2 on days −2 and −1. Graft-versus-host disease prophylaxis included cyclosporine 3 mg/kg intravenously on day −2 and methotrexate 10 mg/ m2 intravenously on days 3, 6, and 11.

Summary of Results: A total of 17 patients were assessable: 11 MM patients (7 IgG, 1 IgA, 2 light chain restriction, 1 non-secretory MM), 3 NHL patients (1 FL, 1 MCL, 1 LGL-NK cell), 2 CLL, and 1 MDS (with trisomy 8, 5q-) with a median age of 50.4 years old (range, 34 to 60 years). Three patients received more than two regimens prior to NM-HCT. The initial responses to therapy prior to NM-HCT were: 5 CR, 2 nCR, and 10 PR. All patients received identical 6/6 HLA sibling donor stem cells. All patients but one attained CR (94%) after NM-HCT. Median time for ANC engraftment was 15.4 days (range, 10–20 days). Eight patients developed acute GVHD grade I–III (5 skin, 3 gastrointestinal); all of them responded well to methylprednisolone treatment.

Conclusions: NM-HCT is a feasible treatment option with manageable toxicity. TRM was less than those reported for myeloablative HCT, and results suggest a graft-versus-tumor effect on these types of hematological malignancies using a NM-HCT approach based on CR rate observed as well as median time to progression.

Infectious Diseases I
Concurrent Session
1:00 PM
Saturday, February 23, 2008

388 BACTEREMIA IN PATIENTS WITH HIV AND HEPATITIS C: ANALYSIS OF THE DMMS STUDY

S. Maddirala1, S. Elfayoumy2, P. Whudyka3, K. Britt1, D. Bullock1, S. Reddy1, B. Cuhaci1, R. Mars1, G. Cu1, V. Urdiudi1, L. Lambie1, and N.S. Nahman1,2 1University of Florida at Jacksonville, Jacksonville, FL, 2University of North Florida, Jacksonville, FL and 3University of North Florida, Jacksonville, FL.

Purpose of Study: Bacteremia (BAC) is an important co-morbidity in HIV patients receiving hemodialysis (HD). We have shown that hepatitis C (HCV) is a risk factor for bacteremia in HD patients (Reddy, JASN, in press). The association of HCV in patients with HIV suggests that HIV may contribute to increased rates of BAC in HIV patients. To address this question, we queried the DMMS for an association between HIV and HCV and the risk of BAC in HD patients.

Methods Used: Logistic regression was performed on the Dialysis Morbidity and Mortality Study (DMMS) from the USRDS. Patients were identified using the ICD-9 diagnosis codes for bacteremia, HCV, and HIV infection.

Summary of Results: 18,295 patients were identified and showed: median age 66 yrs, 37% African-American (AA), and 52% male. BAC, HIV or HCV was present in 3009 (16.5%), 957 (5.2%) and 784 (4.3%), respectively. When compared to HIV(−), HIV(+) patients had a significant increase in the incidence of BAC (16 vs 22% for HIV(−) vs HIV(+) respectively, p < 0.0001). This difference conferred a relative risk of BAC in HIV(+) of 1.4 (95% CI 1.2 – 1.6). Similarly, when compared to HCV negative patients, HCV(+) patients had a significant increase in BAC (27.4 vs 16%, HCV(+) vs HCV(−), respectively, p < 0.0001) conferring a relative risk of BAC in HCV(+) patients of 1.7 (95% CI 1.5 – 1.9). Patient numbers, and HIV and HCV status were: 16,660, 851, 678 and 106 in patients who were HIV(−)/HCV(−), HIV(+)/HCV(−), HIV(−)/HCV(+), and HIV(+)/HCV(+), respectively.

In these groups, the frequency of BAC was 16, 21.3, 27 and 30.2% in patients who were HIV(−)/HCV(−), HIV(+)/HCV(−), HIV(−)/ HCV(+), and HIV(+)/HCV(+), respectively, p < 0.001. These data support the contention that HIV and HCV are risk factors for BAC in HD patients. In addition, this work suggests that the combination of HIV and HCV infection results in the greatest risk of BAC.

Conclusions: The presence of HIV increases the risk of BAC in HD patients. HCV co-infection may further increase the risk of BAC. These data suggest that controlling HIV and HCV infection may have a favorable effect on the rate of BAC in HD patients.

389 MURINE MACROPHAGE TUMOR NECROSIS FACTOR RESPONSE TO MRSA STRAINS ISOGENIC FOR PVL EXPRESSION IN THE PRESENCE OF DIFFERENT CLASSES OF ANTIBIOTICS
Purpose of Study: A strong association between invasive infections caused by community-associated, methicillin-resistant strains of Staphylococcus aureus (CA-MRSA) and the presence of the Panton-Valentine leukocidin (PVL) gene in these strains has been demonstrated in many epidemiologic studies. In a recent animal study, 2 CA-MRSA strains retained their virulence in soft tissue and systemic challenge models, suggesting that PVL expression in these CA-MRSA strains might be a marker for other virulence factor(s).

We have reported that CA-MRSA isolates exposed to daptomycin [DAP] (vs. vancomycin [VAN]) stimulated less macrophage tumor necrosis factor (TNF) secretion. We hypothesized that this might result from reduced release of bacterial products, including PVL, in the presence of DAP (vs. VAN).

Objective: We sought to determine whether PVL plays a significant role in the upregulation of macrophage TNF production by CA-MRSA strains exposed to DAP, VAN, clindamycin [CLI], or linezolid [LIN].

Methods Used: RAW 264.7 murine macrophages were stimulated for 16–18 hrs with 10^5–10^7 cfu/ml of well-characterized CA-MRSA isolates (USA300, USA400 and respective isolates engineered to lack PVL expression [PVL (~)]) in presence of VAN (20µg/L), DAP (20µg/L), CLI (20µg/L) or LIN (10µg/L). After stimulation, supernatants were collected and assayed for TNF concentration by ELISA.

Summary of Results: As previously reported, macrophages exposed to the CA-MRSA isolates (10^5, 10^6, or 10^7 cfu/mL) in the presence of DAP (vs. VAN) secreted less TNF; CLI and LIN were intermediate. In these experiments, no significant differences in TNF secretion were observed between the USA300 (LAC) or USA 400 (MW2) strains and their isogenic PVL (~) mutants (LAC APVL or MW2APVL). A slight reduction (mean 11%; range 6–17%) in TNF secretion in response to the MW2APVL (10^7 cfu/ml) vs (MW2) was observed.

Conclusions: Our preliminary studies fail to implicate PVL in the upregulation of macrophage TNF production in response to virulent clinical isolates of CA-MRSA. Additional studies are required to define the role of PVL and other bacterial products in the host inflammatory response to this pathogen.

391 THE HEMATOPOIETIC STEM CELL RESPONSE TO GRAM NEGATIVE BACTEREMIA


Purpose of Study: In response to bacterial infection, hematopoietic activity in the bone marrow (BM) is shifted toward granulocyte production, which is critical for host defense. Along with enhanced granulopoiesis, the BM also increases its release of hematopoietic precursor cells. At the present time, knowledge about the commitment of hematopoietic stem cells (HSCs) following bacterial infection is unexplored. This study investigated the HSC response to systemic bacterial infection.

Methods Used: Bacteremia was induced in male Balb/c mice (20–24g) by intravenous (i.v.) injection of E. coli (E11775, 10^6 CFUs/mouse). Control mice received i.v. saline. In a subgroup of animals, bromodeoxyuridine (BrdU, 1 mg/mouse) was administered along with the i.v. injection of E. coli or saline. HSCs (lin-ckit+Sca-1+) and hematopoietic progenitor cells (HPCs, lin-ckt+Sca-1+) in nucleated BM cells and peripheral blood mononuclear cells were analyzed by flow cytometry. BM HSCs and HPCs sorted by flow cytometry were cultured in vitro with different cytokines to examine phenotypic changes. Colony forming units (CFU) in sorted HSCs were determined by seven day CFU assays.

Summary of Results: Bacteremia caused a 10-fold increase in the number of HSCs in the BM, which was associated with increased incorporation of BrdU into these cells. The number of BrdU- HSCs in the BM was also greatly increased during bacteremia. The increase in BrdU- HSCs occurred with a concomitant reduction in the number of HPCs in the BM. Culture of HPCs with lipopolysaccharide, tumor necrosis factor-α, interferon-γ, and interleukin-6 significantly increased Sca-1 expression in these cells, suggesting that these agents mediate phenotypic inversion of HPCs to HSCs. Cells in the expanded BM stem cell pool during bacteremia were functionally activated for granulopoiesis. BM HSCs also increased expression of vascular endothelial growth factor receptor-2 (VEGFR2), and VEGFR2+ HSCs were increased in the circulation.

Conclusions: These results demonstrate that the BM HSCs constitute a key component of the host defense response to bacteremia. Functional modifications of primitive HPCs may play a critical role in enhancing granulocyte production and facilitating tissue repair processes following bacterial infection.

392 TULAREMIA: RETROSPECTIVE REVIEW OF TEN YEARS EXPERIENCE IN ARKANSAS

Purpose of Study: Tularemia is a zoonotic disease caused by Francisella tularensis. According to the CDC, tularemia is reported more commonly in Arkansas than most other states. The purpose of this study is to review all cases of tularemia among inpatients at Arkansas Children’s Hospital (ACH) from 1996–2006 to evaluate clinical presentation, diagnosis and treatment in this endemic region.

Methods Used: Records of the Infectious Disease Section at ACH were reviewed to identify cases of suspected or proven tularemia for further study.

Summary of Results: There were 30 cases of tularemia diagnosed among inpatients at ACH. Patients ranged in age from 18 months to 14 years, with an equal male:female distribution. 73% of these cases were diagnosed in the summer months, consistent with periods of higher tick activity. 90% of these patients reported a known tick bite prior to onset of symptoms. Seventeen patients (57%) presented with oculocardiacular tularemia, including one patient who also had pneumonia and meningitis. The remaining patients presented with glandular disease. Fever was present prior to admission in 90% of the patients admitted with tularemia. Most patients had been ill for at least 10–14 days prior to admission and were evaluated at least once by another physician, with 71% receiving antibiotics for disease other than tularemia during their illness (most commonly streptococcal pharyngitis). Serology was positive in 77% of the patients included in this series, although several of these patients had positive serology only on convalescent studies. Seven patients ultimately required surgical drainage of infected lymph nodes after treatment had been initiated. Most patients (96%) were treated with gentamicin (6–14 days) and responded well. Three patients had recurrent disease, including one patient initially treated with ciprofloxacin alone. All 3 patients ultimately resolved their infection with further antibiotics and drainage.

Conclusions: This series emphasizes the importance of tularemia as an early diagnostic consideration among children with fever and lymphadenopathy in Arkansas, particularly in summer months. Convalescent serology is an important diagnostic tool, as many patients will remain seronegative for the first 7–14 days of illness. Gentamicin remains a highly effective treatment and should be considered first-line therapy for suspected tularemia.

393 PROOF OF UTILITY FOR REAL-TIME POLYMERASE CHAIN REACTION IN THE DIAGNOSIS OF STREPTOCOCCUS PNEUMONIAE BACTEREMIA USING A MURINE BACTEREMIA MODEL

N.G. Rouphael1,2, N. Atwell Melnick2, D. Longo2, M. Whaley2, G. Carlone2, J. Sampson4, and E. Ades2. 1Emory University School of Medicine, Atlanta, GA and 2Centers for Disease Control and Prevention, Atlanta, GA.

Purpose of Study: Blood culture is considered the “gold” standard in the diagnosis of Streptococcus pneumoniae bacteremia. However, blood culture requires 24 to 48 hours for growth and lacks sensitivity especially in early disease or after antibiotic administration. Therefore, there is a need for other diagnostic approaches. The purpose of our study was to demonstrate the utility of real-time Polymerase Chain Reaction (PCR) when compared to blood culture in determining S. pneumoniae bacteremia in a murine model.

Methods Used: Mice were infected intranasally with S. pneumoniae serotype 3 (W29 strain). 10 μL of blood were used for blood culture plating and 100 to 200 μL of serum were used for DNA extraction. 2.5 μL of DNA extract were needed for real-time PCR. Real-time PCR targeted two genes (PsaA and LytA) to increase both the sensitivity and specificity of the assay. Blood culture and real-time PCR were obtained at 3 different time points i) 2 hours ii) 24 hours without antibiotic iii) 24 hours, with antibiotic administration.

Summary of Results: i) at 2 hours, 3 out of 10 mice had positive blood cultures and all 10 had positive PCR results. ii) at 24 hours, 9 out of 14 mice not treated with antibiotics had positive blood cultures and all 14 had positive PCR results. iii) In the group treated with antibiotics and where the blood culture was negative (n=16), 13 mice had positive PCR results. It is unclear if the animals were infected in the remaining 3 mice where both the blood culture and PCR were negative.

Conclusions: In a murine model, real-time PCR for S. pneumoniae can be substituted for blood culture in determining whether an animal is bacteremic. In S. pneumoniae bacteremia, real-time PCR is particularly useful in early disease and after antibiotic administration.

394 PARAPARESIS AND THE REVERSAL SYNDROME

E. Charaf, F. Sarubbi, W. El Minaoui, and R.D. Smalligan. East Tennessee State University, Johnson City, TN.

Purpose of Study: Vertebral osteomyelitis is most commonly associated with Staphylococcus or Mycobacterium tuberculosis. We report an uncommon case of Mycobacterium avium complex (MAC) osteomyelitis in an AIDS patient, complicated by the newly described MAC reversal syndrome.

Methods Used: Vignette.

Summary of Results: A 44-year-old man with AIDS, chronic hepatitis B and cirrhosis, developed pneumonia with pleural effusion and was treated with azithromycin. Persistent chest pain prompted a CT which showed a destructive lesion near T8 with caseating granulomas and acid fast bacilli on biopsy. He deteriorated with progressive paraparesis despite anti-tuberculous therapy. Two months later, he underwent laminectomy and fusion and was later able to walk again. The original culture grew Mycobacterium avium complex (MAC) and the patient’s therapy was adjusted for better coverage.

Conclusions: MAC osteomyelitis, while uncommon, typically affects the lower thoracic or lumbar spine causing a kyphotic wedge (Gibbus) deformity of the spine. The symptoms are insidious, often delaying the diagnosis with resulting extensive bone and joint destruction and in some cases paraplegia. Standard treatment regimens include a macrolide plus ethambutol. Rifabutin, aminoglycosides, and quinolones may be added for relapse or resistance. It is prudent to treat for 12 to 18 months and to continue lifelong suppressive therapy.

Our patient’s deterioration following initiation of anti-tuberculous therapy illustrates a recently described phenomenon called the “MAC reversal syndrome”. This syndrome is a paradoxical reaction of increased local inflammation resulting in an initial clinical worsening when patients receiving HAART are started on MAC therapy. The proposed mechanism of this reaction is an emergent cellular immune response to newly released MAC antigens. While data is yet lacking, some propose continuing MAC prophylaxis in HIV patients even after a CD4 count of 200 is attained to reduce the morbidity associated with the MAC reversal syndrome.

This case reminds clinicians of the importance of maintaining a high index of suspicion for MAC infections in high risk patients whose signs and symptoms do not respond in timely fashion to conventional therapy. It also alerts physicians to the possible paradoxical clinical deterioration initially when HAART and MAC therapy are combined.

Perinatal Medicine II

Concurrent Session

1:00 PM

Saturday, February 23, 2008
THE PROBIOTIC, LACTOBACILLUS RHAMNOSUS GG, DECREASES EPITHELIAL APOPTOSIS IN THE DEVELOPING MURINE GUT

1Emory, Atlanta, GA and 2Emory, Atlanta, GA.

Purpose of Study: Necrotizing enterocolitis (NEC) remains a leading cause of morbidity and mortality in preterm infants. Although its pathogenesis is poorly understood, inappropriate intestinal epithelial apoptosis has been implicated. Recent clinical trials suggest that probiotics may reduce the incidence of NEC, and in vitro studies suggest that probiotics may act by suppressing intestinal epithelial apoptosis in cultured cells. However, little is known about their mechanism of action in immature intestines in vivo. In this study we aimed to determine whether the probiotic Lactobacillus rhamnosus GG (LGG) may prevent NEC by reducing inappropriate apoptosis in the developing intestine.

Methods Used: We modeled intestinal epithelia in vitro with IEC6 cells and immature intestines in vivo utilizing 2 week old preweaned mice (maturity expected at 3 weeks). IEC6 cells were pretreated in media with or without LGG (2h) and apoptosis subsequently induced with staurosporine (1μg/ml STS, 2h). 2 week old mice were prefed media with or without LGG (4h) and whole mice intestines subsequently harvested for ex vivo apoptotic induction with STS (2h). To determine whether LGG reduced epithelial apoptosis, we performed TUNEL staining and activated caspase 3 immunohistochemistry. To determine whether LGG induced a generalized cytoprotective response in immature intestines, we compared genes upregulated in the intestine of immature mice fed media with or without LGG using cDNA microarray analysis.

Summary of Results: LGG pretreatment significantly reduced intestinal epithelial apoptosis in cultured cells, as assessed by TUNEL. LGG also significantly reduced epithelial apoptosis in our murine model of immature intestines, as measured by staining for activated caspase 3 and TUNEL. Further, preliminary cDNA microarray analysis indicates that LGG upregulates a battery of genes with known and likely cytoprotective effects.

Conclusions: These studies indicate that probiotics such as LGG may augment intestinal host defenses in the developing intestine by stimulating anti-apoptotic/cytoprotective responses. Since apoptosis may be a precursor to NEC, understanding the mechanism behind probiotic modulation of apoptotic pathways may allow for development of more specifically targeted therapies or preventive strategies in the future.

DOES THE USE OF DONOR BREAST MILK IN VERY LOW BIRTH WEIGHT INFANTS DECREASE THE INCIDENCE OF NECROTIZING ENTEROCOLITIS?

C.E. Bishop, C.L. Blanco, K. Burney, and J.A. Petershack. University of Texas Health Science Center, San Antonio, TX.

Purpose of Study: Necrotizing enterocolitis (NEC) is a significant cause of morbidity and mortality in very low birth weight (VLBW) infants. Previous studies have shown lower rates of NEC when preterm infants are fed their own mother’s breast milk (MBM), but few studies have addressed the effects of donor breast milk (DBM).

Objective: To describe the incidence of NEC, associated risk factors, and morbidities before and after the introduction of DBM.

Methods Used: Retrospective chart review of live born VLBW (<1500g) infants admitted to University Hospital, San Antonio, TX from 2001–2004. 401 charts were reviewed; 70 were excluded due to pre-viable status. NEC was defined according to Bell’s criteria as stage II or higher. Descriptive statistics were performed using SPSS 11.5.

Summary of Results: There were 188 infants in the pre-DBM era and 143 in the post-DBM era with 38% receiving DBM. In the pre-DBM group, the mean gestational age (GA) and mean birth weight were 28.4±2.6 weeks and 1054±279 g respectively, and in the post-DBM era they were 28.6±2.9 weeks and 1061±290 g. The cohorts were similar with respect to race, gender, and small for gestational age. Risk factors commonly associated with NEC were similar in both eras, including post-natal dexamethasone, patent ductus arteriosus (PDA), PDA ligation, indomethacin use and feeding strategies. BM fortification and enteral protein supplementation by 34 completed weeks GA were lower in the pre-DBM era, with 79% vs. 91% of patients fortified and 11% vs. 32% with enteral protein supplementation. The incidence of NEC in the pre-DBM group was 11.8% with 6.2% surgical NEC, and in the post-DBM group was 10.1% with 2.9% surgical NEC. Sepsis decreased from 19% in the pre-DBM era to 9% in the post-DBM era. Mortality in the pre-DBM group it was 11.5% with 4.4% of deaths due to NEC, while in the post-DBM era it was 6.3% with 2.8% of deaths due to NEC.

Conclusions: The overall incidence of NEC and death due to NEC remained unchanged after the introduction of DBM; however, the incidences of surgical NEC, sepsis, and non-NEC related death were lower in the post-DBM group. Further analysis using logistic regression, multivariate analysis, and proportional hazard models to identify effect-modifiers, interactions and confounders is ongoing.

DONOR BREAST MILK, IS IT THE SAME AS MOTHER’S OWN MILK? AN IN VITRO STUDY ON LACTOFERRIN LEVELS

K.K. Sherburne, C.E. Bishop, B. Henson, and C.L. Blanco. University of Texas Health Science Center at San Antonio, San Antonio, TX.

Purpose of Study: In premature infants, human milk significantly decreases the incidence of necrotizing enterocolitis (NEC). Lactoferrin, an iron-binding protein, has previously been shown to have antimicrobial and anti-inflammatory properties and has been suggested as a protective factor for NEC. Donor breast milk (DBM) has been increasing being used to feed premature infants. Little is known about the content of important antimicrobial and immune factors in DBM. The objective of the study was to determine if DBM has comparable amounts of lactoferrin to mother’s own breast milk (BM).

Methods Used: After informed consent, expressed BM samples were collected from random mothers delivering at University Hospital in San Antonio, TX. BM was classified according to time of collection as early (<48hrs from delivery) and late (≥48hrs), and time of gestation (preterm vs. term). Samples were aliquoted, centrifuged, whey removed and stored at −80°C. DBM samples were obtained from NICU supply and treated in the same manner. Protein was quantified from each sample and western blotting was performed with recombinant human lactoferrin (HLF) and formula as controls. ANOVA was utilized to assess significance using SPSS 11.5.

Summary of Results: A total of twenty one samples of late preterm BM (LPBM), late term (LTBM), early term (ETBM) and DBM were obtained. No lactoferrin was detected in the commercially available formula samples tested. DBM samples showed significantly lower lactoferrin levels (shown as mean ± S.E.) than ETBM (1.0±0.2 vs. 6.1±1.1 relative units (r.u.), p=0.001), but had similar levels when compared to LTBM. DBM appeared to have lower lactoferrin levels than LPBM but failed to reach significance (1.0±0.2 vs. 2.9±0.2 r.u., p=0.06). ETBM had the highest levels of lactoferrin.

Conclusions: Lactoferrin levels in DBM were comparable to LTBM and significantly higher than formula. ETBM had the highest levels of lactoferrin.
lactoferrin of all types of expressed BM tested. Further studies are on going to evaluate additional anti-inflammatory and antimicrobial factors in DBM.

HF DBM LPBM LTM ETBM

398 NEONATAL INFECTIONS REDUCED BY FOLLOWING THE AMERICAN DIETETIC ASSOCIATION’S INFANT FEEDINGS: GUIDELINES FOR PREPARATION OF FORMULA AND BREASTMILK IN HEALTH CARE FACILITIES

A. Gates, S. Edell, and J. Bhatia. The Medical College of Georgia, Augusta, GA.

Purpose of Study: The use of powdered infant formulas in high risk newborns has been associated with significant morbidity and even mortality resulting in specific guidelines for the use of these formulas [ADA 2004]. The objective of this study was to determine if infants fed powdered formula [PF] or additives are more likely to develop infections than those fed sterile, ready-to-feed formula.

Methods Used: The data were collected on all NICU admissions in two prospective time periods: 01/04 – 12/05 [Epoch I] & 11/06 to date [Epoch II]. Blood, urine, CSF cultures were reviewed. In Epoch I, formulas were prepared following the guidelines; in Epoch II, PF’s or additives were restricted to only those unavailable in sterile liquid form while feeding practices were the same.

Summary of Results: The following species were isolated in blood: Enterobacter, Enterococcus [E Group], Staphylococcus, E. coli, Streptococcus, Citrobacter, and Proteus. Similar organisms were found in urine. One CSF culture was positive for MRSA. In Epoch I, PF was fed to 197 infants [17.7%]; of these 84 [42.6%] infants had a diagnosed infection. Of infants not fed PF (n=915), only 10% had an infection. In Epoch II, PF was fed to 49 infants [12%]; of these, 13 infants [27%] had a diagnosed infection compared to 43% in Epoch I. However, during Epoch I, of the 58 infants with E Group, 67% were fed powder; during Epoch II, of the 29 infants with E Group infections, only 28% were fed PF. The incidence of E coli was similar in the two periods [12 vs. 10%] and the % of infants fed PF was similar. Of the other infections [68 vs. 71% in the two epochs], there was a marked reduction in number of infections in Epoch II among those fed PF [50% vs. 19%].

Conclusions: Our data demonstrate a 39% reduction in E Group infections among infants fed PFs from Epoch I to II; there was a 31% reduction between the two epochs in the Other Infections category among infants fed PFs. Although the total % of absolute infections [not adjusted for duration of data collection] was similar in the two epochs, there appears to be a change in the incidence and the type of infections. These data demonstrate for the first time, a reduction in infections by following the ADA guidelines for infant formula preparation.

399 PARENTAL SUPPORT INTERVENTIONS IN THE INTENSIVE CARE NURSERY: STRESS PERSISTS

A.M. Patsiokas1, and B.S. Carter2. 1Vanderbilt University School of Medicine, Nashville, TN and 2Vanderbilt University Medical Center, Nashville, TN.

Purpose of Study: Parental experience with preterm infants managed in the neonatal intensive care unit (NICU) is stressful. Emotional reactions include disappointment, sadness, guilt, depression, hostility, anger, helplessness and loss of self-esteem. Such emotional experiences may negatively influence parent-infant relationship and infant development. This study aims to evaluate the short-term effectiveness of parental peer support interventions offered in the NICU through Parents Reaching Out (PRO).

Methods Used: Parents of singleton or twin NICU patients born at <32 weeks gestation or <1500gm were recruited to participate. All study parents had access to social worker services and PRO during their stay in the NICU. An initial assessment (T1) was made within 2 weeks of NICU admission (Positive and Negative Affect Schedule, PANAS, and Neonatal Unit Parental Stressor Scale, NUPSS). The same assessments were made between 4 and 6 weeks after admission, but prior to discharge (T2). After completing the study, participation in PRO was considered the intervention group; parents who did not participate were considered controls.

Summary of Results: Interim data are reported from the first 12 parents (convenience sample; targeted goal of n=20) who participated in the study: 8 parents engaged with PRO; 4 parents did not. At T1, parents in the intervention group had greater negative affect and less positive affect (p<.05, PANAS scores) than controls. At T2 parents in both groups had similar positive and negative affect scores. Negative affect at T1 was positively correlated with total stress (R2 = 0.7225, NUPSS); and parents with higher stress levels participated in parental support groups (p<.01, NUPSS). Stress levels were essentially unchanged in parents participating in PRO and higher stress levels remained on all of their NUPSS subscales (social-practical, illness-treatments, role with infant) when compared to controls. There were no significant differences between initial and final NUPSS assessments in both groups.

Conclusions: Parents who have an initially negative affect seek out peer support interventions, for which the short term benefits in reducing stress are not apparent.

400 A PILOT STUDY OF POLYCYCLIC AROMATIC HYDROCARBONS (PAH) IN MATERNAL AND CORD BLOOD PLASMA

P. Radmacher1, S. Myers2, S. Looney3, and D. Adamkin1. 1University of Louisville, Louisville, KY; 2University of Louisville, Louisville, KY and 3Medical College of Georgia, Augusta, GA.

Purpose of Study: Background: Polycyclic aromatic hydrocarbons (PAH) are chemicals generated from the incomplete combustion of organic materials, including tobacco smoke. Some PAH are known to be mutagenic and carcinogenic in humans, and of concern for the fetus when women smoke during pregnancy. Known consequences of smoking during pregnancy include low birth weight and preterm delivery. It is unknown if PAH are related to these outcomes. Purpose: 1. To measure concentrations of 3 PAH (anthracene [ANTH], benzo(a)pyrene [BAP] and 1 hydroxyphenyrene 1 HP]) in paired maternal (M) and cord blood (CB) plasma samples 2. To identify correlations between the two matrices. 3. To identify relationships between PAH concentrations and birth weight (BW) or gestational age (GA).

Methods Used: Anonymous paired blood samples were collected at Norton Hospital (Louisville KY). Maternal specimens (M) were drawn at admission; cord blood (CB) specimens were drawn at delivery. Specimens were designated PT (GA <38 wks) or T (GA >38 wks). Plasma and packed red cells were stored separately at -75°C until analyzed. Stock solutions of ANTH, 3,4,8,9-dibenzo(a)pyrene (BP) and 1-HP were prepared and reference curves were established using HPLC with full spectrum photodiode array detection. Plasma was extracted
twice into ethyl acetate, dried under nitrogen and stored at 4°C until analyzed. Chromatograms were extracted at 254 nm for integration and quantitation. Cotinine (COT) analysis was by ELISA.

Summary of Results: There were 64 complete M and CB pairs; 72% were T. Mean M COT (47.5 ± 17.2 ng/mL) was strongly suggestive of high proportions of women with significant exposure to tobacco smoke in this cohort. There were significant correlations between M and CB ANTH (r=0.38, p=0.002), 1-HP (r=0.25, p=0.043), as well as M COT and CB ANTH (r=0.40, p=0.001) and 1-HP (r=0.30, p=0.016). There were significant differences between BP in CB from T vs. PT infants (T > PT, p=0.046). There was no correlation with GA or BW.

Conclusions: ANTH, BP and 1-HP are measurable in M and CB specimens. ANTH, a precarcinogen, is positively correlated between M and CB. M COT was correlated with CB ANTH and 1-HP. BP may be related to the length of pregnancy.

401 AMNIOTIC FLUID AS A BIOMARKER OF EXPOSURE TO TOBACCO CARCINOGENS
S.R. Myers1, P. Radmacher2, J. Weeks1, and R.A. Zamora1, 1University of Louisville School of Medicine, Louisville, KY and 2University of Louisville School of Medicine, Louisville, KY.

Purpose of Study: We determined whether or not there is a relationship between tobacco exposure during pregnancy and the application of amniotic fluid as a biomarker of fetal exposure to tobacco related carcinogens.

Methods Used: Amniotic fluid samples were collected from women smokers and nonsmokers at between 16 and 20 weeks gestational age. Sample aliquots were adjusted to pH 5.0 with 1.0 M hydrochloric acid and 0.1 M acetate buffer was added to a total volume of 30 mls. The mixture was incubated overnight with β-glucuronidase/aryl sulfatase. Samples were extracted using both liquid extraction as well solid-phase extraction and analyzed using both HPLC and GC/MS. Identification of extracted amniotic fluid carcinogens was confirmed by comparison with authentic standards of selected tobacco related carcinogens.

Summary of Results: In this study, we qualitatively and quantitatively assessed the presence of tobacco related polycyclic aromatic hydrocarbons found in the amniotic fluid samples obtained from smokers and nonsmokers. Background detectable levels of carcinogens were found in the amniotic fluid of nonsmokers, suggesting that either dietary sources of potential passive smoke exposure may be contributing to the overall levels detected. Highest levels of all tobacco related carcinogens were found in the 2.0 pack/day smokers. Additional studies are currently investigating the presence of additional tobacco and environmental related carcinogens in the amniotic fluid from smokers and nonsmokers and the potential effects that exposure of the fetus to these carcinogens has on IUGR, preterm delivery and subsequent growth and development of the neonate.

Conclusions: In the present study, we characterized the presence of selected polycyclic aromatic hydrocarbons found in amniotic fluid resulting from maternal smoking habits during pregnancy. Focusing on the first trimester of pregnancy allows us to examine the levels of carcinogens from tobacco smoke at an early stage of development. By determining the level of exposure of aromatic hydrocarbons at the initial stages of pregnancy, we can better understand and potentially eliminate those hazards that may cause detriment to the developing fetus.

402 MATERNAL-FETAL MONOSACCHARIDE LEVELS IN PRETERM AND TERM PREGNANCIES

Purpose of Study: Premature infants may be nutritionally disadvantaged since they have not received the same duration, amounts and/or array of in utero nutrients as term babies, and preterm formulas lack critical human milk oligosaccharides (HMOs). Since there is little information on the role of dietary sugars in mothers and infants, we designed this study to evaluate maternal-fetal levels of monosaccharides routinely found in HMOs.

Methods Used: We studied 19 healthy mothers and infants [preterm (30–37 wks, n=11) and term (38–42 wks, n=8)]. Maternal blood was collected within 24 h prior to delivery, and cord umbilical venous blood was obtained at delivery. Serum monosaccharide concentrations (mg/ml) were determined by HPAEC-PAD.

Summary of Results: Maternal serum fucose (Fuc), galactosamine (GaNH2), glucosamine (GlcNH2), galactose (Gal), glucose (Glc), mannose (Man), and sialic acid (Neu5Ac) were not significantly different between mothers delivering preterm or term infants. These data suggest that maternal serum concentrations of monosaccharides remain relatively constant between 30 and 42 wks gestation. However, cord umbilical venous serum levels of GaNH2, Glc, and Neu5Ac were significantly higher in preterm fetuses (p=0.03, 0.04, 0.001, respectively). This could suggest a greater metabolic need for these monosaccharides in premature infants, or declining concentrations with gestational age may be the normal course of events. Maternal vs. cord Glc levels were not significantly different for either preterm or term pregnancies. Other monosaccharides transferred from maternal to fetal serum included Fuc, GaNH2, GlcNH2, Gal, Man, and Neu5Ac; however, fetal levels were significantly less than maternal levels (all p<0.04). Monosaccharide content of cord vs. maternal serum of Neu5Ac was significantly higher in the preterm fetus (p=0.007), while transfer of the other monosaccharides was not significantly different.

Conclusions: These findings suggest that for the premature infant there is potentially a greater nutritional need for these monosaccharides if they are not obtained in utero, are unable to be metabolized from glucose, or if exogenous dietary sugars are unavailable in infant formulas. USDA CRIS 6251-51000-002-03S.

403 PRETERM DELIVERY IS ASSOCIATED WITH MATERNAL LEWIS BLOOD-GROUP RECESSIVE PHENOTYPE
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Purpose of Study: Mother’s ABO blood type and Lewis secretor status is genetically determined and related to breast milk oligosaccharide content. This report is part of a study to determine the association of expressed breast milk carbohydrate composition with mother’s ABO and Lewis blood-group phenotypes.

Methods Used: The study population consisted of 35 breast-feeding mother-infant pairs of preterm (30–37 wks gestation, n=23) and term infants (38–42 wks, n=12). Maternal blood type was obtained from obstetrical records. We collected maternal blood (1–6 d after birth) and determined Lewis secretor status using standardized laboratory methods. Mothers were classified as Lewis secretor (a+b+), non-secretor (a+b−), or recessive (a−b−) phenotypes.

Summary of Results: When we assessed the association of ABO with Lewis blood-group phenotypes, blood types A and O were significantly associated with the Lewis secretor type (p<0.01 and p<0.05, respectively). Our results showed no significant differences in A, B, O, or Lewis secretor and non-secretor phenotypes between mothers of term and preterm infants. The ABO and Lewis blood phenotypes of the 12 term
mothers compare favorably with reported control values; however, control values in mothers delivering preterm infants have not been reported. We found an increased frequency of Lewis recessive phenotype in mothers delivering preterm vs. term infants [12/23 (52%) vs. 2/12 (17%), p<0.05]. When we compared mothers with secretor and recessive phenotypes, the odds ratio (relative risk of preterm delivery) for Lewis recessive mothers was 4.7 (95 percent confidence interval, 0.8 to 28.0).

Conclusions: Preterm delivery is significantly increased among mothers with the Lewis blood-group recessive phenotype. Human milk oligosaccharide content is related to mother’s ABO and Lewis secretor status. Although further studies are needed to elucidate this association, differences in the Lewis secretor status of mothers delivering prematurely may offer a genetic explanation for differences in breast milk carbohydrate content in preterm vs. term infants.

404 MATRIX METALLOPROTEINASE ACTIVITY IN PEDIATRIC ACUTE LUNG INJURY

M. Kong, Y. Li, A. Gaggar, M. Winkler, and J. Clancy. University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: To examine matrix metalloproteinase (MMP) expression and activity in pediatric Acute Lung Injury (ALI), specifically in viral induced ALI.

Methods Used: Lower airway secretions were collected from 28 pediatric patients intubated for ALI in the intensive care unit and from 14 pediatric subjects intubated for elective surgery in the Operating Room. Samples were probed for MMP expression and activity using immunoblotting and ELISA-based quantitative analysis. In-vitro studies utilized Respiratory Syncytial Virus (RSV) A2 strain and human bronchial epithelial cells (16HBE cells).

Summary of Results: MMP-8 and −9 expression were elevated in lung secretions of pediatric ALI patients, with lower levels of MMP-2 and MMP-11 detected. Approximately 75% of the total MMP-8 and MMP-9 activity was constitutive in early ALI. In subjects who remained intubated for >10 days (n=14), MMP-9 activity dropped by 13-fold relative to day 0–10 values (p<0.004). MMP-9 reverted to a regulated phenotype, with <25% of total activity demonstrating constitutive function. In contrast, MMP-8 activity remained elevated, with a predominantly constitutive activity pattern demonstrated in both early (days 0–10) and later stages of ALI (days 11–15). Tissue Inhibitor of Matrix Metalloproteinase-1 (TIMP-1), a natural inhibitor of MMPs was detected in the majority of ALI samples. Discriminating MMP-9:TIMP-1 ratios were seen for ALI that resolved by 10 days compared with protracted ALI (defined as >10 days). The highest MMP-8 and MMP-9 activity was seen in subjects with ALI caused by viral infection, primarily by RSV, relative to non-viral ALI and controls. Complimentary in-vitro studies demonstrated up-regulation of MMP-9 mRNA transcription and MMP-9 protein expression and release in RSV infected 16HBE cells compared with uninfected control cells.

Conclusions: These results identify a limited repertoire of MMP isoforms in the lower lung secretions of pediatric ALI patients, and demonstrate changing activities of the two predominant MMP isoforms (~8 and ~9) with disease progression. Our studies identify a direct link between RSV infection and MMP-9 expression in human airway epithelial cells, potentially contributing to heightened MMP-9 detection in viral-induced ALI. These findings lend support to further investigations to clarify the role of these MMPs in ALI manifestation.

405 INTRINSIC AND HORMONAL REGULATION OF HUMAN SURFACTANT PROTEIN-B (SP-B) MRNA STABILITY IS MEDIATED VIA A STEM-LOOP STRUCTURE (30 NT) IN THE 3'-UNTRANSLATED REGION

J.L. Alcorn, H.W. Huang, and W. Bi. University of Texas Health Science Center at Houston, Houston, TX.

Purpose of Study: Adequate levels of pulmonary surfactant protein-B (SP-B) are crucial for proper lung mechanics in neonatal lung; inadequate levels can lead to Respiratory Distress Syndrome or chronic lung disease. Intrinsic stability of human SP-B mRNA in alveolar type II epithelial cells plays a critical role in maintaining adequate levels of SP-B protein, and stability can be augmented by administration of corticosteroids. Since mRNA stability is mediated through specific sequences, our goal in this study was to localize these regions to understand the mechanisms underlying intrinsic and hormonal regulation of SP-B mRNA stability.

Methods Used: We have developed a novel dual cistronic plasmid in which steady-state mRNA levels in transfected cells reflect the stability of the expressed mRNA. Segments (30 nt) of the SP-B mRNA 3'-UTR were mutated or deleted, and the effect on mRNA stability was determined by quantitation of SP-B mRNA signal by Northern analysis. The effect of the presence of these elements on stability of a heterologous β-globin mRNA was also determined.

Summary of Results: Replacement of four segments in the most proximal region of the SP-B mRNA 3'-UTR significantly increased intrinsic mRNA stability while virtually all tested replacements prevented corticosteroid-induced stabilization. The sequence of one segment that increased stability 11-fold when mutated and 5-fold when deleted is predicted to form a stable stem-loop structure. This sequence reduced stability of β-globin mRNA when introduced into its 3'-UTR, and imparted increased stability of β-globin mRNA in the presence of corticosteroids. Upon mutagenesis of the stem to reduce its formation, corticosteroid-induced stabilization of the mRNA was abolished, but intrinsic stability was unaffected.

Conclusions: These results suggest that intrinsic stability of the human SP-B mRNA is mediated via elements in the 3'-UTR that act to destabilize the mRNA. One 30-nt element that forms a stem-loop structure is necessary and sufficient to mediate instability of mRNA and corticosteroid-induced stabilization. However, the mechanisms that mediate these types of regulation through this element seem to be separable.

406 INHIBITION OF CXCR2 AND P38 SIGNALLING CAN BLOCK ECMO-RELATED INFLAMMATION

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1UAB, Birmingham, AL; 2UAB, Birmingham, AL and 3UAB, Birmingham, AL.

Purpose of Study: Neonates treated with ECMO frequently develop a systemic inflammatory response syndrome (SIRS). In ECMO-related SIRS, endothelial-derived chemokines attract activated neutrophils,
which cause vascular injury. Consistent with this model, IL-8, a neutrophil chemoattractant, is associated with ECMO-related SIRS. However, IL-8 is not a therapeutic target because there are six other homologous ‘ELR-CXC’ chemokines with similar activities. We hypothesized that endothelial-neutrophil interaction can be targeted in ECMO-related SIRS by blocking endothelial chemokine production or cognate receptors on neutrophils to block neutrophil chemotaxis.

**Methods Used:** CXCL1-8 were measured serially in 20 neonates on ECMO and in 10 babies on assisted ventilation. To determine vascular conditions under which chemokines are produced, umbilical venous, aortic and microvascular endothelial cells were exposed to laminar flow shear to simulate capillary, medium and large vessel conditions (4–18 dynes/cm²). CXCL1-8 expression was measured by qPCR and ELISA. Signaling mediators were identified using a MAP kinase array, western blots, immunocytochemistry, and specific inhibitors. Cord neutrophils were exposed to conditions in the ECMO circuit including ECMO membrane, 50% FiO₂, and high flow shear, and chemotaxis was measured using a standard assay.

**Summary of Results:** ELR-CXC chemokines were upregulated during ECMO; CXCL1 levels were highest (median 1282, range 480–7103 pg/mL, day 3–4 on ECMO vs. 124, range 13–315 pg/mL in controls, p<0.01). In vitro, endothelial chemokine production was activated by low shear (1.5–2.4x) but inhibited by high shear. Low shear induced chemokines via cell membrane heparan sulfates, β1-integrins, FAK, p38/MSK-1, and N-FκB. Shear-induced chemokines activated p38 in a +ve feedback loop to further increase chemokine production, which was blocked by p38 and CXCR2 inhibition. p38 inhibitors were most effective in blocking chemokine production. Neutrophil chemotaxis was also blocked by CXCR2 and p38 inhibitors.

**Conclusions:** Inhibition of p38 signaling and CXCR2 can block endothelial chemokine production as well as neutrophil chemotaxis. Because endothelial-neutrophil interaction is a key mechanistic event in ECMO-related SIRS, p38 and CXCR2 can be potential therapeutic targets.

**407 ATTENUATION OF HIGH FREQUENCY VENTILATOR PRESSURE AMPLITUDE BY THE ENDOTRACHEAL TUBE IN A NEONATAL TEST LUNG MODEL**

R. Gillette and S. Messier. Wilford Hall Medical Center, Lackland AFB, TX.

**Purpose of Study:** It is widely taught that amplitude of pressure oscillation is sharply attenuated by the endotracheal tube (ETT). However, mathematical models as well as in vivo and bench studies suggest the degree of attenuation depends on lung compliance (C) and airway resistance (R). We investigated this dependence on C and R, and on ETT size, frequency (ω), proximal pressure amplitude (PA), and ventilator type.

**Methods Used:** A SensorMedics 3100A (ViyaSys) or Bronchotron® (Percussor) ventilator was connected to a 1.5 L calibration syringe (Hans Rudolph) used as a test lung with compliance (C) = 0.1–1 ml/cmH2O, simulating sick newborn lungs. Tidal volume (TV) and pressure amplitude (PA) were measured with a Flavian hot wire anemometer and pressure transducer (Acutronic). TV was studied as C, R, Frequency (ω), endotracheal tube (ETT), and pressure amplitude (PA) was varied with each ventilator.

**Summary of Results:** In each instance delivered tidal volume increased with pressure amplitude. Smaller tidal volumes were delivered with higher frequencies, smaller ETTs, and higher resistances, but varied very little with compliance at high frequencies and resistances. At lower frequencies and resistances, the tidal volume fell, rapidly with compliance below 0.3–0.4 cmH2O but plateaued above that. When matched for pressure amplitude and frequency, the 3100A delivered tidal volumes which were higher than that of the Bronchotron® by as much as 20%.

**Conclusions:** TV is markedly dependent on lung impedance and ventilator used. It is not possible to set tidal volume in high frequency ventilation, nor can one estimate tidal volume from frequency and pressure amplitude without a reasonable estimate of lung impedance. Great care is needed in choosing ventilator settings to avoid aberrant gas exchange and development of routinely available clinical measurement of tidal volume, resistance and compliance in high frequency ventilation is clearly warranted to enhance patient safety and clinical effectiveness.

**408 EFFECT OF LUNG IMPEDANCE ON TIDAL VOLUME OUTPUT OF TWO HIGH FREQUENCY VENTILATORS IN A NEONATAL TEST LUNG MODEL**

S.E. Messier, and R.K. Gillette. Wilford Hall Medical Center, Lackland AFB, TX.

**Purpose of Study:** With high frequency ventilation (HFV), gas exchange depends greatly on the delivered tidal volume. The Sensor-medics 3100A is widely used in neonates and the Bronchotron® percussive HFV is emerging as a neonatal transport ventilator, but tidal volume delivery with these devices is difficult to estimate clinically. This study compared the delivered tidal volumes of the two ventilators.

**Methods Used:** A SensorMedics 3100A (ViyaSys) or Bronchotron® (Percussor) ventilator was connected to a 1.5 L calibration syringe (Hans Rudolph) used as a test lung with compliance (C) = 0.1–1 ml/cmH2O, via a 2.5 or 3.5 mm ETT and calibrated airway resistor (R) of 20–200 cmH2O/L/s, simulating sick newborn lungs. Tidal volume (TV) and pressure amplitude (PA) were measured with a Flavian hot wire anemometer and pressure transducer (Acutronic). TV was studied as C, R, Frequency (ω), endotracheal tube (ETT), and pressure amplitude (PA) was varied with each ventilator.

**Summary of Results:** In each instance delivered tidal volume increased with pressure amplitude. Smaller tidal volumes were delivered with higher frequencies, smaller ETTS, and higher resistances, but varied very little with compliance at high frequencies and resistances. At lower frequencies and resistances, the tidal volume fell, rapidly with compliance below 0.3–0.4 cmH2O but plateaued above that. When matched for pressure amplitude and frequency, the 3100A delivered tidal volumes which were higher than that of the Bronchotron® by as much as 20%.

**Conclusions:** TV is markedly dependent on lung impedance and ventilator used. It is not possible to set tidal volume in high frequency ventilation, nor can one estimate tidal volume from frequency and pressure amplitude without a reasonable estimate of lung impedance. Great care is needed in choosing ventilator settings to avoid aberrant gas exchange and development of routinely available clinical measurement of tidal volume, resistance and compliance in high frequency ventilation is clearly warranted to enhance patient safety and clinical effectiveness.
*Purpose of Study:* An increase in community-associated methicillin-resistant Staphylococcus aureus (MRSA) infections has been reported in the literature. However, most severe, life-threatening infections were previously thought to be associated with chronically ill or frail patients. Our pediatric intensive care unit (PICU) has seen a recent dramatic increase in primary, severe MRSA infections in previously healthy children. In this study we will discuss our experiences with severe, primary MRSA disease. In addition, we will discuss some questions and possible management implications emerging in this rapidly increasing population.

*Methods Used:* A retrospective chart review of all previously healthy patients admitted to our 19 bed medical-surgical PICU with a primary diagnosis of severe, culture proven, community-associated MRSA disease during the past 6 years.

*Summary of Results:* 9 previously healthy patients were admitted to our PICU with severe, primary MRSA infections from March 2006 through September 2007, in contrast to 0 patients meeting these criteria in the 5 years prior. This group of 9 patients had an alarmingly high mortality rate of 33%, compared to an overall PICU mortality rate of <7%. The length of PICU stay ranged from 1 to 51 days, and total hospital stays ranged from 1 to 140 days. Of the 9 patients, 7 required inotropic support, and 8 required positive pressure ventilation. 2 of the patients required hemodialysis secondary to kidney failure. Bone and joint involvement was present in 5 of our patients, and 6 required surgical drainage of at least 1 affected site.

*Conclusions:* Severe community-associated MRSA infections in healthy children are increasing at an alarming rate in our region. This acute rise in incidence, coupled with an alarmingly high associated mortality rate, suggests that we must reconsider both the initial antibiotic therapy and the diagnostic tests we use in caring for previously healthy patients presenting with possible MRSA disease.

Renal, Electrolyte and Hypertension II

**Concurrent Session**

1:00 PM

Saturday, February 23, 2008

**410**

**THE NATRIURESIS ELICITED BY SYSTEMIC NITRIC OXIDE SYNTHESIS INHIBITION IS NOT RELATED TO INCREASES IN ARTERIAL BLOOD PRESSURE**

L. Dobrowolski, and L.G. Navar. Tulane University, Medical School, New Orleans, LA.

*Purpose of Study:* Inhibitors of nitric oxide synthesis (NOSI) reduce the total and regional renal blood flow independent of the route of administration. In contrast, the renal sodium excretion was reported to increase after intravenous (i.v.) and to decrease after renal artery NOSI infusion. The mechanism for the natriuresis during systemic infusion has remained unclear but the associated increases in systemic arterial pressure (SAP) were considered a contributing factor during i.v. NOSI. However, in some studies using moderately pressor doses of NOSI, a time discrepancy between a rise in SAP and the natriuresis was noticed. To limit the influence of SAP changes on renal excretion, whole kidney responses to systemic subpressor doses of NOSI on renal excretion and hemodynamics were examined.

*Methods Used:* A nonselective NOSI, L-NAME was infused i.v. at 5−20 µg/kg/min for at least 180 min, in anesthetized male rats (n = 6). Sodium (UNaV) and water excretion were measured, together with inulin clearance (GFR) and blood perfusion (laser-Doppler flux) of the cortex and outer medulla (CBF, MBF).

**Summary of Results:** The doses of L-NAME used did not significantly increase SAP (113±s vs.117±5 mmHg) and GFR (0.94±0.08 vs. 0.88±0.15 ml/min/g). UNaV increased significantly after 150 min of drug infusion (from 0.7 ±0.2 to 2.1 ± 0.4 µmol/min/g, P<0.05) while urine flow increased only slightly. Thus, the rise in sodium excretion was mostly dependent on an increase in urinary Na concentration. After 30 min of L-NAME infusion, CBF and MBF (but not UNaV) were significantly reduced from control. By 180 min of infusion, CBF and MBF were reduced by 17±5% and 27±5%, respectively. In the time control group no significant changes in renal excretion and hemodynamics were observed.

*Conclusions:* Because the direct effects of NOSI on urinary sodium excretion are antinatriuretic, the natriuretic effects caused by systemic infusion may be due to secondary effects but independent of changes in SAP. The observation that natriuresis related to inhibition of NO synthesis was distinctly later in onset than were the decreases in whole kidney and medullary perfusion does not support a functional association of the two phenomena. However, it can be speculated that a reduction of total and medullary blood flow retarded and attenuated the natriuresis.

**411**

**DELETING TRANSFORMING GROWTH FACTOR- b TYPE II RECEPTOR INCREASES RENAL FIBROSIS**

L.S. Gewin, and R. Zent. Vanderbilt University, Nashville, TN.

*Purpose of Study:* Renal fibrosis, the final common pathway of end stage kidney diseases, is primarily characterized by increased collagen deposition in the tubulointerstitium. Transforming Growth Factor-β (TGF-β) is thought to play a critical role in renal fibrosis progression by promoting collagen and other extracellular matrix (ECM) production as well as by inducing epithelial to mesenchymal transformation (EMT). Therefore, disrupting TGF-β signaling in the tubular epithelium should decrease interstitial fibrosis by reducing epithelial collagen production and impairing EMT. As TGF-β requires the TGF-β type II receptor (TβRII) to transduce its effects, we hypothesized that deleting TβRII in the renal collecting system would reduce fibrosis following injury by both abrogating TGF-β signaling and inhibiting EMT.

*Methods Used:* Mice lacking the TβRII in the collecting system were generated utilizing the cre/lox technique, and unilateral ureteral obstruction was performed to create a model of tubulointerstitial fibrosis. Injury was assessed by morphology and collagen was measured using immunohistochemistry and immunoblots. IMCD cells were isolated from TβRII mice and the receptor was deleted in vitro. Active TGF-β in the conditioned media of the WT and null IMCD cells was determined using the PAIL bioassay. EMT was assessed in vitro by determining E. caderhin expression and localization before and after exposure to TGF-β.

*Summary of Results:* There was increased tubulointerstitial fibrosis, characterized by increased collagen expression, in mice lacking TβRII. TβRII null IMCD cells did not undergo EMT and expressed more active TGF-β in the conditioned media compared to that of WT cells.

*Conclusions:* Contrary to our initial hypothesis, deletion of TβRII in the collecting ducts increased tubulointerstitial fibrosis following injury despite inhibition of EMT in vitro, suggesting that EMT might not play a significant role in mediating the interstitial fibrosis. We hypothesize that the increased fibrosis occurs in the mice lacking TβRII in the collecting system because these cells create an environment of increased active TGF-β that induces fibroblasts with intact TβRII expression to produce more collagen.
412 THE RELATION OF C-REACTIVE PROTEIN TO CHRONIC KIDNEY DISEASE IN AFRICAN AMERICANS: THE JACKSON HEART STUDY


1University of Mississippi Medical Center, Jackson, MS; 2Boston University School of Medicine, Boston, MA and 3MD Anderson Hospital, Houston, TX.

Purpose of Study: African Americans have an increased incidence and worse prognosis with chronic kidney disease (CKD - estimated glomerular filtration rate < 60 mL/min/1.73 m2) than their counterparts of European-descent. Inflammation has been related to renal disease in non-Hispanic whites, but there are limited data on the role of inflammation in renal dysfunction in African Americans.

Methods Used: We examined the cross-sectional relation of log transformed C-reactive protein (CRP) to renal function (by Modification of Diet and Renal Disease equation) in African American participants of the Jackson Heart Study first examination (2000 to 2004). We conducted multivariable linear regression relating CRP to renal function adjusting for age, sex, body mass index (BMI), systolic and diastolic blood pressure, diabetes, total/HDL cholesterol, triglycerides, smoking, anti-hypertensive therapy, and lipid lowering therapy, hormone replacement therapy, and prevalent cardiovascular disease events. Secondary analysis tested for effect modification by age, sex and BMI.

Summary of Results: Participants (n=4858) were 63.2% women and had a mean age ± SD of 54.8±12.8 years. In the multivariable regression, CRP was higher in those with CKD compared to those without CKD (mean CRP 3.0 mg/L vs. 2.4 mg/L, respectively p=0.0001). There was effect modification by sex (p=0.0128). In men multivariable adjusted CRP was significantly higher in those with CKD compared to those without CKD (mean CRP 2.6 mg/L vs. 1.6 mg/L, respectively; p=0.0004). The relation between CRP and CKD was not significant in women (mean CRP 3.5 mg/L in those with CKD vs. 3.1 mg/L in those without CKD; p=0.1004).

Conclusions: CKD was associated with higher CRP concentrations in men in multivariable adjusted analyses. No evidence of effect modification by sex (p=0.1004).

414 CHRONIC TREATMENT WITH PEROXYNITRITE SCAVENGER ATTENUATES SYSTEMIC BLOOD PRESSURE AND IMPROVED RENAL HEMODYNAMICS IN ANGIOTENSIN-II INDUCED HYPERTENSIVE RATS

L.C. Matavelli, J. Wells, M. Shahid, A. Castillo, and D.S. Majid. Tulane Hypertension and Renal Center of Excellence, Tulane University Health Sciences Center, New Orleans, LA.

Purpose of Study: Nitric oxide (NO) reacts with superoxide (O2-) to form another oxidant, peroxynitrite (ONOO-). As angiotensin-II (Ang-II) induces the formation of both NO and O2-, it is hypothesized that the formation of ONOO- is involved in the pathogenesis of Ang-II induced hypertension. To test this hypothesis, we examined the responses to chronic administration of the peroxynitrite scavenger hesperitin in Ang-II induced hypertensive rats.

Methods Used: Sprague-Dawley rats were divided into three groups and chronically treated for a period of 14 days. Group 1 was treated by chronic administration of Ang-II via osmotic minipump (65ng/min; n = 5); group 2 was treated with Ang-II plus hesperitin given orally by gavage (50 mg/kg/day; n = 8), and group 3 was given hesperitin alone (n = 8). Systolic blood pressure (SBP) was measured every 3–4 days using tail-cuff plethysmography. At the end of the 14 days, animals were subjected to acute experiments to measure their renal blood flow (RBF) and glomerular filtration rate (GFR) at baseline condition using PAH and inulin clearances techniques, respectively.

Summary of Results: Two weeks administration of Ang-II increased SBP from 121±2 to 162±4 mmHg. However, hesperitin treatment attenuated the increases in SBP in Ang-II induced hypertensive rats (162±4 vs. 149±4 mmHg; p<0.05). Hesperitin treatment alone did not alter SBP. Baseline RBF (group 1 = 6.75±0.65; group 2 = 9.39±0.75); group 3 = 8.74±0.70 ml/min/g; *p<0.05 vs. group 1) and GFR (group 1 = 1.07±0.06; group 2 = 1.30±0.04; group 3 = 1.27±0.05 ml/min/g; *p<0.05 vs. group 1) were increased in Ang-II + hesperitin treated animals compared to Ang-II treatment. In addition, urinary sodium excretion was increased in Ang-II + hesperitin treated rats (group 1 = 0.50±0.05; group 2 = 0.75±0.05; group 3 = 0.68±0.05 μmol/min/g; *p<0.05 vs. group 1).

413 MARINOBUFAGENIN IMPAIRS PROLIFERATION AND TRIGGERS ENHANCED VASCULAR PERMEABILITY IN RAT LUNG MICROVASCULAR ENDOTHELIAL CELLS


1Texas A & M University College of Medicine/Scott & White, Temple, TX and 2Texas A & M University College of Medicine/Scott & White, Temple, TX.

Purpose of Study: Marinobufagenin (MBG) is an endogenous mammalian cardiotoxic steroid that is involved in the inhibition of the sodium pump Na+/K+−ATPase. Increased plasma levels of MBG are associated with hypertension, renal failure and preeclampsia. In an animal model of preeclampsia, we have shown that MBG levels are elevated prior to the development of hypertension indicating that it may play a key role in the pathogenesis of preeclampsia. The lining of microvascular exchange vessels consists of endothelial cells with closely opposed cell-to-cell junctions. We have recently demonstrated that MBG alters the microvascular barrier by increasing permeability. The role that MBG plays in the regulation of vascular cell physiology is unknown. The aim of our study was to begin to elucidate the molecular mechanisms by which MBG alters proliferation and microvascular permeability.

Methods Used: Rat lung microvascular endothelial cells (RLMEC) were utilized to observe alterations in MBG-induced monolayer permeability. In RLMEC, the phosphorylation of ERK1/2, Jnk, and p38 was evaluated by ELISA for phosphorylated and total proteins after treatment with MBG at 0, 10, 30 and 60 min. Apoptosis was evaluated by examining alterations in caspase 3/7 and Annexin-V staining with or without p38 and Jnk inhibitors.

Summary of Results: MBG inhibited the proliferation of RLMEC in a dose-dependent manner (50% by 10 nM and 70% by 100 nM). MBG also induced an increase in the monolayer microvascular permeability of RLMEC within 3 hours (2-fold). MBG stimulated a significant time-dependent decrease in the phosphorylation of ERK1/2 (80% at 10 min) and activated phosphorylation of Jnk and p38 (25% and 50% at 10 min, respectively). In addition to the inhibition of proliferation, MBG stimulated a significant increase in caspase 3/7 indicating the activation of apoptosis (2-fold). The activation of apoptosis by MBG was confirmed by Annexin-V staining.

Conclusions: We conclude that MBG-induced impairment of RLMEC proliferation and monolayer microvascular permeability occurs via downregulation of ERK1/2 and activation of Jnk, p38 and also by the activation of apoptosis.
Conclusions: These data indicated that ONOO- plays a mechanistic role in the development of hypertension induced by chronic administration of angiotensin-II by influencing renal hemodynamics and excretry function.

415 VASCULAR PERMEABILITY CHANGES IN A RAT MODEL OF PREECLAMPSIA


Purpose of Study: Preeclampsia (PE) is a hypertensive disease which develops de novo in women after the 20th week of gestation. These patients also develop proteinuria and often demonstrate excessive edema and intrauterine growth restriction (IUGR). We have previously reported the development of a rat model of PE induced by excessive volume expansion. Measurement of the urinary excretion of marinobufagenin (MBG), a cardiotonic steroid from the bufadienolide class of Na+/K+ ATPase inhibitors, is increased compared to that determined in normal pregnant animals. This increase occurs prior to the onset of hypertension and proteinuria. PE patients are volume expanded, but the excess salt and water is located primarily in the interstitial, not the intravascular space. A “capillary leak” syndrome has therefore been postulated in this disorder.

Methods Used: We investigated this thesis into 2 ways: 1) We injected MBG (200 nM) into male and female rats. We examined the “leak” of fluorescein-labeled albumin from omental venules. Images were obtained with a Nikon 20X objective and a photometric cascade camera. Areas in the small bowel mesentry, post-capsular venules “20–30 μm” and adjacent extravascular space were selected for study. Changes in light intensity comparing intra and extravascular spaces were determined. II) We studied vascular permeability in 3 groups of rats: a) We administered DOCA to pregnant rats whose drinking water had been replaced with saline. These animals (n = 9, “PDS rats”) developed hypertension, proteinuria, excessive weight gain, and IUGR. b) A normal pregnant group (n = 11, “NP rats”) and c) control, non-pregnant females (n = 5, “C”) were evaluated for comparison.

Summary of Results: In the group I animals, injection of MBG produced extravasation of dye within 1–2 minutes, whereas saline injection had no effect. In the group II studies, statistically significant differences between the control and PDS groups were observed beginning at 10 minutes of observation and between the NP and PDS groups starting at 40 minutes. Permeability changes in the NP group reached statistical significance compared to the control group late in the study.

Conclusions: 1) MBG causes an increase in vascular permeability. 2) In preeclamptic animals, this change greatly exceeds the minor alteration noticed in the normal pregnant group and in control animals.

416 INTERACTION OF RACE AND OBESITY ON THE SHORT-TERM SURVIVAL OF ESRD PATIENTS

R.L. Woodson, J. Lea, and W. McClellan. Emory University, Atlanta, GA.

Purpose of Study: Obesity is an important health problem in the general population associated with an increased risk of death, however, in patients with End-Stage Renal Disease (ESRD) there appears to be a survival benefit associated with increased BMI. It has been observed in previous studies that African Americans (AA) on average have a higher BMI and also live longer on hemodialysis than Caucasian patients with similar characteristics. The purpose of this study is to investigate whether the survival advantage of African Americans on dialysis is influenced by BMI.

Methods Used: The study population consisted of 28,135 incident adults initiating hemodialysis from June 1, 2005 through May 31, 2006 from 1,622 dialysis facilities in the regional ESRD Network 5,6,8,11, and 13. We obtained demographic, behavioral, cause of ESRD, comorbidities, functional status, and surrogate markers associated with socioeconomic status information from the Center for Medicaid & Medicare Services (CMS) 2728 form. Patients were group into categories according WHO guidelines (underweight= BMI<18.5 kg/m², normal weight= BMI 18.6–24.9 kg/m², overweight BMI 25–29.9 kg/m², class I obesity= BMI 30–34.9 kg/m², class II obesity = BMI 35–39.9 kg/m², class III obesity = BMI 40 kg/m² of greater). 180 day survival rates were the primary endpoint of interest.

Summary of Results: AA patients were more likely to be obese compared to Whites (p-value<0.0001). AA were less likely to die compared to Whites (p-value<0.0001). After controlling for other patient characteristics including: behavioral, cause of ESRD, comorbidities, functional status, and surrogate markers associated with socioeconomic status, there appeared to be no survival benefit among AA compared to Whites (p-value<0.0001).

Conclusions: After controlling for multiple variables, obesity does not appear to mediate the short-term survival among incident AA hemodialysis patients compared to Whites.

417 TRANSFORMING GROWTH FACTOR BETA-1 INHIBITS EPITHELIAL SODIUM CHANNEL ACTIVITY IN CORTICAL COLLECTING DUCT CELLS

Z. Feng, N.K. Somanna, L.L. Hamn, and K.S. Hering-Smith. Tulane University Health Sciences Center, New Orleans, LA.

Purpose of Study: The epithelial sodium channel (ENaC) in collecting duct cells is involved in the regulation of sodium balance and blood pressure. Channel activating protease 1 (CAP-1/prostasin) activates ENaC; and its action can be mimicked by trypsin and inhibited by the serine protease inhibitor aprotinin. Basolateral (BL) transforming growth factor beta-1 (TGF-1) has been shown to inhibit Na current, mRNA expression of prostasin and ENaC subunits. The purpose herein is to characterize the collecting duct response to TGF-1, in particular the involvement of proteolytic processes and the paracellular pathway.

Methods Used: Electrophysiological measurements (voltage, Vte; resistance, Rte; equivalent current, Ieq) are performed on M-1 cells cultured on permeable supports. The activity of secreted serine proteases is measured by an amidolytic assay using the fluorogenic substrate D-Pro-Phe-Arg-7-amino-4-methylcoumarin.

Summary of Results: BL TGF-1 inhibited Vte, Rte and Ieq in the range of 2–40 ng/ml. The most marked effect is observed at TGF-1 concentrations ≥ 20 ng/ml. Vte, Rte and Ieq are significantly inhibited by 20 ng/ml TGF-1; and at 24 hours decreased Vte from 13.2±0.7 to 2.3±0.4, Rte from 585.1±10.8 to 229.8±19.0, and Ieq from 19.9±0.7 to 8.2±0.7 (P<0.0001, n=12). Significant differences in Rte started at the 2nd hour after addition of TGF-1, whereas significant difference in Ieq started at the 4th hour. Inhibitory effects of TGF-1 are not reversed by apical addition of trypsin (doses ranged 2–200 μg/ml), as might be expected if inhibition of prostasin is the predominant effect of TGF-1. Proteolytic activity in the apical media was not altered by 20 ng/ml TGF-1.

Conclusions: BL TGF-1 significantly decreases sodium transport in collecting duct cells. In addition, TGF-1 increases paracellular permeability (indicated by the decrease in Rte). The lack of response to trypsin in TGF-1 treated cells implies that the downregulation of prostasin is not a major factor in the inhibition of Na current by TGF-1. The simultaneous changes in ENaC and the paracellular pathway in
response to several stimuli suggest common regulatory mechanisms which have not been identified.

Southern Society of General Internal Medicine
SSSGIM Research Abstract Session A
8:30 AM
Friday, February 22, 2008

418 ASSESSMENT OF MEDICAL STUDENTS: CAN ONE QUESTION TELL ALL?
K. Pepper1, E. Brownfield1, G. Bao2, and K. Easley2. 1 Emory University School of Medicine, Atlanta, GA and 2 Emory University Rollins School of Public Health, Atlanta, GA.

Purpose of Study: Many methods are used to evaluate students; however many are time-consuming and unreliable for capturing true student performance. Many evaluators inflate ratings and avoid any documentation of suboptimal performance. In order to shorten evaluations and truly capture evaluators’ opinions of students, we propose one question can tell all.

Methods Used: One question, “Would you want this student participating in the care of a loved one?” was added to the evaluation of students on the Medicine Clerkship. Faculty and residents working with students answered this question, along with the traditional questions related to medical knowledge, clinical skills, and professionalism. Responses to this one question were grouped as “yes,” “no” “n/a” or no response. Subgroups were then compared to ratings (on a Likert scale from 1–5 with 1 being poor and 5 excellent) of knowledge, skills, and professionalism on the traditional evaluation.

Summary of Results: 6 months of data on 52 students were analyzed using the Wilcoxon rank-sum test. Because only 2 students received a negative (no) evaluation, these observations were combined with all responses other than a positive (yes) one. Results are in Table 1. Even though statistical analysis was not plausible with 2 students who received a negative evaluation, Likert ratings for knowledge, skills, and professionalism were 3.2, 3.2, and 4.1, respectively.

Conclusions: “Yes”–only responses to the question “would you want this student participating in the care of a loved one?” suggested higher scores in medical knowledge, clinical skills, and professionalism compared to “No” or other responses. Although the numbers are small, “no”–only responses indicate a trend towards lower performance in traditional areas of evaluation. With more data, we will try to see if this question can potentially be used either as an adjunct to or in replacement of traditional evaluations.

<table>
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<th>Subgroup</th>
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<th>Knowledge (median)</th>
<th>Skills (median)</th>
<th>Professionalism (median)</th>
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<td>4.3</td>
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<tr>
<td>All others</td>
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419 ARE WE PREPARING INTERNISTS TO TREAT THE OBESITY EPIDEMIC?
C. Fung1, M. Landry1, E. Rosenberg2, I. Chen3, T.S. Caudill4, J.P. Block1, and K.B. DeSalvo1. 1 Tulane School of Medicine, New Orleans, LA; 2 University of Florida, Jacksonville, FL; 3 East Virginia Medical School, Richmond, VA; 4 University of Kentucky, Lexington, KY and 5 Harvard University, Boston, MA.

Purpose of Study: To understand whether interns-in-training are better prepared for their role in treating the growing epidemic of obesity compared with prior cohorts.

Methods Used: We surveyed residents concerning their knowledge and attitudes regarding obesity. We administered a previously validated, anonymous, web-based survey to all internal medicine residents in 4 university-based residency programs.

Summary of Results: The overall response rate at the time of abstract submission was 63%. All residents were able to accurately estimate a BMI from provided data compared to only 60% in a previous survey. Nearly all residents recognized the medical consequences of obesity such as hypertension and diabetes. They also were able to identify goals for weight loss and exercise activity. Twice as many (80%) knew the minimum BMI for diagnosing obesity than in a 2003 survey (40%). One-third did not recognize that waist circumference was a reasonable measure of obesity which was similar to the prior cohort. As in 2003, nearly all residents agreed that treating obesity was important (94%), but only 55% had confidence in their ability to treat obesity. One-third reported success in treating obesity which was the same as the prior cohort and 22% felt treating obesity was futile. Only 1 in 10 reported receiving formal obesity treatment training which was the same as the 2003 cohort. Despite a lack of reported training, the majority, 63%, felt qualified to treat obesity which was significantly improved over the 2003 cohort (44%). Knowledge and attitudes about obesity were not correlated as in the prior cohort.

Conclusions: An overwhelming majority of residents have not received formal training in obesity treatment though knowledge and skills at identifying and treating obesity have improved since 2003. Many residents still report negative experiences with and attitudes towards obesity. There remains a need for Internal Medicine training programs to develop targeted educational programs about obesity treatment to improve skills and attitudes for internal medicine residents.

420 MEDICAL STUDENTS’ ATTITUDES TOWARD PERSONS LIVING WITH HIV
J.R. Olges1, C.M. Bingcang2, J.F. Wilson3, and A.R. Hoellein4. 1 University of Kentucky, Lexington, KY; 2 University of Kentucky, Lexington, KY; 3 University of Kentucky, Lexington, KY and 4 Emory University, Atlanta, GA.

Purpose of Study: Nearly thirty years into the HIV/AIDS epidemic, patients continue to report discrimination by the medical community, threatening the patient-provider relationship and ultimately the well-being of the patient. As medical students represent the future of medicine, it is important to address student attitudes toward HIV and identify those factors which influence these attitudes.

Methods Used: Anonymous surveys were distributed to medical students during the spring of 2007. To measure attitudes, students were asked to use a 5-point Likert scale to rate their agreement of statements related to HIV testing, treatment of patients with HIV and healthcare workers with HIV. Multiple choice questions were used to assess student knowledge of HIV. Linear regression was conducted on individual items and on subscales of attitudes to identify possible predictors of attitudes.

Summary of Results: Students in the 3rd and 4th year returned 110 surveys for a response rate of 84%. Higher levels of knowledge of HIV were associated with higher levels of overall comfort as determined by subscale of comfort attitudes (p=0.008). Knowledge of HIV was also significantly associated with 5 of the 8 components of the comfort subscale. Specifically, those with greater levels of knowledge of HIV were more likely to agree that they felt comfortable treating patients with HIV and that HIV positive practitioners should be allowed to...
continue practicing whether or not they perform invasive procedures (p=0.0196, p=0.0419, p=0.0423, respectively). Those with higher levels of knowledge of HIV were also less likely to worry about contracting HIV from a patient (p=0.0353). Other factors significantly associated with attitudes included having known someone with HIV, knowledge of universal precautions, and socioeconomic status.

Conclusions: Several factors, particularly knowledge of HIV, were found to be significant predictors of attitudes toward HIV among medical students in their clinical years. Evaluation of curriculum content and improved education of students with respect to HIV may play a critical role in improving the attitudes of future medical professionals toward persons living with HIV.

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AN OBJECTIVE EVALUATION OF WOMEN’S HEALTH TRACK CURRICULUM UTILIZING THE AMERICAN COLLEGE OF PHYSICIANS IN-TRAINING EXAMINATION

E. Snyder1,2, L. Farless1, A. Cherrington1, C. Estrada1,2, T. Bryan1,2, and E. Boohaker3.1 University of Alabama at Birmingham, Birmingham, AL and 2Birmingham VA Medical Center, Birmingham, AL.

Purpose of Study: An increasing number of Internal Medicine residency programs have begun offering a Women’s Health Track (WHT); however, literature regarding evaluation of these tracts is lacking. We sought to objectively assess knowledge of women’s health topics in WHT residents and to examine change in knowledge over the 3 year residency program.

Methods Used: We examined knowledge of women’s health topics using results from the American College of Physicians (ACP) In-Training Exam. Three investigators independently reviewed all objectives for each year to identify which were specific to women’s health. The investigators met to discuss until they achieved 100% consensus regarding which objectives to include in the evaluation. Objectives were further sub-divided into those directly related to women’s health (such as vaginitis), those addressing Internal Medicine topics that disproportionately affect women (such as osteoporosis), and those related to pregnancy. Baseline % correct was assessed for each WHT resident in PGY 1 using descriptive statistics. Change in % correct over the 3 years of residency was assessed using a Friedman Test (non-parametric, repeated testing).

Summary of Results: Seven WHT residents took the in-training exam for three consecutive years. The median % correct scores for all objectives evaluated were no different for PGY 1 (63%), PGY 2 (62%), and PGY 3 (63%) (p=1.0). When evaluating those objectives directly related to women’s health, no difference was seen among PGY 1 (83%), PGY 2 (83%) and PGY 3 (67%) (p=0.34). Similarly, when evaluating those objectives that tested medicine topics which disproportionately affect women, no difference was seen among median scores for PGY 1 (40%), PGY 2 (50%), and PGY 3 (60%) (p=0.22). Finally, no difference was seen when evaluating the pregnancy objectives for PGY 1 (67%), PGY 2 (67%), and PGY 3 (50%) (p=0.62).

Conclusions: WHT residents did not demonstrate improvement in median scores for WH related objectives over PGY level. There was no difference seen when sub-groups of objectives were analyzed individually. With further study, this type of evaluation of resident scores may be useful to target and evaluate curriculum changes.

422
RECONSTRUCTING MENTORSHIP: QUANTITATIVE ANALYSIS OF ATTITUDES TOWARD PANEL MENTORING

D.M. Guerra, R. Nipp, N. Pardue, S. Sehli, R. Alalawi, R. Corona, R. Raj, and K. Nugent. Texas Tech University, Lubbock, TX.

Purpose of Study: Geriatric assessment frequently uses timed walks to evaluate mobility. Some studies require a 400 meter walk which has practical limitations. We hypothesized that a shorter clinic-based walk should provide useful information about gait and fitness which would correlate with patient demographics, clinical diagnoses, and potential morbidity.

Methods Used: One hundred and eighty four unselected outpatients in a convenience sample completed a structured medical questionnaire, a Tinetti test, handgrip strength testing, and a timed 100-foot walk. Results were analyzed using descriptive statistics and correlation analysis.

Summary of Results: The mean patient age was 57 ± 13 yrs (range: 24 to 90). Fifty percent of the subjects were men. Mean gait speed was 3.3 ± 0.7 ft/sec. The distribution was slightly left shifted, and the lowest
Conclusions: Short timed walks in clinic provide a good estimate of gait assessment during routine outpatient visits as a functional screening test. Clinicians can easily add this test to patient assessment during routine outpatient visits as a functional screening test to identify patients needing more evaluation.

Summary of Results: Of the 2194 patients completing the survey, 21 were missing race information in the administrative database and 4 patients did not provide race information and were excluded from the analysis. Of the 2169 with race information, 30% were black, 68% were white, and 2% were other race. Using self-reported race as the reference, race information in the administrative database correctly classified 95.6% of patients overall, 94.9% of black patients, and 98.1% of white patients. The sensitivity and specificity for the black population was 94.9% and 98.7% respectively. For the white population, it was 98.1% and 91.9% respectively.

Conclusions: Administrative databases may be a valid source of race information, an important demographic variable in epidemiologic research.

425 A COMPARISON OF SELF-REPORTED VERSUS ADMINISTRATIVE RACE DATA

E. Stanley1, R. Wood2, L. Kergosien1, and M.A. Krousel-Wood1,4
1Ochsner Clinic Foundation, New Orleans, LA; 2Tulane University, New Orleans, LA; 3Princeton University, Princeton, NJ and 4Tulane University, New Orleans, LA.

Purpose of Study: Race information and other demographics are important variables for population-based research. The purpose of this study was to determine the accuracy of an administrative database classification of race compared to self-reported race.

Methods Used: Between August 2006 and September 2007, self-reported race information was requested from 2194 older patients with hypertension through a telephone administered survey. Self-reported data was compared with race data extracted from the administrative database of a multi-specialty group practice in an academic setting.

Summary of Results: Of the 2194 patients completing the survey, 21 were missing race information in the administrative database and 4 patients did not provide race information and were excluded from the analysis. Of the 2169 with race information, 30% were black, 68% were white, and 2% were other race. Using self-reported race as the reference, race information in the administrative database correctly classified 95.6% of patients overall, 94.9% of black patients, and 98.1% of white patients. The sensitivity and specificity for the black population was 94.9% and 98.7% respectively. For the white population, it was 98.1% and 91.9% respectively.

Conclusions: Administrative databases may be a valid source of race information, an important demographic variable in epidemiologic research.

426 RECONSTRUCTING MENTORSHIP: QUALITATIVE ANALYSIS OF THEMES FROM PANEL MENTORING SESSIONS

R. Chakkalakal1, E. Brownfield1, and E. Brownfield2. 1Emory University School of Medicine, Atlanta, GA and 2Medical University of South Carolina, Charleston, SC.

Purpose of Study: Qualitative analyses of traditional one-on-one mentoring sessions have described several themes of effective mentoring (1). Panel mentoring was introduced as an alternative to the traditional model at the 2006 and 2007 Southern Society of General Internal Medicine (SSGIM) annual meetings. In a separate abstract, we report the feasibility and acceptability of these sessions. The purpose of this project was to compare panel mentoring themes with those described in traditional dyadic sessions.

Methods Used: Registrants of the 2006 and 2007 SSGIM annual meetings interested in panel mentoring participated in sessions comprised of 1 mentee and 3-4 mentors. Mentors were recruited based on varying expertise and interests. All sessions were tape recorded and then evaluated by a single reviewer to identify session themes and compare them to a previously published list of themes described during traditional year-long dyadic sessions. Themes were categorized as content, process, and growth over time (1).

Summary of Results: 15 panel sessions were conducted, each lasting an average of 32 minutes. Compared to traditional mentoring themes, panel mentoring sessions included 15/21 content, 18/18 process, and 0/6 growth over time themes. Several unique themes emerged in the panel sessions that have not been previously described in traditional sessions including developing networking and negotiating skills, creating a teaching portfolio, and incorporating advice from multiple mentors.

Conclusions: Panel mentoring and traditional mentoring share several similar themes. Panel sessions also explore new themes and allow mentees with HIV. Educational interventions should be aimed to address potential bias of health professionals in training.
DO RESIDENTS AGREE SOME MEDICATIONS ARE UNSAFE IN THE ELDERLY?

C. Caton\(^1\), C. Powell\(^2\), K. Davis\(^1\), M. Wiley\(^1\), M. Wellein\(^1\), and W. Moran\(^1\).

\(^1\)Medical University of South Carolina, Charleston, SC and \(^2\)University of South Carolina, Columbia, SC.

**Purpose of Study:** Some medications place elders at high risk for adverse events, and we sought to determine resident awareness of medications which are considered safe or unsafe in the elderly.

**Methods Used:** We surveyed Internal Medicine Residents (n=62) at MUSC using an anonymous survey of medication safety in the elderly. One question presented the use of a single medication in an otherwise healthy 75 year old outpatient using a Likert scale with choices “definitely safe” and “probably safe” collapsed as safe and “definitely unsafe,” “probably unsafe” and “don’t know” collapsed as unsafe. Three General Internists and three Pharmacists provided consensus opinion about medication safety for the fourteen commonly prescribed medications presented in the survey. Medication safety knowledge was scored based on agreement with consensus. Residents were scored based on answers to individual medications, number of medications associated with an increased risk of falls and a combined score. Statistical analysis was performed using SAS v9.1.

**Summary of Results:** We achieved a 73% response rate for the survey. Overall, 51% were male residents and 16% did not report gender. PGY 3 or higher accounted for 40% of the residents, whereas PGY1 and 2 were 32% and 17% respectively. We found that both PGY1’s and PGY2’s were in agreement with safe medications with 66% and 65% accuracy respectively. PGY3’s or higher were 71% accurate. On average, 68% of residents agreed with the number of medications associated with an increased risk of falls. Only 58% of residents agreed that amitriptyline was unsafe, whereas 43% agreed that propoxyphene was unsafe although both of these are listed on Beer’s Criteria. 48% of residents agreed that clonidine was unsafe, while 39% agreed that doxazosin was unsafe. Only 33% of residents agreed that amiidaron was unsafe. Generally at least 80% of residents agreed that antibiotic and diabetic medications were safe.

**Conclusions:** Based on survey data, resident knowledge of medication safety needs to be improved.

THE EFFECT OF RESIDENT PHYSICIAN CONTINUITY ON HgA1c, LDL CHOLESTEROL, AND BLOOD PRESSURE IN PATIENTS WITH DIABETES

A.T. Dearinger, J.F. Wilson, and C.H. Griffith. University of Kentucky College of Medicine, Lexington, KY.

**Purpose of Study:** Diabetes is a chronic disease with a high incidence of morbidity and mortality. Continuity of physician care may benefit patients with diabetes. A resident physician clinic is a unique type of practice where maintaining patient-physician continuity can be challenging. These clinics serve a patient population with a high percentage of individuals with multiple chronic illnesses. The purpose of this study was to determine if resident physician continuity is associated with an improvement in diabetic outcomes.

**Methods Used:** This study was a retrospective, cross-sectional analysis of data obtained from a medical record review of diabetic patients in a University based residency-training program. Records were reviewed from January 1, 2004 to December 31, 2006. Seventy medical records met the criteria for the study. We assessed the relationship between provider continuity and change in diabetes outcomes (HgA1c, LDL blood pressure). The Usual Provider of Continuity (UPC) Index was used to measure provider continuity at both the attending physician and resident physician level. High and low continuity groupings were evaluated at UPC levels of 0.45 (median) and 0.65.

**Summary of Results:** The overall change in HgA1c over the three year time period was −0.3. There was a statistically significant relationship between change in HgA1c and resident continuity, but not with attending physician continuity. There was also no association between resident or attending continuity and change in LDL cholesterol or systolic/diastolic blood pressure.

**Conclusions:** Resident physician continuity is linked with an improvement in glycemic control in diabetic patients. Resident physicians have a
greater opportunity to develop a personal relationship with their patients than supervising attendings. This interpersonal continuity may be of benefit in patients with illnesses that requires a significant amount of self-management behaviors. Medical training programs should focus efforts on improving continuity in resident primary care clinics.

Southern Society of General Internal Medicine
SSGIM Research Abstract Session C
1:30 PM
Friday, February 22, 2008

430 HOW DO HEALTH PROFESSIONAL STUDENTS FEEL ABOUT TESTING FOR HIV?
A.R. Hoellein1, J.R. Olges1, C.M. Bingcang2, C. Griffith1, and J.F. Wilson3. 1University of Kentucky, Lexington, KY; 2University of Kentucky, Lexington, KY and 3University of Kentucky, Lexington, KY.

Purpose of Study: In September, 2006, the Centers for Disease Control recommended routine screening for HIV for patients in all health care settings and annually if at high risk unless the patient declines. Despite these recommendations, wide-spread implementation has yet to be realized. The purpose of this study is to ascertain the attitudes of health professional students toward testing for HIV.

Methods Used: Anonymous surveys were distributed to health professional students at the University of Kentucky during the spring of 2007. Students were asked to use a 5-point Likert scale to rate their agreement of statements related to HIV testing. Linear regression was conducted using program and demographic data as independent variables to identify possible predictors of attitudes.

Summary of Results: 701 health professional students completed the survey with an overall response rate of about 66%. dentistry (DMD) = 104, physician assistant program (PA) = 84, medical (MD) = 188, undergraduate nursing (RN-U) = 47, graduate nursing (RN-G) = 42, pharmacy (P) = 236, PA (3.46 ± 1.3) and RN-U (3.28 ± 1.2) students were significantly more likely (p<.0001) to agree that all patients should be tested for HIV. MD students agreed significantly more strongly to testing all hospitalized patients (3.68 ± 1.3, p=.0005) but RN-G students disagreed to testing hospitalized patients (2.85 ± 1.4). PA students more strongly agreed to testing prior to invasive procedures (4.2 ± 1.0, p=.001). RN-G students did not agree with testing health care practitioners (2.8 ± 1.3, p<.0001). Although all students agreed with testing high risk patients, DMD and RN-U students were slightly but significantly less favorable (4.12 ± 1.0 and 4.22 ± 1.0, p<.0001). Other than age which exhibits some co-linearity with program, demographic data do not reliably predict attitudes toward testing for HIV.

Conclusions: Some discrepancies exist between health professional students’ attitudes toward testing for HIV. Clearly, to achieve compliance with the CDC recommendations, educational interventions are necessary in all programs and at all levels.

431 DISAGREEMENTS BETWEEN HEALTHCARE PROVIDERS IN CARING FOR PATIENTS NEAR THE END OF LIFE
R. Howard, and K. Deep. University of Kentucky, Lexington, KY.

Purpose of Study: Healthcare providers often have differing opinions about the appropriateness of certain treatments for patients who are seriously ill and near the end of life. These beliefs can cause disagreement among members of the care team and potentially impact patient care.

Methods Used: An anonymous survey about end of life care was administered to physicians who provide care to seriously-ill adult inpatients including trainees and attending physicians from surgery, internal medicine, neurology, family medicine, cardiology, critical care and oncology. Surveys were delivered at departmental conferences or via mail. Respondents were asked in an open response question to describe a situation in which they experienced a difference of opinion between healthcare providers about the appropriate treatment for a patient near the end of life. Two independent raters coded the responses using content analysis to determine who the conflict involved, why it arose, and how it impacted patient care. The coding scheme was developed after review of the data via an iterative process. Codes were not mutually exclusive and each response could receive multiple codes.

Summary of Results: 132 physicians completed the survey for a response rate of 64%. Sixty-three surveys (47%) included an open response. Eleven responses were omitted due to irrelevant content leaving responses from 30 trainees, 20 attendings and 2 unidentified sources available for analysis. Initial inter-rater agreement was 75% with all discrepancies resolved by consensus. Thirty-seven respondents described experiencing a disagreement with nursing, 10 with other physicians and 5 with other healthcare providers or family members. We identified three etiologies for the divergent beliefs about the care provided to the patient. Most often (16 cases) this was due to an alternate definition of DNR. Other causes were role/boundary confusion (6) and the appropriateness of a DNR order for a patient (7). These differences reportedly negatively impacted patient care by altering treatment (34), diagnostic care (6) or the timeliness of care (4).

Conclusions: Physicians report disagreements with nursing staff and other physicians about the appropriate care of a patient near the end of life. They perceive this negatively impacts patient care in very tangible ways.

432 THE TINETTI TEST PROVIDES INFORMATION ABOUT GAIT SAFETY AND CARDIORESPIRATORY STATUS IN OUTPATIENTS REGARDLESS OF AGE

Purpose of Study: The Tinetti test is a standard tool used to evaluate mobility and balance in geriatric patients. We hypothesized that it could provide useful information in unselected outpatients with a wide age range.

Methods Used: One hundred and eighty four outpatients from a convenience sample completed a structured medical questionnaire, a timed 100-foot walk, and grip strength testing. The Tinetti test for gait and balance was incorporated into the 100-foot walk. Standards descriptive statistics including nonparametric correlation analysis were used to analyze the results.

Summary of Results: The mean patient age was 57±13 yrs (range: 24–90). The mean Tinetti score was 18.7±3.4 on this slightly modified test which had a maximum of 21. The distribution was left skewed. There was no difference between men and women. The Tinetti score significantly decreased with increasing age (p<0.05) and increasing BMI (p<0.05). The score was decreased in patients with coronary disease, diabetes, and stroke but not in other common medical conditions. It was decreased in patients with a positive response to weakness and to a perception of “gait problems” on a questionnaire. There was a positive correlation between the Tinetti score and gait speed (p<0.01) and handgrip strength (p=0.056). Patients in the lowest quartile (Tinetti score <18) had a mean age of 60.6±10.9, were more likely to have COPD, coronary disease, stroke, arthritis and diabetes, and had more frequent falls (p= 0.053).These patients had a slower gait speed.
(2.5f/sec vs. 3.5f/sec) and higher heart rates and respiratory rates after the walk.

**Conclusions:** Most outpatients have high Tinetti scores. There are significant correlations between the Tinetti score and age, some medical conditions, gait speed, and a history of falls. Patients in the lowest quartile of Tinetti scores had more cardiac and respiratory stress during walking. This latter association suggests that cardiorespiratory status influences mobility and balance. Therefore, our study demonstrates that the Tinetti test can provide important information in outpatients even if they are not in the geriatric age range and identifies patients who need additional evaluation.

### 433

**ARE PATIENTS WITH INFLAMMATORY BOWEL DISEASE RECEIVING PREVENTIVE HEALTH SERVICES?**


**Purpose of Study:** Patients with severe chronic diseases may not receive preventive services at the same rate as the general population. Due to typically younger age and rapidly evolving therapies, persons with Inflammatory Bowel Disease (IBD) may be particularly susceptible to non-receipt of indicated preventive health services.

**Methods Used:** A convenience sample of patients with IBD from the University of Kentucky as well as a general medicine control group were enrolled and delivered an anonymous cross sectional survey. The survey tallied self-reported receipt of ten common preventive medicine services derived from recommendations from the United States Preventive Services Task Force and Advisory Committee for Immunization Practices. Data were analyzed using multiple regression approaches using the General Linear Model.

**Summary of Results:** 117 patients with IBD and 100 general medicine controls were enrolled at the University of Kentucky. For generalizability, data from a similar survey of 125 patients with IBD from the University of Chicago were also analyzed. The overall age/sex adjusted screening rate, as measured by the screening index, was significantly lower in patients with IBD than in controls (75.1% vs 83.9%, p=0.0002). After adjustment for insurance status, the difference in screen rates is still lower for IBD than controls (71% vs 78%; p=0.022). Neither disease type nor disease control rating predicted screen rates. UCH data show a 67% overall age/sex adjusted screening rate supporting the findings from UK.

**Conclusions:** Our data suggest patients with IBD do not receive preventive services at the same rate as general medical patients. Conceivably, general internists and their gastroenterology colleagues are assuming provision of such services from the other provider. Further research could investigate physician attitudes toward responsibility for preventive medicine for persons with chronic diseases.

### 434

**EFFECTS OF DISASTERS ON QUALITY OF LIFE IN HYPERTENSIVE PATIENTS: IMPLICATIONS FOR CLINICAL PRACTICE**


1. Ochsner Clinic Foundation, New Orleans, LA; 2. Mount Sinai School of Medicine, New York, NY; 3. Ochsner Clinic Foundation, New Orleans, LA and 4. Tulane University, School of Public Health, New Orleans, LA.

**Purpose of Study:** We assessed differences in quality of life among hypertensive patients from before through one year after Hurricane Katrina.

**Methods Used:** Two groups of hypertensive patients in a multispecialty group practice in New Orleans completed validated surveys before (n=214, December 2003 – January 2004) and up to one year after (n=211, November 2005 – August 2006) Hurricane Katrina. Both populations completed identical questions on demographics and quality of life (SF-36). Additionally, in the post-disaster survey, hurricane coping self-efficacy, property damage, stress, and changes in distance from and visits with family and friends were assessed.

**Summary of Results:** Age, race, gender standardized quality of life scores were lower in the post- compared to the pre-disaster population, with significant declines occurring for physical functioning (p<0.05), bodily pain (p<0.001), general health (p<0.001), and role-emotional (p<0.01). After adjustment for age, gender, and race, lower quality of life was associated with lower coping self-efficacy, more damage to their residence, higher levels of stress after the storm, and changes in the distance from and visits with family and friends. A higher percentage of patients reported personal and financial losses as causing the most stress after versus before the disaster (29.6% versus 7.4%, respectively; p<0.001).

**Conclusions:** We identified a significant decline in quality of life in adult patients with hypertension after Hurricane Katrina. Consideration of quality of life in the post-disaster setting may be useful in identifying patients at risk for adverse cardiovascular events and in managing this chronic disease.

### 435

**IS DIASTOLIC DYSFUNCTION AN INDEPENDENT PREDICTOR OF MORTALITY IN PATIENTS WITH LOW EJECTION FRACTION?**

C. McDowell, and J.E. Murillo.

**Purpose of Study:** Nearly 50 million people in the United States have the diagnosis of congestive heart failure with 600,000 new cases reported annually. Diagnosis and treatment have been primarily aimed at patients with low left ventricular ejection fraction (LVEF). While accepted that patients with decreased systolic function have increased mortality, the role of diastolic dysfunction is less studied. Better understanding of the impact of diastolic dysfunction is needed to improve treatment strategies and survival in this subset of patients.

**Methods Used:** This is a retrospective secondary analysis of echocardiographic data. Data were collected from inpatients and outpatients between July 3, 2003 through December 30, 2004. Patients with an LVEF <50% were included. Chart review was used to gather demographic data and medical history. Cox regression analysis of independent predictors of mortality and Kaplan-Meier survival curves were generated for analysis of diastolic dysfunction in adjusted and unadjusted data sets using the SPSS statistical analysis program.

**Summary of Results:** 126 subjects were included for data analysis. 57% were male, 43% female. Mean age was 63 years. Of the sixty-eight subjects with diastolic dysfunction (54%) there was no significant difference in age or sex, but they were more likely to be African-American (64% vs 43%; p=0.02) and have hypertension (89% vs 74%; p=0.03). Subjects with diastolic dysfunction had significantly lower LVEF (24% vs 31%; p=0.01). Overall mortality was 33%. There was no significant difference in mortality between patients with and without diastolic dysfunction (34% vs 32%). There was no significant difference in mortality adjusted for these variables: diabetes, prior myocardial infarction, hypertension or the use of any medications.

**Conclusions:** This study did not find diastolic dysfunction to be a predictor of mortality in this data set. African American race and hypertension were positively associated with diastolic dysfunction.
Clearly, given the heterogeneity of published studies, there is a need for randomized controlled trials with well-defined criteria for both systolic and diastolic dysfunction to fully assess the impact of diastolic dysfunction on morbidity and mortality.

436 USING “ECOLOGICAL MOMENTARY ASSESSMENT” TO EVALUATE AN AMBULATORY MORNING REPORT CURRICULUM


Purpose of Study: End-of-rotation evaluations may not accurately reflect learning experiences. Residents may only partially recall specific events, resulting in overestimation, lack of detail and limited discrimination. To improve evaluation of ambulatory morning report (AMR), we implemented a daily assessment tool - the “exit card” - developed using principles of ecological momentary assessment (EMA).

Methods Used: To reduce recall errors, EMA uses brief, unobtrusive self-reports collected immediately at the time of an experience. Our exit cards, designed to be completed anonymously within 2 minutes, included 4 questions related to the topic (would recommend to a colleague, learned something new, would like more like this topic, was in an area I need to improve). The four topic measures loaded onto one principal factor (eigenvalue = 3.4) with cronbach’s alpha = 0.84, and were thus combined into a “perceived quality” scale (0 = lowest, 8 = highest). Because individual cards are clustered within AMR sessions, we used generalized estimating equations (GEE) to adjust for variance inflation when assessing AMR sessions.

Summary of Results: Our results are based on 449 cards completed, representing 73 AMR sessions over 7 months. Quality varied by post-graduate year, with 93% of interns rating AMR sessions a 7 or higher, as compared with 84% and 79% by PGY-2 and 3 respectively (p for trend = 0.02). Among the sub-items of quality, the greatest decline by increasing PGY was seen for “learned something new” with PGY-1, 2, 3 responding positively 92%, 87%, and 78% respectively. AMR format varies, combining case presentations with mini-lectures or question-and-answer sessions, but we found no differences in perceived quality by format. AMR sessions with cases that were derived from sub-specialty consults, walk-in clinic, or emergency department were rated higher, (mean = 7.4 (SD = 1.1)) compared with primary care clinic (mean = 6.9 (SD = 1.5)), with p = 0.02 after GEE adjustment (beta = 0.54 (95% CI 0.24-0.83)).

Conclusions: The exit cards serve as a useful needs assessment tool for modifying our ambulatory curriculum. We have planned an additional formative assessment to understand how AMR can be improved for junior trainees and how we can provide equity in learning from different cases.

Southern Society of General Internal Medicine
SSGIM Poster Session and Reception
5:30 PM
Friday, February 22, 2008

437 ASSESSING INTERNAL MEDICINE RESIDENTS’ COMMUNICATION SKILLS WITH A STANDARDIZED PATIENT PERCEPTION QUESTIONNAIRE


Purpose of Study: To meet ACGME requirements, most internal medicine (IM) residencies use faculty evaluations (FE) for evaluating communication and interpersonal skills. However, attending physicians are not always present during residents’ interactions with patients at difficult moments such as breaking bad news and dealing with domestic violence. Objective Structured Clinical Examinations (OSCE) are used extensively in medical schools and are being explored in graduate medical education. Surgical programs have compared residents’ performance in OSCEs for history taking, physical exam, diagnosis and treatment and found a positive correlation between FE and standardized patient (SP) scores. Another surgical program used OSCEs to assess communication skills in difficult patient situations. They assessed the OSCE based on resident feedback and focus groups with no correlation to FE. While many IM programs have begun using OSCEs for skills assessment, they have not compared residents’ communication skills with the current gold standard, FE. We piloted an OSCE using a Patient Perception Questionnaire (PPQ) scored by SPs to compare residents’ performance to FE.

Methods Used: Eight IM residents were chosen to participate based on their prior FE, four residents at the upper end and four at the lower end of the evaluation scale. Two of the OSCE stations focused on communication: breaking bad news case and domestic violence. Residents’ interpersonal skills were assessed by SPs using the seven-item PPQ, which included questions such as “letting you tell your story; using words you can understand; acknowledging your personal distress.”

Summary of Results: A positive correlation was found between FE of residents’ communication skills and their OSCE PPQ on the two stations (r=0.01, p=0.01 respectively).

Conclusions: The OSCE’s PPQ was effective in evaluating residents’ performance in difficult communication scenarios compared with FE in this group. We plan to use the PPQ in an OSCE format with a larger group of our residents, both in IM and other specialties, to further validate its usefulness for evaluating communication skills.
complications of diabetes documented (mean 1.1 vs 1.5), their ICU length of stay was similar to that of controls, the total length of hospital stay was 2.7 days shorter, and total cost of hospitalization was lower (mean $8,185 vs $13,351). Close scrutiny revealed that cases received less inpatient procedures (i.e. coronary revascularization, kidney transplant) than controls, which explains the lower length of stay and costs observed.

Conclusions: Higher utilization of emergency and inpatient care for diabetes signals a complicated course of the disease among patients with DM2 and SA. In an environment of limited resources, a lower intensity of medical care while admitted may be the system’s response to the high utilization demands of such patients.

439 HIV/AIDS MANAGEMENT IN THE AFTERMATH OF HURRICANE KATRINA
R.D. Foreman1,2, E.D. Crook1,2, M.L. Icenogle3, and M.I. Arrieta1,2.
1University of South Alabama, Mobile, AL; 2University of South Alabama, Mobile, AL; and 3University of South Alabama, Mobile, AL.

Purpose of Study: To document HIV/AIDS management challenges in the aftermath of Hurricane Katrina and identify strategies to meet those challenges in future disasters that cause mass displacement.

Methods Used: In Phase I of data collection 30 health and social service providers (Key Informants, KI) from 14 hospitals, community health centers, pharmacies and aid organizations in coastal Mississippi and Alabama were interviewed. Four focus groups were conducted with 28 chronic disease (CD) patients (HIV/AIDS, n = 15, 54%). In Phase II, selected KI formed an Advisory Panel. Phases I and II data was coded and analyzed for emerging themes using grounded theory. In Phase III, KI reviewed a report summarizing all findings.

Summary of Results: Reported challenges to HIV/AIDS management were: finding and affording prescription medications, particularly under the duress of post-disaster financial stressors (loss of housing, employment, insurance); inability to communicate with regular providers; loss of or lack of access to medical records, resulting in delays of diagnosis, staging and selection of antiviral treatments; interruption in support service and mental health (MH) service provision; fear of disclosing disease status to shelter staff and providers; emotional cost of building rapport with new providers; and increased risk behaviors, particularly substance abuse. Strategies to address challenges identified by participants included: patient education to promote disease management (though HIV/AIDS patients did reportedly have better medication knowledge than other CD patients); electronic medical records with distant access capability to aid patients seeking care outside their medical home; HIV/AIDS sensitivity training for providers/shelter staff; and increased availability of MH services post-storm.

Conclusions: Many barriers to continuity of care were pervasive for all CD patients (e.g., medication procurement, inability to communicate with regular provider). For HIV/AIDS patients, the issues of stigma, confidentiality and the emotional stress of initiating care with a new provider must be taken into consideration when planning for health care response to future disasters.

Southern Society of General Internal Medicine
SSGIM Research Abstract Oral Plenary Session
8:00 AM Saturday, February 23, 2008

440 COULD PREDICTING RISK BE THIS EASY?
K. DeSalvo, T. Jones, J. McDonald, and P. Muntner. Tulane School of Medicine, New Orleans, LA.

Purpose of Study: To determine whether a simple tool (a single-item measure of general self-rated health [GSRH] plus age) performs as well as established, but more complicated, tools for the prediction of future health expenditures.

Methods Used: We analyzed prospective cohort data collected from the 2003 and 2004 Medical Expenditure Panel Survey (n=8,479) to determine the ability of a GSRH question “In general, would you say your health is: Excellent, Very Good, Good, Fair, Poor?” to discriminate those in the top quintile of annualized health care expenditures. The predictive value of GSRH plus age was compared with the ability of more complex tools including the Short Form-12 Physical Component Score (PCS), the Seattle Index of Comorbidity (SIC), and the Charlson-Deyo Comorbidity Index (CD). We used the Area Under the Receiver Operator Characteristic Curve (AUC) to compare model discriminant performance. For reference, the Framingham Risk Score has an AUC of 0.77.

Summary of Results: Those reporting “poor” health had 5 times the age-adjusted annual expenditures as those reporting “excellent” health ($2,211 (SE +126) v. $10,481 (SE +1038)) and had an increased age-adjusted odds of being in the top quintile (> $3,816) of expenditures [OR 8.85, 95% CI: 6.21, 12.62]. Models including age plus GSRH, PCS, SIC or CD were good risk prediction tools and had similar AUC for predicting high expenditures (AUC 0.77, 0.78, 0.76 and 0.76, respectively). Adding the PCS, SIC and CD measures to the simple tool of GSRH plus age did not provide any meaningful improvement in model performance (GSRH + Age, AUC 0.77 [95% CI 0.76, 0.79] GSRH + Age + PCS + SIC + CD, AUC 0.79 [95% CI 0.78, 0.80]). The GSRH model performed as well as the PCS, SIC, and CD models for predicting key sub-groups of expenditures including pharmacy (AUC 0.81, 0.81, 0.80, 0.79, respectively) and inpatient expenditures (AUC 0.74, 0.74, 0.73 and 0.72, respectively). Conclusions: A single item measure of self-rated health (GSRH) stratifies populations according to future health expenditures and performs as well as more complex risk prediction tools, including those using comorbidity such as the Charlson-Deyo. GSRH and age are easily captured and should replace more complex tools used for risk stratification and risk prediction.

441 “THANKS FOR LETTING ME VENT”: MORAL DISTRESS IN PHYSICIANS
K. Deep, J. Wilson, and S. Murphy. University of Kentucky, Lexington, KY.

Purpose of Study: Moral distress can arise when healthcare providers are constrained from implementing the course of action they deem ethically appropriate due to institutional obstacles or conflict with others about values. This construct has been extensively studied in nursing but has received little attention in physicians.

Methods Used: We adapted an existing Moral Distress scale to use in physicians. The instrument contains 17 brief clinical scenarios such as competence, substandard care, end of life care, and workload. Respondents were asked to rate the frequency of occurrence and the severity of distress using a 5-point Likert scale. An open response item asked respondents to describe the time when they experienced the greatest moral distress. The anonymous survey was administered at departmental conferences or via mail. We analyzed the data using SAS describing statistics and correlation matrices. Two independent raters performed content analysis via an iterative process on the open response data.

Summary of Results: 125 physicians completed the survey for a response rate of 60%. This sample included 83 trainees and 33 attendings;
62% were male. The scenarios rated highest in frequency involving continuing life support against the physician’s judgment and caring for more patients than is reasonable. Scenarios describing invasive treatments believed only to prolong death (73%) or not in the best interests of the patient (70%) were most likely to receive high distress ratings. Two workload scenarios also received high ratings (68%, 69%). Overall years experience was correlated with increasing distress in trainees but not attending physicians. Increasing critical care experience was positively correlated with distress in housestaff (p=0.05) but negatively correlated for attendings (p=0.05). Gender was not predictive of moral distress. Content analysis revealed respondents describe the most distress in dealing with surrogate decision makers (21/53) most often in the setting of terminal illness (10). Providing sub-optimal care and inadequate information sharing were also common themes.

Conclusions: Physicians are not immune to moral distress. The etiologies and consequences deserve further study to improve physician well-being and patient care.

442 IDENTIFYING KEY COMPONENTS FOR AN EFFECTIVE POSTER PRESENTATION: AN OBSERVATIONAL STUDY
L.L. Willett1, A. Paranjape2, and C. Estrada3. 1University of Alabama at Birmingham, Birmingham, AL; 2Temple University School of Medicine, Philadelphia, PA and 3Birmingham VA Medical Center, Birmingham, AL.

Purpose of Study: Trainees and junior faculty often present clinical vignette posters at professional meetings. However, there is great variability in the quality of the presentations. Little data exists regarding the components that contribute to a quality poster. From an innovative educational project designed to provide feedback to presenters, we were able to identify the key characteristics mentors felt were missing from poster presentations.

Methods Used: Clinician educators attending 3 academic general internal medicine meetings gave feedback to poster presenters using a standardized form. The form contained 10 items, rated on a 5 point Likert scale (5=highest, 1=lowest; maximum score 50). The domains were 1) content (clear learning objectives, case description, relevant content area); 2) conclusions (tied to objectives, supported by content, increased the understanding or improved the diagnosis/treatment); and, 3) presentation format (clarity, appropriate amount of words, effective use of color, pictures and graphics).

Summary of Results: 46 evaluators representing 11 medical institutions (US and Canada) reviewed 224 posters at three meetings (Southern SGIM 2006 n=63, 2007 n=84; National SGIM 2007 n=77). The Cronbach’s alpha was 0.83 and the median total score was 41 (Q1=25th-Q3=75th percentile, 37–46). Using an arbitrary cut-off point of scores <3, 15% of posters did not clearly state learning objectives (content), 18% did not tie the conclusions to the learning objectives (conclusions), and 16% had inappropriate amount of words/presentation format. The national meeting score was higher (median 44; Q1-Q3, 40–47) than for the regional meetings (median 40; Q1–Q3, 35–45) (p=0.001). Total score did not differ by faculty rank or years on faculty but being a division director was associated with a higher score (p=0.04).

Conclusions: Clinical vignette posters at academic meetings often lack clarity. The form we used had high internal consistency for the poster components and identified three areas for poster improvement. Mentors can help by instructing presenters to clearly state learning objectives, link conclusions to their objectives, and use the appropriate amount of words to convey the teaching points of a vignette.

443 LISTEN TO YOUR HEART: DEFICIENCIES IN CARDIAC EXAMINATION OF FEMALE PATIENTS DURING AN OBJECTIVE STRUCTURED CLINICAL EXAMINATION
R.J. Chakkalakkal, S.M. Higgins, L.B. Bernstein, and J.P. Doyle. Emory University School of Medicine, Atlanta, GA.

Purpose of Study: Prior research has shown gender bias in physician interpretation of cardiac symptoms but few studies have explored gender bias in cardiac physical examination. The purpose of this project was to determine if Internal Medicine (IM) PGY-1 residents differ in the performance of key aspects of the cardiac exam of female versus male standardized patients (SPs) during an Objective Structured Clinical Exam (OSCE).

Methods Used: 84 IM PGY-1 residents examined a middle-aged SP with acute chest pain during orientation OSCE’s in June 2006. Due to a recording error, only 50 of the 84 cases were videotaped for evaluation by a single reviewer for the performance of 5 standard cardiac exam skills: auscultation of aortic, pulmonic, tricuspid, and mitral valve areas and palpation for apical impulse (1). A “complete” maneuver was performed at the correct location and directly against the patient’s skin. Bivarial analysis of the data using Fisher’s exact two-tailed probability test compared the number of complete maneuvers performed for each skill on the female versus male SP (2).

Summary of Results: See Table 1. The difference in the number of complete maneuvers performed was statistically significant for auscultation of the tricuspid (P=0.0013) and mitral (P<0.0001) areas and palpation of PMI (P=0.0002).

Conclusions: Our project identifies gender bias in the female cardiac exam, especially in areas requiring attention to breast tissue. This bias may be due to physician concern for modesty and inadequate teaching of gender-specific exam skills. Future research should study resident traits as predictors of cardiac exam performance and the validity of faculty evaluation of resident performance of female cardiac exam during OSCE’s.

<table>
<thead>
<tr>
<th>Cardiac Exam Skill</th>
<th>Male SP</th>
<th>Female SP</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(n=26)</td>
<td>(n=24)</td>
</tr>
<tr>
<td>Auscultation, aortic area</td>
<td>20 (77)</td>
<td>16 (67)</td>
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<tr>
<td>Auscultation, pulmonic area</td>
<td>20 (77)</td>
<td>18 (75)</td>
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<tr>
<td>Auscultation, tricuspid area</td>
<td>21 (81)</td>
<td>8 (33)</td>
</tr>
<tr>
<td>Auscultation, mitral area</td>
<td>19 (73)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>Palpation for apical impulse</td>
<td>17 (65)</td>
<td>3 (13)</td>
</tr>
</tbody>
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References:

444 THE LABEL OF DNR: WHAT TREATMENTS ARE APPROPRIATE?
S. Lockwood, K. Deep, and J. Wilson. University Of Kentucky, Lexington, KY.

Purpose of Study: Healthcare providers often have differing opinions about the appropriateness of certain treatments for patients with a Do-Not-Resuscitate (DNR) order. These beliefs may impact the care these patients receive.

Methods Used: We adapted an existing instrument to evaluate physicians’ beliefs about the care provided to patients with a DNR order. Respondents rated the appropriateness of 12 therapeutic interventions on a 4-point Likert scale from not at all appropriate to very appropriate. We
also asked which level of care is most often provided to patients labeled DNR. Response choices included four textual descriptions of care including various use of intravenous fluids, analgesia, and highly technical interventions. The anonymous survey was administered to physicians who provide care to seriously-ill adult inpatients including trainees and attendings from surgery, internal medicine, neurology, family medicine, cardiology, critical care and oncology. Surveys were delivered at departmental conferences or via mail. We performed descriptive statistics and rotational factor analysis using SAS.

Summary of Results: 125 physicians completed the survey for a response rate of 60%. This sample included 72% trainees and 28% attendings; 62% were male. Most respondents felt that it was probably or very appropriate for patients with DNR orders to receive intravenous fluids (94%) and antibiotics (92%). Tube feeding (79%), transfusion (78%), and dialysis (59%) were highly but not universally endorsed. Only half of respondents felt that transfer to the ICU was probably or very appropriate. The treatment modalities rated least appropriate were elective mechanical ventilation (29%) and vasopressor medications (33%). Principal component factor analysis revealed that physicians’ ratings clustered in two dimensions of care: supportive measures versus invasive procedures. When asked about the most common level of care provided to patients with a DNR order, half of respondents selected the scenario that avoided ICU transfer and emergency surgery. Trainees were significantly more likely to endorse use of advanced treatment modalities than attending physicians (p=0.02).

Conclusions: Physicians’ beliefs differ greatly regarding the appropriate level of care provided to patients labeled DNR. Building consensus among providers may improve patient care.
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