Proceedings from the 2014 Annual Meeting of the American College of Physicians, Wisconsin Chapter

The following abstracts were presented during the 59th Annual Meeting of the Wisconsin Chapter of the American College of Physicians in 2014. Internal medicine residents from each of Wisconsin's 5 residency programs presented their research and/or unusual clinical experience via case- and research-based vignettes and posters. All of the vignettes as well as the winning posters are published here. Additional poster presentations are available online in an appendix and can be accessed at https://www.wisconsinmedicalsociety.org/_WMS/publications/wmj/pdf/114/2/WACP_abstracts_2014.pdf.

CASE-BASED VIGNETTES

Eosinophilic Granulomatosis With Polyangiitis (Churg Strauss Disease)

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA), previously known as Churg Strauss Disease, is a multiorgan disease usually affecting the lungs and skin. Patients typically present with chronic rhinosinusitis, asthma, and eosinophilia. While classically considered to be an ANCA-positive vasculitis, the sensitivity and specificity of ANCA activity level is low.

Case: A 62-year-old woman with chronic sinusitis and asthma presented with progressive shortness of breath that worsened over the past month and nodules on her fingers that developed 3 weeks prior to presentation. Outpatient use of Advair, albuterol, Spiriva, azithromycin, and steroids provided minimal relief of her symptoms. Physical exam was significant for bilateral expiratory wheezing and crackles, and papulo-vesicular nodules on the extensor surfaces of her elbows, distal interphalangeal (DIP), and proximal interphalangeal (PIP) joints. Her labs were remarkable for white blood cell (WBC) count of 12.2 with 30% eosinophils, markedly elevated erythrocyte sedimentation rate (ESR) of 116 mm/h, C-reactive protein (CRP) of 16.10 mg/dL, IgE level of 470.9 IU/mL, rheumatoid factor of 28 IU/mL. C3 was mildly elevated at 186 mg/dL. C4, total complement level, antinuclear antibody (ANA), c-ANCA, p-ANCA, proteinase 3 antibody, myeloperoxidase antibody, anti-CCP antibody, angiotensin-converting enzyme (ACE) level, urine *Histoplasma, Blastomyces,* and *Legionella* antigen were all negative. Computed tomography (CT) of chest with contrast was notable for diffuse thickening of lung parenchyma and bronchial wall, hilar, and mediastinal lymphadenopathy. To aid in diagnosis, a skin biopsy of the patient's papulo-vesicular nodules was performed and found erythema elevatum diutinum, a rare and poorly understood presentation of vasculitis. Video-assisted thoracoscopic surgery (VATS) lung biopsy revealed eosinophilic vasculitis with patchy involvement of medium-sized arteries confirming the diagnosis of EGPA. Bone marrow biopsy showed marked eosinophilia but not an increased percentage of blasts, effectively ruling out a neoplastic process leading to the hypereosinophilia. The patient was started on steroid therapy and then transitioned to a course of rituximab.

Discussion: The differential diagnosis of peripheral eosinophilia with associated skin findings included a vasculitic process such as eosinophilic granulomatosis with polyangiitis (EGPA) or sarcoidosis, neoplastic disease such as lymphoma, immunologic disease such as hypereosinophilic syndrome, or atypical infection with helminth or parasite. This case describes a typical presentation of a classic vasculitis. P-ANCA is present in only about 50% of patients with EGPA, however, our patient did not have this classical marker. In a patient with chronic sinusitis and asthma presenting with peripheral eosinophilia, clinicians must maintain a high degree of suspicion for EGPA since treatment can significantly reduce morbidity and mortality.

H1N1 Influenza A Infection as a Cause of Severe Pulmonary Complications

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Introduction: Most patients with H1N1 influenza A infection have a mild or uncomplicated clinical course. Common complications include secondary bacterial pneumonia, acute respiratory distress syndrome (ARDS), etc. Other pulmonary complications such as pneumatocele, bronchopleural fistula, and pneumothorax are very rare.

Case: A 59-year-old man, vaccinated against flu, presented with cough, fever, chest congestion, and respiratory distress. He was found to be hypoxic with bilateral alveolar and interstitial opacities on chest x-ray. Diagnosis of ARDS was made. He was intubated and started on antibiotics. Blood and sputum cultures were negative. Later, influenza A was detected on bronchoalveolar lavage (BAL). Oseltamivir was started. Follow-up CT chest showed diffuse and extensive airspace opacification and repeat

bronchoscopy was unremarkable. High dose steroids were started for fibroproliferative ARDS. He underwent tracheostomy and was eventually transferred to a long-term acute care facility. Within a month, he was admitted with shortness of breath and hypoxemia. Imaging revealed bilateral infiltrates, cavitary lesions, as well as pneumothorax. He was treated for possible health care-associated pneumonia despite negative workup and was discharged with chest tube and home oxygen. He presented to the hospital again within 3 days with shortness of breath. CT chest revealed a left bronchopleural fistula with large hydropneumothrax and persistent right pneumothorax. He underwent thoracoscopy and bronchopleural fistula repair. He had an extended hospital stay before being discharged.

Discussion: This case demonstrates the devastating complications associated with H1N1 influenza A. In our patient, the delay in diagnosis and initiation of treatment might have contributed to the development of these complications. There was no evidence of superimposed bacterial infection. Maintaining a high index of suspicion for influenza, early diagnosis, and prompt initiation of treatment is paramount in preventing complications and improving outcomes.

1st Place
Hemolytic Uremic Syndrome in an Adult Chemotherapy Patient

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Introduction: Hemolytic uremic syndrome (HUS) is often overlooked as a diagnosis in adults. Additionally, because many chemotherapy regimens are associated with diarrhea, infectious etiologies of diarrhea in cancer patients can be easily missed. The time sensitive nature of starting plasmapharesis to avoid the potentially irreversible renal damage of microangiopathic hemolytic anemia (MAHA) makes this an important diagnosis to consider, even in less classic circumstances.

Case: A 62-year-old woman on dasatinib for chronic myelocytic leukemia (CML) developed watery, nonbloody diarrhea, and nonbilious emesis without fevers during a trip to Missouri. No other family members had gastrointestinal symptoms. Her symptoms persisted for the following 2 to 3 weeks, despite a trial of loperamide and ondansetron. Upon return to Wisconsin, she was instructed to stop dasatinib and required intravenous (IV) fluids for dehydration. Her labs were notable for serum urea nitrogen (BUN) 38 and Cr2.3 thought pre-renal from volume loss. Over the next 48 hours, however, she developed worsening confusion and peri-orbital edema. Admitted to the hospital, physical exam was notable for blood pressure (BP) 159/87, pale sclera, asterixis and petechial rash on her lower back and sacrum. Labs were notable for HgB 7.8, platelets 85, BUN 49, creatine 4.82, urine analysis (UA) with 3+ protein and fractional excretion of sodium (FeNA) 1.34 suggestive of intrarenal pathology. Peripheral smear with >5 schistocytes/hpf and renal biopsy showing thrombotic microangiopathy confirmed MAHA. Stool was negative for Shigella, O157:H7, shiga toxin; however, further inquiry of outside hospital workup revealed positive stool Shigella and shiga toxin. The Missouri Department of Public Health was notified. Upon urgent initiation of plasmapharesis and intravenous immunoglobulin (IVIG), she improved dramatically over the following 6 days with normalization of cell lines and renal function.

Discussion: This case illustrates the importance of re-evaluating the cause of worsening renal function when not improving after fluid resuscitation, and remembering MAHA and HUS when presented with a history of gastrointestinal symptoms—even in adults, as early recognition and treatment are critical to maximizing renal recovery.

Heroin and Rhabdomylosis

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Case: We present a case of a 23-year-old man who was found unconscious by friends, wedged between a bed and a night stand, having been there for an unknown period of time. He was given naloxone and became transiently more responsive. Initial evaluation revealed renal failure, hyperkalemia, lactic acidosis, CPK >250,000, and absent bilateral pedal pulses. Bilateral lower extremity fasiciotomies were performed. Renal dialysis was started shortly after admission, but his metabolic acidosis and hyperkalemia continued to worsen. Bilateral above knee amputations were performed with subsequent resolution of his metabolic abnormalities. Upon wakening, the patient admitted longstanding history heroin and polysubstance abuse.

Discussion: Heroin is one of the most harmful drugs available and causes physical, emotional, and monetary burdens on both patients and society. Beyond respiratory depression and addiction, it poses many different organic problems when overdosed. In addition, narcotic addiction is a problem now reaching a younger population. Among 12 to 13 year olds, controlled prescription drugs are now the most commonly abused. In 2012, it was estimated that 10 million individuals between ages 12 and 29 needed treatment for drug addiction. Providers must become more judicious in their dispensing of addictive prescription medications knowing that they are often gateway drugs.

Rhabdomyolysis is a potentially life-threatening condition with complications including renal failure, compartment syndrome, and fatal arrhythmias. It must be suspected in any patient found down for an unknown period of time. The first line treatment of preventing these complications is heavy fluid resuscitation and frequent neurovascular checks. Although myoglobulin and its byproduct are major contributors to renal failure, the pathophysiology is much more complicated and usually is preceded by pre-renal azotemia and hyperuricemia. In a large retrospective study of patients with rhabdomyolysis, it was found that patients with pre-renal azotemia were more likely to develop renal failure versus the patients who were well hydrated.

Narcotic abuse is becoming a widespread problem taking a huge physical toll and resulting in a large economic burden as well. In Wisconsin there have been significant recent legislative efforts with the addition of resources to prevent narcotic overdose, however more needs to be done to prevent the abuse of narcotics. It requires both increased public awareness and also provider awareness across all specialties.

Monoclonal Gammopathy of Mesenteric Significance

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Introduction: Sclerosing mesenteritis, a fibroinflammatory condition of unclear pathogenesis, consists of a spectrum of uncommon disorders including mesenteric lipodystrophy and mesenteric panniculitis. Rarely, it has been reported in patients with underlying malignancies commonly of the gastrointestinal and genitourinary tracts, but rarely with leukemia/lymphomas. We present a patient with myeloma-related mesenteritis and highlight the challenges associated with nonspecific symptomatology concealing a malignant process.

Case: An 83-year-old woman with known history of monoclonal gammopathy of undetermined significance (MGUS) and previously treated stage I breast cancer developed persistent abdominal pain with eating and alternating constipation and diarrhea. CT of the abdomen showed mesenteric nodules. Recurrent breast cancer was suspected. A positron emission tomography (PET)/CT scan showed the mesenteric nodules were metabolically quiescent and no other evidence of metastatic disease, leading to the conclusion that the mesenteric changes were nonspecific. The patient continued to have symptoms for 1 year and underwent multiple endoscopies and physician visits without explanation of etiology or symptomatic benefit. She was empirically treated with prednisone 20 mg/day without relief. Subsequently, she developed bone pain in addition to her abdominal symptoms, which led to a hospitalization at our center. A PET/CT scan was repeated owing to the high suspicion for an underlying malignancy; it revealed bony lytic lesions in addition to the mesenteric nodules. Further hematology-directed workup revealed low immunoglobulin levels, however her kappa light chains of 2089mg/L (3.3-19.4 mg/L) and a free light chain (FLC) ratio of 289 (0.26-1.65). It was noted that her previous MGUS follow-up evaluation 6 months ago had shown that her FLC ratio had increased to 20.9 from a previous stable level of 9. A bone marrow biopsy confirmed multiple myeloma. She was started on treatment with lenalidomide, bortezomib, and dexamethasone with prompt resolution of her abdominal symptoms.

Discussion: Sclerosing mesenteritis includes a spectrum of disorders that lead to inflammation and fibrosis of the mesentery. Rarely, it has been associated with hematologic malignancies either as a paraneoplastic syndrome or as direct infiltration by malignant cells. In our patient, the MGUS was a clue to an underlying hematologic malignancy; the fact that it was changing as observed by an increasingly abnormal FLC ratio was a clue that it had evolved into myeloma. This case highlights the need for awareness of the paraneoplastic nature of sclerosing mesenteritis and suspicion of myeloma evolution from MGUS.

Intravascular Large B-Cell Lymphoma in a Caucasian Woman With Profound Thrombocytopenia and Dyspnea

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Introduction: Intravascular large B-cell lymphoma (IVLBCL) is an extremely rare form of non-Hodgkin's lymphoma in which malignant cells have a tropism for small- and medium-sized blood vessels. In this case, IVLBCL was diagnosed in a 78-year-old Caucasian woman who presented with severe thrombocytopenia, anemia, and progressive shortness of breath (SOB).

Case: The patient, a nonsmoker with a history of Sjögren's syndrome presented 3 months prior to admission with SOB and was told she had interstitial pulmonary fibrosis. She was treated with a prednisone taper. She returned to clinic 1 week prior to admission with bruising, dyspnea, and a platelet count of 8 K/μL. She received prednisone and gamma-globulin for presumed immune thrombocytopenia without improvement.

On admission, the patient was afebrile. Physical findings included bibasilar lung crackles, splenomegaly without adenopathy, and diffuse ecchymoses and petechiae. Labs showed a WBC 7.8 K/μL, hemoglobin 9.9 g/dL, and a platelet count of 3 K/μL. The patient's creatinine was 1.40 mg/dL, serum LDH was 1810 U/L (normal <245 U/L), and albumin was 1.9 g/dL. The blood smear showed thrombocytopenia without schistocytes. A bone marrow aspirate showed hemophagocytosis, while biopsy demonstrated monoclonal infiltrates of CD20+ lymphoid cells confined to vascular spaces, consistent with IVLBCL.

The patient was started on R-CHOP. She required daily blood products, but after 2 weeks was able to maintain a platelet count of greater than 20 K/μL unsupported.

Discussion: IVLBCL is notoriously difficult to diagnose, with more than half of cases proven at autopsy. Definitive diagnosis requires finding malignant cells in the vessels of affected organs. The disease is usually disseminated and has a variable presentation, often with nonspecific complaints, but frequently with elevated lactate dehydrogenase (LDH) and anemia. Western patients typically present with cutaneous and neurologic abnormalities. By contrast, Asian patients are more likely to have pulmonary symptoms and bone marrow involvement with thrombocytopenia and a hemophagocytic syndrome. In this case, a Caucasian patient presented with an Asian variant of IVLBCL. Prognosis is poor, but treatment with R-CHOP has improved overall survival to an estimated 60% to 80% at 3 years.

Pneumococcal Pericarditis With Tamponade

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Introduction: Pneumococcal pericarditis is a rare entity in the current antibiotic and vaccination era in the United States. Here we present a case of pneumococcal pericardial effusion with tamponade.

Case: An 82-year-old man with no significant known previous medical history was seen for fatigue of approximately 1 month's duration and dyspnea at rest for a week. He was hypotensive, tachypneic, tachycardic, and orthostatic. His exam revealed distant heart sounds, crackles in left lung base, and distended neck veins. Labs revealed leukocytosis of 197k, multiorgan dysfunction, and spontaneous tumor lysis. An electrocardiogram

(ECG) showed diffuse ST segment elevation in the anterolateral leads. Chest x-ray revealed cardiomegaly with a left retrocardiac density. Echocardiogram showed a moderate pericardial effusion with pending tamponade physiology and he underwent emergent pericardial window placement. His pericardial fluid grew *S pneumoniae.* He also was diagnosed with chronic lymphocytic leukemia (CLL), however, there were no malignant cells in the pericardial fluid. He was treated with 4 weeks of IV antibiotics with resolution of sepsis and multi-organ dysfunction.

Discussion: Bacterial pericarditis (BP) is nowadays very rare occuring, mostly in individuals with previous pericardial disease treated by chemotherapy, patients who have undergone cardiac surgery, or those receiving dialysis. Risk factors for getting BP are immunosuppression, alcoholism, and chest trauma. BP requires prompt recognition as it is life threatening and requires immediate antibiotics and surgical drainage.

Our patient's pericardial effusion initially was thought to be from his CLL until the pathology results came back negative for malignant cells. However, there has been a case report on concurrent *S pneumoniae* and malignant squamous cells in pericardial fluid. Further, negative cytology does not exclude the diagnosis of malignancy, particularly if there is a high index of suspicion. In this situation, a pericardial biopsy should be considered to confirm or exclude pericardial malignancy.

This case demonstrates the importance of considering pneumococcal pericarditis as the cause of a pericardial effusion in patients with pneumococcal sepsis and immunosuppression. Further diagnostic testing such as pericardiocentesis and culture of pericardial fluid, polymerase chain reaction (PCR), or antigen testing with early drainage is vital.

A Rare Case of Post-Infarct Ventral Septal Defect With Ventricular Pseudoaneurysm

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Introduction: Immediate mechanical complications of myocardial infarction (MI) include ventricular septal defect (VSD), papillary muscle rupture, and ventricular free wall rupture. Concomitant occurrence of VSD with free wall rupture, which gets sealed off by the pericardium forming a pseudoaneurysm, is an extremely rare and life-threatening complication of MI.

Case: A 67-year-old woman with end stage renal disease on hemodialysis was admitted for evaluation of hypotension and dyspnea. Eight weeks prior, she had a non-ST segment elevation myocardial infarction (NSTEMI) with subsequent nuclear stress test showing no reversible ischemia; she was managed medically.

Review of systems was unremarkable, except for worsening lower limb edema. Physical examination was significant for a blood pressure of 71/54 mmHg and 3+ leg edema. Cardiac exam was notable for a pansystolic murmur. Chest x-ray revealed a moderate right pleural effusion.

Echocardiogram demonstrated severely reduced right heart function, markedly different from her previous echocardiogram. Chest CT, performed to rule out pulmonary embolism, revealed a focal outpouching along the inferior interventricular septum with possible communication between ventricular cavities, suspicious for VSD associated with an aneurysm. Transesophageal echocardiogram (TEE) and magnetic resonance imaging (MRI) confirmed the diagnosis. Coronary angiography revealed 100% occlusion of the right coronary artery (RCA), supporting the post-infarct etiology. Given the patient's comorbidities, a percutaneous approach of VSD occlusion was adopted. The patient had an uneventful postintervention hospital course.

Discussion: Ventricular free wall rupture is a serious complication of MI. Rupture of the inferior wall contained by the pericardium forms a pseudoaneurysm. Patients can be asymptomatic or present with chest pain and hypotension. A high index of suspicion is necessary for early diagnosis. Associated with VSD, it can lead to significant hemodynamic instability and cardiogenic shock. When feasible, a surgical approach is preferable and can be lifesaving.

A Rare Cause of Seizures

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Introduction: Anaplasmosis is rarely associated with neurologic manifestations other than confusion. Rarely, meningoencephalitis has been associated in immunocompromised hosts. Anaplasmosis-associated seizures have not been reported. Described below is a man afflicted with seizures after infection with *Anaplasma phagocytophilum.*

Case: An 81-year-old man from northern Wisconsin presented to his primary care provider with progressively worsening generalized myalgias and weakness with increasing frequency of low-energy falls of 3 weeks duration. These were accompanied by fevers, chills, anorexia, headache, and lightheadedness during the week prior to presentation. Two weeks prior to presentation, he was bitten by a tick and was unable to remove all of it until he was seen by dermatology the next day. He did not develop a rash. Physical exam revealed an afebrile, pleasant, ill-appearing man and no other abnormalities. Initial lab studies revealed leukopenia, thrombocytopenia, and borderline elevated alanine aminotransferase (AST) and alanine aminotransferase (ALT). CRP was 5.0, ESR was 8. Cytomegalovirus (CMV) and Epstein-Barr virus (EBV) IgM antibodies were negative. Lyme serology was negative. PCR detection was positive for *Anaplasma phagocytophilum* DNA and negative for *Babesia* and *Ehrlichia* species. ECG and chest x-ray were normal. He was treated empirically with doxycycline. He developed a fever of 103° on hospital day 2 but was otherwise stable. His symptoms improved and discharge was planned. On hospital day 4, he developed acute confusion without other focal neurologic deficits. He developed a tonic-clonic seizure of 1 minute in duration while in CT scan. CT head was normal. He was placed on continuous electroencephalogram (EEG) monitoring and started on levetiracetam. Brain MRI was normal. Lumbar puncture was unremarkable and PCR was negative for Lyme, Arbovirus, West Nile virus, herpes simplex virus (HSV), and varicella zoster virus (VZV). He continued to have intermittent epileptiform activity until he was switched to divalproex sodium and

his condition improved. He was discharged home with doxycycline and divalproex sodium. He had no seizure recurrence and his antiepileptic was weaned off.

Discussion: Anaplasmosis has been a reportable disease since 1999, with over 1600 cases reported in 2010. It is transmitted via the Ixodes scapularis tick in the north central and northeast regions of the United States. After an incubation period of 1 to 2 weeks, symptoms of fever, malaise, myalgias, and headache develop. Rash occurs infrequently. More severe symptoms include shock, rhabdomyolysis, and renal failure. Neurologic manifestations such as meningoencephalitis have been documented but are extremely rare. Recommended management is with doxycycline, which has low but adequate cerebrospinal fluid (CSF) penetration for treatment of neurologic disease.

Seronegative Granulomatosis With Polyangiitis Presenting as a Lung Mass

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Introduction: Granulomatosis with polyangiitis (GPA) is a vasculitis with systemic manifestations mainly in respiratory and renal systems. Rarely it involves other systems, (eg nervous, cardiovascular, and genitourinary systems).

Case: A 49-year-old man presented with sinus discharge and intermittent headache for 1 year. He was treated initially with oral antibiotics without improvement and subsequently developed epistaxis. MRI of the head showed faint enhancement of the extracranial right mastoid facial nerve and paranasal sinus mucosal disease. Upper airway examination revealed significant sinonasal inflammation with scarring out of proportion to regular sinus infection. Two months later he began to cough. Imaging studies revealed consolidation in the right upper lobe with a possible mass. He was treated for pneumonia with ceftriaxone. Follow-up CT scan revealed new cavities formation. Myeloperoxidase-antinuclear cytoplasmic antibodies (MPO-ANCA) and proteinase 3- antinuclear cytoplasmic antibodies (PR3-ANCA) were both negative. Kidney function and urinalysis were normal. Bronchoscopy with transbronchial and endobronchial biopsies were not diagnostic. Right upper and middle lobectomies with lymph node sampling showed necrotizing granulomatous inflammation with geographic necrosis and vasculitis, which was consistent with GPA. He was started on high-dose corticosteroids and received 2 cycles of rituximab with significant improvement of his respiratory symptoms. He currently is being weaned of corticosteroids and transitioned to azathioprine.

Discussion: This case demonstrates the importance of considering GPA in patients with recurrent sinus symptoms combined with lower respiratory tract symptoms in spite of negative serologies. Early diagnosis and treatment is important to prevent mortality and organ loss. MPO-ANCA and PR3-ANCA antibodies are positive in 82% to 94% of the patients. Ten percent of patients with GPA can be serongative. The diagnosis must be confirmed with biopsy, which can be obtained from the target organ.

RESEARCH-BASED VIGNETTES

Development and Validation of a Risk Score to Predict Access Site Complications After Peripheral Vascular Interventions

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Purpose: Access site complications (ASC) after peripheral vascular interventions (PVI) are associated with prolonged hospitalization and increased mortality. The aim of this study was to create a clinical scoring tool to stratify patients according to their risk of developing post-PVI ASC.

Methods: The Society for Vascular Surgery Vascular Quality Initiative database yielded 27,997 patients who had undergone PVI from July 2007 to January 2014 at 151 North American centers. Clinically and statistically significant ($P < 0.05$) preprocedural risk factors associated with in-hospital post-PVI ASC were included in a multivariate logistic regression model with ASC as the outcome variable. A predictive model was developed with a random sample of 70% of the dataset and validated against the remaining 30%. Risk factors were assigned weighted integers based on their beta coefficients, and the sum constituted the risk score.

Results: ASC occurred in 939 (3.4%) patients. Predictors included were female gender, age >70, white race, bedridden ambulatory status, insulin-dependent diabetes mellitus (IDDM), prior minor amputation, procedural indication of claudication, and non-femoral arterial access site (model c-statistic = 0.637). The discriminatory power of the risk model was confirmed by the validation dataset (Brier score = 0.033). Higher risk scores correlated with increased frequency of ASC: 1.9% for low risk (score 0-15), 3.4% for moderate risk (16-27) and 5.0% for high risk (28-34).

Conclusions: The proposed clinical risk score based on 8 preprocedural characteristics is a simple tool to stratify patients at risk for post-PVI ASC. The risk score may assist physicians in therapeutic decision-making, including selection of the appropriate bleeding avoidance strategy, to improve outcomes in patients undergoing PVI.

Factors Affecting Specimen Accrual in a Community Hospital Biobank

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Background: Community hospital biobanks are important contributors to several cancer genome programs. In an effort to improve the specimen accrual, we sought to determine cancer patients' attitudes and knowledge about donating tissue for research.

Methods: We mailed questionnaires to 500 patients who had undergone cancer surgery at our hospital in the year 2012.

Results: Response rate was 43.4% (217/500). Only 36/217 respondents were aware of the biobank (BB), 32 of whom had consented to tissue collection. Of the 181/217 who were not aware, 120 believed that they would have consented had they been aware, 46 were not sure, and 15 would have refused. Most respondents (174/217) saw possible benefit for others as the most important reason for consenting. Forty-one of 217 patients

believed there is a potential for misuse of their tissue or personal information, 17 did not want to deal with any extra issues, and 11 did not understand the concept. None cited religious or cultural beliefs as factors influencing their decision.

Conclusions: The majority of the people were unaware of the concept of BB but if made aware, most of them would have consented primarily to help other cancer patients. Lack of patient awareness is an important difference between a smaller community hospital and a bigger quaternary setting. With increasing participation of smaller centers towards international cancer genome programs, improving patient awareness could be a major step in increasing specimen accrual. Despite being unaware, most patients showed good understanding of the concept of BB. The fear of misuse or commercial use of their tissue and personal information was their biggest apprehension. Hence, even a small, informative conversation addressing this issue could help allay patient fears about tissue donation.

The Novel P13K/Akt/mTOR Inhibitor Palomid 529 Can Inhibit Human Lung Fibroblast Differentiation in an In Vitro Model of Idiopathic Pulmonary Fibrosis

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Background: Idiopathic pulmonary fibrosis (IPF) is a fibroproliferative lung disease with very few therapeutic options. Investigation was made into whether the PI3K/Akt/mTOR inhibitor Palomid 529 (8-[1-hydroxyethyl]-2-methoxy-3-[4-mehtyoxybenzyloxy]-benzo[c]chromen-6-one), which is a target of both mammalian target of rapamycin complex 1 (mTORC-1 and mTORC-2) could inhibit fibrosis in human lung fibroblasts in an in vitro model.

Treatment of human lung fibroblasts after stimulation with transforming growth factor beta (TGFß) with differing concentrations of P529 led to concentration-dependent reduction of fibrotic proteins in the form of smooth muscle actin, fibronectin, and collagen-1 as well as reduction in the protein kinase B (Akt) pathway by decreasing the amount of phospho-Akt (pAkt) via Western blotting after 24 hours of treatment. Moreover, there appears to be a reduction in the cofilin pathway with a decrease in the amount of phosphcofilin (pcofilin) as well. P529 was compared against dimethyl sulfoxide (DMSO) as well as negative control. Luciferase assays were performed to investigate protein transcription. Immunohistochemical methods on human lung fibroblasts investigated the proliferation of human lung fibroblasts with differing concentrations of P529.

These preclinical in vitro observations are promising as the mTOR pathway could be a target for future IPF research and that the PI3K/Akt/mTOR inhibitor P529 should be further explored as a candidate treatment for IPF.

Providers' Experience With Sex Trafficking Victims

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Background: Though many health care providers come into contact with victims of sex trafficking, very few recognize and identify the victims, resulting in potentially significant health disparities for this vulnerable population. One study found that 28% of victims were seen by a health care provider during the time they were being trafficked. Sex trafficking (ST) victims are a unique subset of patients with specific identification and needs. Our objective was to evaluate knowledge gaps and training needs of medical providers, importance of training for a victim's specific needs, as well as barriers to the identification and response to victims.

Methods: Survey of 168 health care workers including physicians, nurses, nurse practitioners, physician assistants, social workers, and patient/family advocates at multiple hospitals and medical clinics in urban, suburban, and rural locations. In particular, we focused on specialties and locations that would likely encounter victims, such as social work, general pediatrics, adolescent medicine, child abuse pediatrics, internal medicine, emergency medicine, obstetrics and gynecology, sexual assault nurse examiners, and urban free clinics. The survey was sent to the chairs of each of these departments for distribution to potential participants.

Results: In 2 clinical vignettes, only 48% correctly classified a minor as a ST victim, and only 42% correctly distinguished a ST victim from a child abuse victim. Of respondents, 62.5% said that they had never received training on how to identify ST victims. Those with training were significantly more likely to report ST as a major problem locally ($P < 0.001$), to have encountered a victim in their practice ($P < 0.001$), and to have greater confidence in their ability to identify victims ($P < 0.001$). The greatest barriers to identification of victims reported were a lack of training (34%) and lack of awareness (21%) on ST. There also were many action steps taken once a victim was identified, which included calling child protective services (69%), contacting local police (66%), referring patient to human trafficking victims' services (42%), and calling the national hotline (31%).

Discussion: Health care providers demonstrate a lack of knowledge and awareness of ST that correlates with their limited experience and training. Training is vitally important to improve identification of these victims and provide appropriate care for their specific needs. There is also a need for a coordinated, uniform protocol, without which many health care workers are not confident in their ability to connect patients with the necessary services. Consequently, this may affect their willingness to screen potential victims.

1st Place

Repeat Lipopolysaccharide Exposure is Sufficient to Impair Viral-Induced Pro-atopic, CD49d Expressing Neutrophil Recruitment to the Lung

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Background: Severe respiratory viral infections increase the risk of developing asthma and atopic disease. In the Sendai virus (SeV) mouse model, we demonstrated this risk depends upon the early recruitment of CD49d expressing neutrophils to the lung. We also demonstrated that single intranasal (i.n.) dose of lipopolysaccharide (LPS) prior to SeV infection significantly reduced

CD49d+ neutrophils in the BAL. The hygiene hypothesis suggests chronic microbial exposure prevents development of atopic disease. Our study investigated whether chronic LPS exposure would reduce SeV mediated CD49d+ neutrophil recruitment to the lung and BAL.

Methods: C57BL6 mice were treated with daily LPS (3 μg) i.n. starting 1 or 3 days before or with SeV infection (day 0). On day 3 post SeV, the BAL and lung were isolated and the frequency of CD49d+ neutrophils determined by flow cytometry.

Results: In the BAL, CD49d+ neutrophils were reduced most significantly when LPS exposure was started 1 day prior to or the day of SeV infection (23.6±1.8%, 10.2±1.6% [0.0002], 10.5±2.2% [0.0037], 17.4±3.6% [0.11]; mean ± sem percent CD49d+ neutrophils [*P* value vs PBS] for PBS, LPS starting on day 0, -1, or -3; n≥3). In the lung, CD49d+ neutrophils decreased regardless of LPS starting day (42.9±3.7%, 18.7±2.0% [0.0003], 22.6±1.0% [0.013], 24.9±2.0% [0.0052]; n≥3).

Discussion: Chronic LPS exposure reduces SeV mediated CD49d+ neutrophil accumulation in the lung and the BAL, suggesting an interaction between the viral and hygiene hypotheses in driving atopic risk. Future studies will explore whether chronic LPS exposure is sufficient to prevent the development of postviral atopic disease.

DISPLAYED POSTERS

1st place

A Rare Case of Delirium Associated With Crowned Dens Syndrome

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Introduction: Crowned dens syndrome (CDS) is a rare and under-recognized cause of acute neck pain. CDS is characterized by severe cervico-occipital neck pain associated with deposition of calcium pyrophosphate dihydrate (CPPD) around the odontoid process (or dens) to give the appearance of a crown on imaging. Because CDS often is associated with neck stiffness, fever, and elevated inflammatory markers, it can be misdiagnosed as other conditions such as meningitis, cervical spondylitis, or polymyalgia rheumatica, thus delaying diagnosis and appropriate treatment.

Case: An 87-year-old man with history of hypertension, diabetes, and chronic kidney disease presented with acute delirium on top of gradual cognitive decline. The patient's family noted increased confusion and severe neck pain in the past week. On exam, he had fever to 101ºF and was oriented only to self. He had significant neck tenderness and stiffness with restricted cervical range of motion but no focal neurological deficits. He also had active synovitis to the bilateral knees and wrists. Labs revealed normal white count and elevated acute phase reactants with sedimentation rate of 82 mm/h and C-reactive protein 22.8 mg/dl. Infectious workup with urinalysis, blood cultures, and chest radiography were negative. A lumbar puncture was attempted but unsuccessful. Due to the patient's persistent severe neck pain, CT and MRI cervical spine were performed, revealing calcium deposition around the odontoid process, consistent with crowned dens syndrome. Left knee arthrocentesis was subsequently performed with CPPD crystals on synovial fluid analysis suggestive of acute pseudogout. The patient was started on prednisone 30 mg daily with subsequent taper for treatment of crowned dens syndrome related to CPPD and polyarticular pseudogout with rapid and significant improvement in mental status and neck and joint pain.

Discussion: Crowned dens syndrome can present with a pseudo-meningitis picture with acute neck pain and fever. CT of the cervical spine is the gold standard imaging modality with classic finding of calcium deposition in a crown around the dens. The majority of patients with CDS also have chondrocalcinosis with CPPD deposition within primary sites (eg, knees, wrists, ankles). Treatment consists of NSAIDs or steroids, with dramatic improvement in symptoms and excellent prognosis. Thus, CDS should be considered in the differential with this clinical picture to avoid unnecessary invasive procedures and allow for appropriate diagnosis and rapid initiation of targeted treatment.

2nd place

Left Ventricular Noncompaction: Etiology, Pathology, and Clinical Significance

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Case: A 29-year-old African American man presented with clinical symptoms of congestive heart failure with unclear etiology. When he came to the emergency department for an abdominal gunshot wound at the age of 22, he was incidentally diagnosed with severe left ventricular (LV) dilation and heart failure (HF). His left heart catheterization was negative for acute coronary disease to explain his systolic dysfunction. He had an ejection fraction of about 20% and had an AICD placed. In addition, he was unaware of any family history of cardiovascular disease.

During this admission, the patient complained of increasing dyspnea on exertion, paroxysmal nocturnal dyspnea, weight gain, and feeling as though his implantable cardioverter-defibrillator (ICD) had fired. He was diagnosed with congestive heart failure exacerbation secondary to poor diet and medication non-compliance. He was diuresed and TTE was performed. TTE showed trabeculation seen within the LV endocardium concerning for left ventricular noncompaction (LVNC). Furthermore, a small thrombus within the trabecaulation could not be ruled out.

LVNC, also known as spongy myocardium, is a rare disease that occurs in the 12th week in utero when the spongy myocardium fails to transform into mature compact myocardium. This results in deep recess and trabeculations that form within a dilated left ventricle. This is a rare disease but should be considered in the differential for diagnosis of new onset HF in young individuals.

These individuals are at an increased risk for arrhythmias, thrombus formation, and heart failure. The diagnosis is made either by TTE or cardiac MRI (not performed on this patient given that he had a subcutaneous ICD lead). Anticoagulation should be considered given their increased risk for thromboemboli caused by their dilated left ven-

tricle. Our patient was started on coumadin given potential for LV thrombus formation. This is also a congenital disease, so family members should be offered an opportunity to be screened. This did not occur in this case because of the patient's financial constraints. Keeping LVNC in the differential for new HF in younger individuals is critical as it helps clinicians risk stratify the patient's outcomes for strokes, arrhythmias, and their children's risk for heart disease.

3rd place

Case Report of an Aggressive Lymphoma With Mixed Plasma Cell and T Cell Features in a Patient With Crohn's Disease Receiving Tumor Necrosis Factor Alpha Inhibitors

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Case: A 62-year-old man with Crohn's disease presented with fever, drenching night sweats, and increased frequency of watery diarrhea. He also reported severe anorexia, cachexia, and weight loss. This was his 5th hospital admission in past 30 days with similar symptoms. He had multiple laparotomies in the past, with a total of 128 cms of small bowel removed to date. Due to disease progression, initially on methotrexate and later adalimumab, he had recently started on a combination of 6 mercaptopurine (6 MP) and certolizumab. He underwent colonoscopy, which showed mild active disease at the anastomotic site with normal C- reactive protein on all admissions. Biopsy was negative for cytomegalovirus and inclusion body disease. His stool cultures repeatedly had come back negative for routine bacteria, ova, and parasites including *Giardia* and *Cryptosporidium.* Other tests that had come back negative were serum HIV, EBV, hepatitis panel, cryptococcal antigen and fungal assays. Six MP levels were found normal as well, and discontinuation of this drug did not improve his symptoms. His symptoms were persistent despite empirical treatment with steroids for Crohn's flare and use of cholestyramine.

Physical exam during this admission revealed left axillary adenopathy and a 2 cm x 2 cm erythematous skin lesion on his scalp. He also was found anemic with hemoglobin of 9; lactate dehydrogenase was mildly elevated at 400. CT scan of abdomen showed a left flank mass measuring 6 cm x 6 cm with mild splenomegaly and mesenteric adenopathy; the latter also was noted on MRI 2 years prior and was thought to be reactive at that point. Biopsy of the left flank mass showed an unusual combination of cell surface markers with presence of both T cell (CD 3) and plasma cell (CD 38, 138 and Mum 1) markers. This sample was sent for second opinion at a quaternary center where findings were confirmed and was diagnosed as "aggressive plasmablastic lymphoma with aberrant expression of T cell markers." Bone marrow and CSF analysis came back negative for lymphoma. Biopsy of scalp lesion revealed squamous cell skin cancer. Patient opted for comfort care after carefully evaluating all his treatment options and expired peacefully within 2 to 3 days.

Discussion: The activity of tumor necrosis factor alpha (TNF) against tumors in laboratory models and, potentially, in humans raises the possibility that tumor necrosis factor alpha inhibitors (TNFI) might potentiate the clinical risk of malignancy. There are studies supporting increased incidence of cancers, especially skin cancer and lymphoma in patients receiving TNFI, but their accuracy is questionable due to mixed patient population and frequent coadministration of immunomodulators like 6 MP and azathioprine, which also are implicated in the causation of lymphoma. Thus, a more homogeneous sample consisting of patients with Crohn's disease treated solely with TNFI is needed to reach accurate results. Our patient's unusual lymphoma with rare atypical characteristics and presence of a concomitant squamous cell skin cancer makes us strongly suspicious of TNFI playing a role in the pathogenesis of these cancers.

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