

CELEBRATING INNOVATION AND DISCOVERY AT BAYSTATE MEDICAL CENTER

11TH ANNUAL

RESEARCH WEEK



Baystate
Medical Center

Western Campus of Tufts University School of Medicine

Tufts
UNIVERSITY

ADVANCEMENT OF KNOWLEDGE is a strategic goal that is woven throughout the fabric of Baystate Medical Center. Scholarly activity is a core component of our residency and fellowship training programs, and an integral aspect of our faculty's professional lives. Research Week celebrates the accomplishments of our residents, fellows, faculty, coordinators, nurses, and others who are involved in biomedical and educational research.

BMC's 11th annual Research Week is Tuesday, May 18, 2010 through Friday, May 21, 2010. The collection of work accomplished by our residents, fellows, faculty, coordinators, nurses, and others is located in various areas of the Chestnut Conference Center. Please visit, learn and recognize the breadth of scholarly contributions our residents, fellows, faculty, coordinators, nurses, and others have made to the field of medicine.

LUNCHEON & KEYNOTE SPEAKERS

Chestnut Conference Center, Rooms 1 A & B

Tuesday, May 18, 2010

12:00 pm: *How Financial Conflicts of Interest Endanger Our Profession*
Jerome P. Kassirer, MD

Distinguished Professor of Medicine, Tufts University School of Medicine

Thursday, May 20, 2010

12:00 pm: *Bridging Global Health, Medical Education Innovation, and Technology*

Mary Y. Lee, MD, MS, MA

Associate Provost, Tufts University

LUNCHEON & AWARDS PRESENTATION

Chestnut Conference Center, Rooms 1 A & B

Wednesday, May 19, 2010

12:00 pm: *Presentations from award winners*
Award for Significance in Research
Award for Innovation in Research

Award for Excellence in Clinical Education Research

RESEARCH WEEK POSTER EXHIBIT

Chestnut Conference Center Lobby

Chestnut 1 A & B and Health Sciences Library

Tuesday, May 18 through Thursday, May 20

7:00 am – 7:00 pm

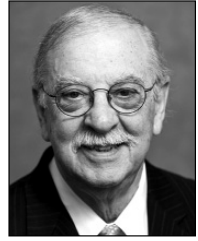
Friday, May 21

7:00 am – 12:00 pm

KEYNOTE SPEAKERS

Jerome P. Kassirer, MD

Jerome P. Kassirer is Distinguished Professor at Tufts University School of Medicine. He has promoted professionalism, ethical scientific conduct, patient involvement in decision making, appropriate use of firearms, and reliable approaches to the assessment of the quality of health care. He was been highly critical of for-profit medicine, the abuses of managed care, political intrusions into medical decisions, and financial conflicts of interest. His 2004 book, "On The Take: How Medicine's Complicity With Big Business Endangers Your Health," was about financial conflict of interest in medicine, and his latest book in 2009, is entitled, "Learning Clinical Reasoning." He served as Editor-in-Chief of the New England Journal of Medicine between 1991 and 1999, and has been elected to the Association of American Physicians, the Institute of Medicine of the National Academy of Sciences, and the American Academy of Arts and Sciences..



Mary Y. Lee, MD, MS, MA

Mary Y. Lee, Associate Provost for Tufts University, manages multidisciplinary educational initiatives spanning Tufts' undergraduate, graduate, and professional schools. She provides key academic leadership for the educational use of information technology, and faculty development in conjunction with the University Committee on Teaching and Faculty Development (UCTFD) and the Center for the Enhancement of Learning and Teaching (CELT). Dr. Lee was most recently Dean for Educational Affairs at Tufts University School of Medicine for over 12 years as the strategic and operational leader in curriculum, evaluation, faculty development, educational programming, and grants. She is the project steward of both the Tufts University Sciences Knowledgebase (TUSK) and Tufts OpenCourseWare (OCW). She leads the Tufts team that is contributing to the global Open Educational Resources movement by offering high quality content (particularly in the health sciences), open-source tool development, and faculty development in the innovative uses of technology to support education. Dr. Lee is a Professor of Medicine at Tufts University School of Medicine and was the recipient of the Tufts University Distinguished Faculty Award for 2006.



*Resident and Fellow authors are bolded on abstracts.

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Postoperative Coma

Karin Zuegge, MD; Karthik Raghunathan, MD, MPH;
Charles Gibson, RN, MA

CASE DESCRIPTION: A 31 year old cognitively intact male was admitted with fever, leukocytosis and positive blood cultures. Subsequently, he developed an acutely ischemic leg. Emergent femoral artery embolectomy and fasciotomies were performed under general anesthesia. The intraoperative course was benign and we performed a TEE examination for suspected infective endocarditis. This revealed intra-cardiac vegetations potentially a source for the current (and future) emboli. Unfortunately, the patient failed to regain consciousness postoperatively (small pupils, low respiratory rate, no response to noxious stimuli). Head CT was uninformative but MRI revealed multiple embolic infarctions (including the brainstem, pontine reticular formation). The patient remained in a persistently vegetative state for months before expiring at a long term care facility.

Poster Presentation:

Medically Challenging Case, American Society of Anesthesiologists, Annual Meeting, New Orleans, October 17-20, 2009.

Hypercapneic Cerebral Edema in Asthma

Ryan Joyce, MD; William McGee, MD; Lawrence Goodman, MD;
Charles Gibson, RN, MA

INTRODUCTION: A 63-year-old obese asthmatic woman presented with facial swelling and shortness of breath. Despite treatment with epinephrine and solumedrol for anaphylaxis; severe respiratory distress developed. Following intubation a dilated and non-responsive right pupil was noted. Emergent computerized tomographic (CT) scan of the head showed effaced sulci with small ventricles and basilar cisterns, which were read as consistent with increased intracranial pressure. The patient was placed on a ventilator and transferred to the ICU.

CASE DESCRIPTION: The patient's initial blood gas revealed severe respiratory acidosis which was corrected over several hours. Neurosurgery agreed with the CT interpretation and recommended no specific therapy. After eight hours the patient's physical and neurological findings were unchanged. At 12 hours, the patient's right pupil was 5mm and reactive. The follow-up head CT was read as normal without cerebral edema. Concurrent arterial blood gases were: pH-7.64; PCO₂-36; pO₂-75; & HCO₃-39. By 24 hours, the patient's pupils had become symmetrically equal and reactive. Her anaphylaxis symptoms had improved so she was extubated. A brain MRI revealed no pathology.

CONCLUSION: Alteration of consciousness related to hypercapnia during respiratory failure is not generally thought to be related to cerebral edema. Respiratory acidosis from hypercarbia is known to produce CO₂ narcosis but no current treatment algorithm suggests hypercapnia correction can be critical for neurologic outcome. Our case is a unique example of the physiological changes that occur in relation to arterial CO₂ concentration. Correction of respiratory acidosis reversed the neurologic symptoms and physiology causing the cerebral injury. Similar cases have been only sporadically reported in the medical literature. Her case is also unique as rapid deterioration and clinical status were directly observed with simultaneous CTs. Had this patient underwent brief respiratory or cardiac arrest, the scan could have been interpreted as global anoxic injury leading to a worse outcome.

Poster Presentation:

Society of Critical Care Medicine Annual Symposium, January 2010.

'Malpositioned' Central Venous Catheter

Karin Zuegge, MD; Karthik Raghunathan, MD, MPH;
Charles Gibson, RN, MA;

CASE: A 71-year-old woman (157 cm, 103 kg) was transferred to the intensive care unit with a 20-cm long triple-lumen catheter in her right subclavian vein. The central venous pressures, waveform morphology, together with an inappropriate length of catheter insertion, suggested intra-cardiac placement (Panel A). After calculating the optimal intravascular insertion length ($(\text{height} / 10) - 2$ cm), we placed a shorter central venous catheter at the same location but there was no change in the CVP tracing. TRANSTHORACIC ECHOCARDIOGRAPHY: TTE later revealed mal-coaptation of the tricuspid valve with severe tricuspid regurgitation producing an eccentric jet impinging upon the wall of the right atrium ('the Coanda effect', Panel B). The CVP tracing for this patient shows a holosystolic 'c-v' wave, obliteration of the x descent and a steep y descent. Despite a correctly situated catheter, venous pressures were significantly elevated from severe regurgitation and an eccentric jet.

CONCLUSION: When right atrial electrocardiography is not readily available, a combination of clinical judgment, predictive formulae for optimal intravascular insertion and radiographic confirmation can be used for correct positioning of central venous catheters. In addition, the morphology of the CVP waveform can provide useful information.

Poster Presentation:

Medically Challenging Case, American Society of Anesthesiologists, Annual Meeting, New Orleans, October 17-20, 2009.

The Impact of a State Wide Moratorium on Diversion on Ambulance Arrivals: A Level 1 Trauma Center Experience

Ben Osborne, MD; Niels Rathlev, MD; **Le Grand Reynolds, MD**; Adam Kellogg, MD; John Santoro, MD; Del Blank, RN; Paul Visintainer, PhD

INTRODUCTION: The Massachusetts Department of Public Health abolished ambulance diversion on 1/1/09. The effect of no diversion on the number of emergency department (ED) visits is not known.

OBJECTIVE: Our goal is to describe ambulance arrivals at the only tertiary care hospital, Level 1 Trauma Center in a city of 150,000 inhabitants, in the 3 months before (control period) and the 3 months after (no diversion period) 1/1/09. Our annual census is 115,000 patient visits per year.

METHODS: We retrospectively compared the number of ambulance arrivals from 10/1/08 to 12/31/08 (control period) with the 3-month period following 1/1/09 (no diversion period). We compared the mean hourly number of ambulance arrivals between the control and the no diversion periods. Multivariate analyses using an autoregressive integrated moving average model was performed to determine if significant change occurred between the periods.

RESULTS: There were 92 days, 101 hours of diversion, and 8,701 ambulance arrivals (94.5 patients/day) during the control period. In the no diversion time period there were 90 days and 8886 ambulance arrivals (98.7 patients/day). The pre-post difference was an increase of 0.20 patients/hr (95%CI: 0.07, 0.34, $p=0.005$). Adjusting for diversion and time of day there were an average of 4.43 contacts per hour (95%CI: 4.34, 4.53) for the control period, while there were 4.64 contacts per hour (95%CI 4.54, 4.74) during the no diversion period.

CONCLUSIONS: No diversion was associated with a small but statistically significant increase in the number of ambulance arrivals during a 6-month study period. We do not believe that this increase was clinically significant, as the percentage change in ED and EMS volume was small. After abolishing diversion, EMS and hospital systems comprised of a single Level 1 Trauma Center in a medium sized city similar to ours can expect a clinically insignificant increase in EMS arrivals.

Oral Presentations:

New England Regional Society for Academic Emergency Medicine Conference, April 2010.

National Assembly Society for Academic Emergency Medicine Annual Meeting, June 2010.

PUBLICATION: Abstract: Academic Emergency Medicine, June 2010.

PREVIOUS AWARDS: "Outstanding Presentation and Research," New England Society for Academic Emergency Medicine.

Use of Spinal Immobilization Techniques in Stable patients: A Multicenter Evaluation

Ben Osborne, MD; **Dana Cerone, MD**; Del Blank, RN; Richard Barus;
Tom Fitzgerald; Michael Dailey, MD; Adam Frisch

INTRODUCTION: There are differing techniques for pre-hospital spinal immobilization depending on how stable the patient is and in what position they are found in. Per pre-hospital protocols, stable patients found seated in a car should be extricated using a Kendrick extrication device or short board (KED/SB). Stable ambulatory patients should be immobilized using a standing takedown (ST).

OBJECTIVE: To assess the current use and practice patterns of EMTs with regard to KED/SB use and ST for spinal immobilization.

METHODS: A cross sectional observational study was performed. A convenience sample of stable immobilized patients, who had a cervical collar applied by the EMTs, were enrolled after presenting to either of two tertiary care trauma centers. EMTs were surveyed as to the position of the patient upon their arrival and to which spinal immobilization techniques were used. The EMT's were asked to indicate the likelihood of cervical spine injury (CSI) on a 100 mm VAS. Logistic regression was used to evaluate the use of KED/SB and ST with regard to the perceived likelihood of CSI by the EMTs.

RESULTS: Of 207 subjects assessed, 38% of the patients were seated in a car of which 20% were immobilized with a KED/SB. 40% of the patients were ambulatory of which 43% were immobilized using a ST. Comparing the likelihood of CSI to KED/SB use and ST use, it was found not statistically significant for the KED (OR 1.1, 95%CI .94-1.2) or for the ST (OR 1.1, 95%CI .99-1.22). EMTs were not any more likely to use the KED/SB or ST if they perceived the patient to have a higher likelihood of c-spine injury.

CONCLUSIONS: The KED/SB and ST are underutilized means of spinal immobilization. EMS programs must maintain an active quality improvement process to assure that EMTs are appropriately using spinal immobilization techniques.

Poster Presentation:

New England Society for Academic Emergency Medicine, Regional Meeting, April 2010.

Undiagnosed Diabetes in Patients with Acute Heart Failure: A Potential Population for Novel Interventions

H. Smithline, MD; M. Donnino, MD; F. Blank, RN; R. Barus, BS;
R. Coute, BS; J. Stekiewicz, BS

INTRODUCTION: Heart failure is associated with diabetes. Diabetes is a risk factor for increased morbidity and mortality in heart failure. Several novel medications, developed to treat diabetes, may be beneficial for the treatment of acute heart failure. The diagnosis of diabetes using standard methods during periods of acute stress is problematic. HbA1c (a measure of treatment effectiveness for diabetes) has been proposed as the preferred method for the diagnosis of diabetes and pre-diabetes. The goal of this study is to determine the incidence of diabetes, using HbA1c, in patients presenting to the emergency department with acute heart failure but without known diabetes.

METHODS: This was a secondary analysis using data from a prospective acute heart failure study of patients admitted from two academic emergency departments. Random plasma glucose was measured at time of emergency department evaluation. HbA1c and fasting plasma glucose were measured on the first in-hospital morning. HbA1c was measured using HPLC. Diabetes history (including pre-diabetes and diet controlled diabetes) was obtained prospectively. Data were analyzed descriptively. Agreement was calculated using the kappa statistic.

RESULTS: Out of 128 subjects, 58 did not have known diabetes. Complete data was available on 39. HbA1c was equal to or greater than 6.5 (diabetes) in 28% of these subjects. HbA1c was between 6 and 6.5 (pre-diabetes) in 28%.

LAB VALUES: (values are medians, IQR)

HbA1c	6.0 (5.7 to 6.5)
Random glucose	121 (99 to 147)
Fasting Glucose	96 (90 to 108)

AGREEMENT: (values are kappa, 95%CI)

HbA1c to random glucose	0.03 (-0.16 to 0.12)
HbA1c to fasting glucose	0.35 (0.06 to 0.54)

CONCLUSION: Undiagnosed diabetes is present in a large percent of emergency department patients admitted with acute heart failure. This population may benefit from novel agents developed to treat diabetes.

Presentation:

New England Regional Society for Academic Emergency Medicine Meeting, April 2010.

A Randomized Comparison of Cardiocerebral and Cardiopulmonary Resuscitation Using a Swine Model of Prolonged Ventricular Fibrillation

Timothy Mader, MD; Adam Kellogg, MD; **Joshua Walterscheid, MD**,
Cynthia Lodding, MD; Lawrence Sherman, MD

BACKGROUND: This study was done to quantify the effect of the EMS component of CCR as compared to typical OHCA CPR using a swine model of prolonged untreated VF in a prospective randomized fashion.

METHODS: The study was IACUC approved. 53 animals were instrumented under anesthesia. VF was electrically induced. After 10" of untreated VF, animals were block randomized to 1 of 2 resuscitation schemes. The controls had mechanical chest compressions (MCC) at 100/minute with 30:2 ventilations. Two 30-second pauses in MCC occurred to simulate attempts to accomplish endotracheal intubation (ETI) at minutes 1 and 3 of CPR and successful IV access was simulated to occur 3 minutes after ETI. The CCR group had continuous uninterrupted MCC at 100/minute without active ventilations. A tibial IO needle was placed in real-time for vascular access. Both groups received epinephrine (0.1mg/kg) as soon as access became available followed by 2.5" of MCC before the first 120J rescue shock (RS) attempt. After successful RS, standardized post-resuscitative care was provided to a 20-minute endpoint. Failed RS was followed by continued MCC with positive pressure ventilation in both groups, repeat doses of epinephrine (0.01mg/kg) every 3 minutes, and RS every minute as long as a shockable rhythm persisted. Group comparisons were assessed using descriptive statistics. Proportions with 95% confidence intervals were calculated for VF termination, ROSC, and survival.

RESULTS: At baseline, the two groups were the same. The CCR group had 92% (0.82, 1.00) termination of VF and 59% (0.40, 0.78) ROSC compared to 50% (0.31, 0.69) and 30% (0.12, 0.48) respectively in the CPR group. 40% (0.22, 0.58) of the CCR group survived to 20 minutes compared with 19% (0.04, 0.34) of the CPR group.

CONCLUSION: In this model, CCR resulted in substantial improvement in all 3 outcomes relative to typical OHCA EMS CPR.

Presentations:

Moderated Poster Presentation: American Heart Association Resuscitation Science Symposium, November 2009, Orlando, FL.

Moderated Poster Presentation: 14th Annual New England Region Society for Academic Emergency Medicine Research Forum, April 2010, Worcester, MA.

Oral Presentation: National Association of EMS Physicians, January 2010, Phoenix, AZ.

PUBLICATION: Mader TJ, Kellogg AR, Walterscheid JK, Lodding CC, Sherman LD: "A randomized comparison of cardiocerebral and cardiopulmonary resuscitation using a swine model of prolonged ventricular fibrillation." Resuscitation. 2010;81:596-602.

An Observational Study to Assess Changes in Arterial Blood Gas Values During Untreated Porcine Ventricular Fibrillation

Timothy Mader, MD; Adam Kellogg, MD; **Jamie Hess, MD;**
Joshua Walterscheid, MD; Richard Misiaszek, MD

BACKGROUND: Cardiocerebral resuscitation (CCR) is reportedly superior to cardiopulmonary resuscitation (CPR) for out-of-hospital cardiac arrest (OHCA) even though active ventilation is not initially provided. Understandably, concerns have been raised regarding the withholding of positive pressure ventilation (PPV) during CCR because of the longstanding belief that respiratory gas exchange is a critical action during resuscitation. We sought to quantify the effect of untreated VF on the pH, pCO₂, and pO₂ values in a swine model of cardiac arrest to determine if these concerns might be warranted.

METHODS: Both included studies were IACUC approved. Eighty-three animals (25-35kg) were instrumented under general anesthesia. Baseline characteristics were recorded. An arterial blood gas (ABG) was drawn from each animal via femoral catheter just prior to electrical induction of VF. After 8 minutes of untreated VF in one study [Study1 (n=30)] and 10 minutes of untreated VF in the other study [Study2 (n=53)], a second ABG was drawn. All samples were processed immediately using an iStat portable analyzer. Baseline characteristics of animals in the two studies were assessed using descriptive statistics. For the second ABG in each study, the mean pH, pCO₂, and pO₂ values, with 95% confidence intervals (95%CI), were determined. The paired ABG results for each animal were then compared and the average pH, pCO₂, and pO₂ proportions, with 95%CI, for each study were calculated.

RESULTS: Baseline characteristics of animals in the two studies were similar. The average ABG after 8" VF arrest was 7.35(7.32, 7.37)/44.1(41.1, 47.1)/44.8(42.2, 47.4) and the average ABG after 10" VF arrest was 7.37(7.36, 7.38)/52.7(51.0, 54.4)/45.5(43.3, 47.6) [ABS pH is in units, the ABS pCO₂ and pO₂ are in mmHg].

CONCLUSIONS: These data suggest that concerns over initially withholding PPV to focus on high quality chest compressions and vasopressor administration during resuscitation by EMS personnel after witnessed VF are unfounded.

Poster Presentations:

American Heart Association Resuscitation Science Symposium, November 2009, Orlando, FL.

14th Annual New England Region Society for Academic Emergency Medicine Research Forum, April 2010, Worcester, MA.

PUBLICATION: Mader TJ, Kellogg AR, Hess JM, Walterscheid JK, Misiaszek RA: "An observational study to assess changes in arterial blood gas values during untreated porcine ventricular fibrillation." *Prehosp Emerg Care*. 2010 in press.

Feasibility of Intraosseous Infusion of Iced Saline to Induce Therapeutic Hypothermia after Cardiac Resuscitation

Timothy Mader, MD; **Joshua Walterscheid, MD;**

Adam Kellogg, MD; Cynthia Lodding, MD

BACKGROUND: Therapeutic hypothermia (TH) is currently recommended for survivors of out-of-hospital cardiac arrest (OHCA) who meet specified criteria. Many emergency medical services initiate this process in the prehospital setting by IV infusion of iced normal saline upon return of spontaneous circulation (ROSC). This study was done to determine the feasibility of inducing TH after successful resuscitation by giving an IO infusion of iced saline.

METHODS: This study was IACUC approved. Liter bags of normal saline, after being refrigerated for at least 24 hours, were placed in an ice filled cooler. The animals were sedated and then instrumented under general anesthesia. A temperature probe was inserted 10cm into the esophagus. VF was electrically induced and allowed to continue untreated for 10 minutes. Animals were randomized to 1 of 2 resuscitation schemes for the primary study (N=53). One group had central IV access for drug delivery and the other had an IO needle inserted into the proximal tibia for drug delivery. Animals in whom ROSC was achieved were immediately cooled by means of a rapid, pump-assisted infusion of 1 liter of iced saline either through the IO needle (n=8), the central access (n=6), or a peripheral IV (n=7) in a systematic, non-randomized fashion. Room, animal, and saline temperatures were recorded at initiation and upon completion of infusion. The data were analyzed descriptively using Stata SE v8.1 for Macintosh.

RESULTS: The baseline characteristics of all three groups were identical. The average ambient room temperature during the experimental sessions was 25.5°C (StDev:1.3°C). The IO group achieved a drop of 2.8°C compared with 3.0°C and 3.5°C in the central and peripheral IV groups and there was no statistical difference between groups. A control group had a drop of 0.1°C.

CONCLUSIONS: IO infusion of iced saline is effective for lowering core body temperature after a successful resuscitation.

Poster Presentation:

American College of Emergency Physicians Research Forum, Boston, MA, October 2009.

PUBLICATIONS: Mader TJ, Walterscheid JK, Kellogg AR, Lodding CC: "Feasibility of intraosseous infusion of iced saline to induce therapeutic hypothermia after cardiac resuscitation." *Resuscitation*. 2010;81:82-86.

Tetracycline Induced Drug Rash with Eosinophilia and Systemic Symptoms

Amanda Conti, MD; Jonathan Bayuk, DO;
Vanessa Van Stee, MD; Jean Henneberry, MD

INTRODUCTION: Diagnosing DRESS syndrome (drug rash with eosinophilia and systemic symptoms) requires at least three of the following criteria: exanthema, hematologic abnormality such as eosinophilia and/or atypical lymphocytes, systemic involvement with lymphadenopathy, hepatitis, interstitial nephritis, interstitial pneumonia or carditis. The drugs commonly associated with DRESS are antiepileptics, antimicrobials including minocycline, sulfonamides, abacavir, and nevirapine, allopurinol and sulfasalazine. To our knowledge, tetracycline has not been described in association with DRESS. We present a case of tetracycline induced DRESS.

CASE HISTORY: The patient was a 17 year old male who presented with a 1 week history of a maculopapular rash that started on his arms. The rash developed into pustular lesions that spread to his trunk, arms and face. He was initially treated with diphenhydramine and oral steroids without improvement. He worsened and developed fever, vomiting, periorbital and perioral edema and lymphadenopathy. He was admitted to the hospital and treated for possible sepsis. Lab work showed elevated WBC count, eosinophilia, transaminitis, and elevated creatinine. Skin biopsy was consistent with possible DRESS. On day 6 of hospitalization, pt recalled that he was taking tetracycline for acne treatment for approximately 3 months prior to his illness. A diagnosis of DRESS from tetracycline was made. Tetracycline was discontinued and prednisone was continued with complete recovery.

DISCUSSION: While several cases of minocycline induced DRESS have been described, this is the first case of tetracycline associated DRESS that we are aware of. Minocycline induced DRESS typically starts with fever 2-4 weeks after initiation of therapy, followed by lymphocytosis, eosinophilia, lymphadenopathy, skin rash, and visceral organ involvement. Our patient's presentation started with rash developing before fever and the symptoms began approximately 12 weeks after starting tetracycline.

SUMMARY: Tetracycline is a common medication used for acne treatment and both prescribers and patients should be aware of the potential risks of DRESS. Providers should also recognize the varied presentations of DRESS syndrome. Finally, this case highlights the importance of taking a thorough medication history as directed questioning may have led to an earlier diagnosis in this patient.

Micro Tumor Embolization Leading to Cor Pulmonale: An Extremely Rare Complication of Ovarian Cancer

Ranjit Dhelaria, MD; Amal Fadaili, MD;
Carlos Acevado, MD; Giovanna Crisi, MD

Dyspnea leading to respiratory failure is not uncommon in patients with known malignancy. The underlying differential for this presentation is broad and needs careful clinical assessment and imaging studies to make a correct diagnosis. Microscopic pulmonary tumor embolus is a rare but potentially fatal complication of cancer and often a postmortem diagnosis. Its incidence is reported to be 3.3% of 3,300 autopsied cases. 1 Gastric, breast, and choriocarcinoma are the most common primary sites of origin. Adenocarcinoma is the most common histological tumor type. Pulmonary tumor emboli are rarely seen with ovarian tumors with only four cases reported in the literature. We present a case illustrating this rare complication.

The patient was a 53-year-old female with ovarian cancer stage 3 diagnosed five years ago. Over the years, the patient had surgical and chemotherapeutic intervention. She presented with subacute onset of dyspnea, and an acute pulmonary embolism was ruled out with a computed tomography angiography (CTA) and perfusion scan of the lungs. Right heart catheterization was planned, but the patient became hemodynamically unstable requiring large volume fluid bolus and vasopressors. A chest x-ray done at this time showed only mild-moderate pleural effusions and clear lung fields. Repeat echocardiogram showed peak pulmonary artery pressure of 90 mm Hg with severely reduced right ventricular function. She continued to deteriorate, experienced a cardiac arrest, and died despite aggressive resuscitation. At autopsy, there was diffuse thickening and fibrosis of the pulmonary visceral pleurae with extensive adhesions to the thoracic wall. There was no evidence of gross pulmonary emboli, discrete mass lesions, infarcts, or consolidation. The heart was enlarged with marked right ventricular dilation and left ventricular hypertrophy. There was mild coronary artery disease. Microscopically, the lungs revealed diffuse intravascular metastatic microtumor emboli within pulmonary lymphatics and blood vessels. Pulmonary small arteries and arterioles showed marked arterial and arteriolar fibrointimal thickening with partial luminal occlusion. These changes led to catastrophic cor pulmonale leading to patient's death.

Publications:

Ranjit K. Dhelaria, MD, Amal Fadaili, MD, Carlos Acevado, MD, Giovanna Crisi, MD.

Micro Tumor Embolization Leading to Cor Pulmonale: An Extremely Rare Complication of Ovarian Cancer

Southern Medical Journal; Publication number SMJ202293.

Left Ventricular End Diastolic Pressure Does Not Predict Contrast Induced Nephropathy

Fadi Saab, MD; Srikanth Penumetsa, MD; Gregory Valania, DO;

James Cook, MD; Ashequl Islam, MD; Amir Lotfi, MD;

Gregory Giugliano, MD; Marc Schweiger, MD

BACKGROUND: Contrast induced nephropathy (CIN) may account for up to 10% of hospital acquired acute renal failure and can lead to prolonged hospital stay and worse outcomes. Several risk factors for CIN have been identified, but studies examining the relationship between left ventricular end diastolic pressure (LVEDP) and CIN are lacking. We studied LVEDP as a surrogate for volume status during cardiac catheterization and its effect on CIN.

METHODS: We retrospectively analyzed data from 1397 patients undergoing coronary angiography who were hospitalized between 2007 and 2008. CIN was defined as a > 25% or > 0.5 mg/dl increase in serum creatinine above baseline during the hospital stay following contrast administration. Multivariable logistic regression modeling was performed to determine the predictors of CIN after adjusting for age, gender, congestive heart failure, use of intra aortic balloon pumps (IABP), creatinine, diabetes and contrast volume. LVEDP was divided into terciles (<12 mmHg, 12-20 mmHg, >20 mmHg) and added to the model.

RESULTS: The mean age of patients was 62 +/- 12 years and 30% of patients were women. CIN was identified in 160 patients (11.45%). There was no difference between patients with low ejection fraction (<40%) and normal ejection fraction. The predictors of CIN were age, female gender and the use of IABP (Table). LVEDP was not a predictor of CIN.

CONCLUSION: LVEDP was not a predictor of CIN suggesting that the use of LVEDP as a surrogate for volume status may not be accurate. The finding of female gender as a strong predictor of CIN requires further evaluation.

	Odds ratio	P value	95% confidence interval
Age (>75 years)	1.95	0.002	1.29-2.97
Female gender	1.74	0.003	1.21-2.52
IABP	4.03	0.006	1.49-10.84
LVEDP	1.16	0.154	0.94-1.44

Poster Presentation:

SCAI meeting, San Diego, CA, May 2010.

HIV Testing in Emergency Department: A Survey of ED Providers

Anneta Golubchik, MD; Daniel Skiest, MD; Michael Lemanski, MD

OBJECTIVES: The optimal approach to testing for HIV in the ED is not known and the attitudes of ED physicians is not known. We conducted a survey to analyze ED staff attitudes regarding rapid HIV testing in the ED of a large community, teaching hospital.

STUDY DESIGN: Prior to the start of a rapid HIV testing program in the ED, a brief anonymous, electronic survey (using Survey Monkey software) was emailed to ED physicians and midlevel providers to assess knowledge and attitudes regarding HIV testing in the ED.

RESULTS: Thirty-eight of 71 (54%) providers completed the survey: 22 physicians, 12 residents, and 4 physician's assistants. 53% of respondents were not aware of recent CDC HIV testing recommendations. Ten (26%) respondents thought that it was "always" important to know the HIV status of their patients and 28 (74%) considered it to be "sometimes" important. Thirty-six respondents (95%) were in favor of offering diagnostic HIV testing in the ED (chief complaint HIV related). Twenty-one respondents (55%) supported offering HIV screening in the ED (chief complaint not HIV related). Among ED providers not in favor of HIV screening, the main reasons cited were: "too many competing priorities", "takes too much time/effort", "concerned about confidentiality", and "not part of ED mission". Of note, all respondents whose main concerns were related to competing priorities or time/effort were in favor of HIV screening if the counseling and testing were performed by a dedicated, HIV counselor, rather than an ED provider (parallel track testing).

CONCLUSIONS: Most ED physicians surveyed were not aware of recent CDC HIV testing recommendations. While there was near universal support for diagnostic testing, fewer clinicians favored HIV screening in the ED. Parallel track testing may alleviate the concerns of ED health care providers.

Poster Presentation:

Infectious Disease Society of America, Philadelphia, PA, October 2009.

Quality of Care for Hispanic Patients Hospitalized with Heart Failure

Jaime Hernandez-Montfort, MD; Mara Slawsky, MD;
Michael Rothberg, MD; Jane Garb

OBJECTIVES: Compare the quality of care received by patients of Hispanic and non-Hispanic white ethnicity at an academic medical center serving a large, predominantly Puerto Rican Hispanic population. We hypothesized that due to language and cultural barriers, Hispanic patients would receive a lower quality of care.

METHODS: We performed a retrospective cohort of all patients aged > 18 years admitted to a large academic medical center in Massachusetts between 2005 and 2008 with an ICD-9-CM Principal Diagnosis Code for heart failure. We compared Hispanics and non-Hispanic whites based on four Joint Commission core measure sets: Discharge instructions, evaluation of left ventricular systolic (LVS) function, angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) for LVS dysfunction, adult smoking cessation/advice counseling. Data collection and inclusion/exclusion criterion for each specific core measure set was based on the Specifications Manual for National Hospital Inpatient Quality Measures.

RESULTS: We identified 2,154 patients who met our inclusion criteria of which 265 were Hispanic. Hispanic and non-Hispanic white patients shared similar demographic characteristics including female sex (54% vs. 48%, $p=0.07$), active smoking status (15% vs. 13%, $p=0.32$), mean length of stay (4 vs. 5 days, $p=0.06$) and LVEF < 40% (46% vs. 48%, $p=0.5$). Overall performance of heart failure quality measures was high, and there were no statistical differences between Hispanic and white patients for discharge instructions (95% vs. 97%, $p=0.2$), evaluation of LVS function (67% vs. 72%, $p=0.15$), ACEI or ARB for LVS dysfunction (97% vs. 94% $p=0.07$), adult smoking cessation/advice counseling (97% vs. 97% $p=0.9$) or overall perfect care (55% vs. 54% $p=0.7$).

CONCLUSIONS: No significant differences were detected between Hispanics and non-Hispanic whites on the application of performance measurements for hospitalized patients with heart failure. Further research is necessary to determine whether equal application of performance measurements between two different ethnic/racial groups translates into similar clinical outcomes.

Publication:

Manuscript in process.

Using ABIM Performance Improvement Modules to Improve Care Set Utilization, Quality-Care Indicators and Enhance Resident Education in Quality Improvement

Jaime Hernandez-Montfort, MD; Mihaela Stefan, MD;
Amit Bhargava, MD; Raquel Belforti, MD; Mark Jankowske, MD;
Gretchen Coady, MD; Michael Kelly, MD; Melvin Ooi, MD; Fernando
Madero-Gorostieta, MD; Adrienne Seiler, MD; Mayu Sekiguchi, MD;
Janice Fitzgerald, RN; Surinder Yadav, MD

OBJECTIVE: To examine the effect of a resident-driven quality improvement (QI) initiative to increase the use of care sets for heart failure (HF) and pneumonia. We hypothesized that our intervention will increase the rate of care set usage and secondarily improve the rates of condition-specific composite quality score.

METHODS: A QI group comprised of residents, hospitalists and representatives from the Division of Health Care Quality was formed to complete the American Board of Internal Medicine (ABIM) Performance Improvement Modules (PIMs) for HF and pneumonia.

We used data collected by the Division of Health Care Quality, which reflects the rate of care set utilization and the HF and pneumonia composite quality scores from October 2008 to October 2009.

In order to increase the utilization of CPOE Care Sets we developed a multifaceted educational program for healthcare care providers. We had monthly noon conferences for the residents and hospitalists, where we presented the evidence behind the orders in the care sets, discussed the barriers to utilization and conducted a survey to determine attitudes towards care set utilization. Using PIMs data, the group performed multiple small tests of change by the Plan-Do-Study-Act cycle to increase care set usage.

RESULTS: HF CPOE Care Sets usage increased from 30% to 58% and HF composite score for same period also increased from 93% to 98.2%. For Pneumonia, the care set utilization improved from 50% to 65% and the composite score from 81% to 88%.

CONCLUSIONS: Engaging residents in QI projects not only improved their knowledge of QI initiatives, but also directly impacted BMC CPOE care sets utilization and the hospital quality scores for HF and Pneumonia. Quality improvement education needs to be a formalized part of residents' education.

Oral Presentations:

Society of Hospital Medicine's Annual Meeting, Washington, DC, April 8-11, 2010.

Publications: Manuscript in process.

Atypical Hip Pain in a Female Runner: A Case Report

Julio Martinez-Silvestrini, MD; **Katrina Lewis, MD**

OBJECTIVE: To discuss a novel approach to an unusual hip pain presentation in a runner, in which conventional modalities of treatment had failed.

To discuss an unusual hip pain presentation in a runner, in which conventional modalities of treatment had failed and in which a novel approach provided significant relief and function recovery.

STUDY DESIGN: A patient atypical hip pain presentation is reviewed in terms of her history, clinical findings, background of other failed treatments and complications, and the subsequent rapid and successful response to targeted therapy with ultrasound-guided peripheral nerve injection with a combination of triamcinolone and bupivacaine local anesthetic.

RESULTS: Pain score 0/10, full return to pre-injury level of physical activity and sport participation.

CONCLUSIONS: This is an unusual case of localized neuropathic hip pain in a very active runner which could have been due to a medial superior cluneal nerve, ilioinguinal, iliocostal or other superficial iliac crest nerve entrapment neuropathy. Blind therapies with trigger point injections and physical therapy were unhelpful. It illustrates that in patients who participate in highly physically demanding sports that one should always consider possible nerve injury in the etiology of pain complaints that appear more discrete and refractory to conventional treatments. Hip pain problems have usually been always considered to be alignment/tracking or overuse issues in runners by sports medicine specialists. If anatomically one is considering a particular nerve relating to the location of the pain, ultrasound-guided targeted nerve therapy can be both diagnostic and therapeutic.

Presentation:

American Academy of Physical Medicine and Rehabilitation 70th Annual Assembly, Austin Tx, October 2009.

Publication:

Martinez-Silvestrini, JA. Lewis, K. Atypical Hip Pain in a female runner: A Case Report. PM&R 2009; 1(9S):S153.

Changing Physical Activity Behavior Using Problem-Solving Skills and Continuous Glucose Feedback in Women with Type 2 Diabetes

Nancy Allen, PhD, ANP-BC; Robin Whittemore, PhD, APRN;
Gail Melkus, EdD, C-NP, FAAN

OBJECTIVES: Physical activity (PA) is a cornerstone of diabetes treatment, yet 60% of women with type 2 diabetes (T2D) don't participate in regular PA. The goal of this pilot study was to test acceptability and efficacy of a self-management intervention for women with T2D using technology and problem-solving vs. technology and education (ed.).

STUDY DESIGN: This 12 week study used a pretest-posttest experimental design to explore efficacy of a self-management intervention derived from Social Cognitive Theory to provide women (N=29) with counseling using continuous glucose monitoring (CGM) and PA related problem-solving skills compared to women receiving only CGM counseling and general ed. Both groups were counseled for 90 min. with CGM feedback to depict the glucose-lowering effects of PA on glucose levels, PA ed., goal setting, and a PA prescription. After 2 weeks, the intervention group received a 90 min. session focused on problems implementing PA prescription, such as communication skills, motivational strategies, and/or time-management skills; the control group received 90 minutes of general diabetes ed.

RESULTS: Of 29 women, 82% were White, 17% Black and 17% Hispanic. Majority aged 52 ± 7 yrs. had poorly controlled T2D (HbA1c $8.6\% \pm 1.3$). Both groups had high attendance (100%) and low attrition (7%). CGM plus PA problem-solving group were more satisfied than CGM plus ed. participants ($p=0.06$). CGM plus PA problem-solving group had a significantly greater problem-solving skills than CGM plus ed. (pre to post intervention $p=0.01$) with a moderate effect size (0.51). CGM plus PA problem-solving had a trend towards more moderate activity minutes ($p=0.11$) small-moderate effect size (0.38), dietary self-care activity ($p=0.13$) small-moderate effect size (0.34) than CGM plus ed. pre to post intervention.

CONCLUSION: Results suggest that CGM plus PA problem-solving intervention is feasible and acceptable to women with T2D and appears to result in greater problem-solving than CGM plus ed. alone.

Poster Presentation:

22nd Annual Scientific Session for Eastern Nursing Research Society,
March 2010.

Predictors for Getting a Stress Test in Patients Hospitalized for Chest Pain

Srikanth Penumetsa, MD; Manmeet Singh, MD;

William Hiser, MD; Michael Rothberg, MD

BACKGROUND: Chest pain is a common cause of hospital admission. There is wide variation in current management of these patients and little is known about predictors for getting a stress test.

METHODS: A retrospective database review was conducted of all patients \geq 21 years of age admitted to Baystate Medical Center between 1/1/07 and 12/31/08 with an admitting diagnosis of chest pain. The dependant variable of interest was stress test performed (yes vs. no). Predictors studied include patient demographics, co-morbidities and attending specialty (cardiologist, hospitalist, or PCP). In addition, a random sample of 8% of admission charts was examined for documentation of pre-test probability of significant coronary disease. A multivariate logistic model was built to predict stress testing as a function of the above variables

RESULTS: A total of 2081 admissions met inclusion criteria. The mean age was 58 years and 54% were female. Patients were admitted based on their PCP affiliation to hospital (63%), cardiologists (21%), PCP (11%) or the medical teaching service (5%).

Stress testing was performed on 1473 patients (71%). Most frequently ordered test was nuclear exercise test. Significant variability in ordering stress test was observed according to medical specialty ($P < 0.0001$), with the highest rates observed for PCPs (79%) and hospitalists (76%), and lower rates observed for medical resident service (53%) and cardiologists (56%). In the multivariate analysis the following patient variables were independently associated with getting a stress test: Age $<$ 70 years (OR 2.0), uncomplicated hypertension (OR 1.2) and fluid balance complications (OR 0.3). Compared to cardiologists, hospitalists were 2.7 times and PCPs 3.3 times as likely to order a stress test. Review of a random sample of charts revealed that only 22% (154/2081) of patients had a pretest probability documented by the admitting physician. Receipt of a stress test was not associated with the documented pretest probability

CONCLUSION: Among patients hospitalized for chest pain, admitting physician specialty is a strong determinant of stress testing. Pretest probability of coronary artery disease is rarely documented and does not appear to enter into decision making around stress testing.

Oral Presentation: SGIM regional conference (New England), April 2010.

Poster Presentation: SGIM National Conference, April 2010.

Are Inpatients More Satisfied with Hospitalist or Primary Care Physicians?

Adrienne Seiler, MD; Michael Rothberg, MD; Paul Visintainer, PhD;
Richard Brzostek; Michael Ehresman; Evan Benjamin, MD

OBJECTIVE: To determine the effect hospitalists have had on patient satisfaction.

METHODS: Baystate and PRC, Inc. have conducted patient satisfaction telephone interviews of discharged medicine inpatients. We compared responses of patients cared for by hospitalists to those cared for by PCPs. Patient information collected included age, gender, admission year, education level, language, illness severity, ER admission status and attending physician type (Hospitalist vs. PCP). Our primary outcome was patient reported satisfaction with physician care quality measured on a 5 point scale.

Secondary outcomes included patient satisfaction ratings of physician behavior, pain management, and communication. Logistic regression analysis controlled for sex, marital status, illness severity, age group, ethnicity, LOS, and ER admission.

RESULTS: Our sample included 8295 patients (4219 Hospitalist, 4076 PCP) interviewed between 2003 and 2009. Patients cared for by Hospitalists were similar to those cared for by PCPs regarding: age (64 ± 16 vs. 64 ± 17 , $p=.87$), % male (46 vs. 45, $p=.10$), % married (49 vs. 49, $p=.99$), % Caucasian (84 vs. 85, $p=.15$), % English speaking at home (94 vs. 93, $p=.12$), % discharged home (87 vs. 90, $p=.19$), and mean perceived health score (2.9 ± 1.2 vs. 3.0 ± 1.2 , $p=.07$), but had significantly lower % with some college education (43 vs. 50, $p=.03$), higher % ER admissions (93 vs. 83, $p<.001$), longer average LOS (4.3 ± 4.3 vs. 3.9 ± 3.7 , $p<.001$) and higher average illness severity score (2.2 ± 0.8 vs. 2.0 ± 0.8 , $p<.001$). After multivariable adjustment, patient reported satisfaction with physician care quality was similar for Hospitalists and PCPs (4.2 vs. 4.3) but due to the large sample size was statistically significant ($p=.003$). Likewise, similar proportions of Hospitalist and PCP patients rated their physicians in the highest satisfaction category (80% Hospitalist vs. 81% PCP, $p=.05$) and lowest satisfaction category (5% Hospitalist vs. 4% PCP, $p=.007$).

CONCLUSION: Patients appear similarly satisfied with physician care provided by hospitalists and primary care physicians.

Poster Presentation:

SGIM National Conference, April 2010.

Cultural Difference in the Self Perception of Obesity and Associated Cardiovascular Effects

Senthil Sivalingam, MD; Javed Ashraf, MD; Neelima Vallurupalli, MD;
James Cook, MD; Michael Rothberg, MD

BACKGROUND: Obesity is an epidemic in the United States and other Western countries. Obesity related complication including cardiovascular risks have a huge economic impact on the U.S. health care system. The self perception of being obese and awareness of related cardiovascular risks may affect attitudes towards losing weight and seeking medical attention. The objective of this study was to compare the individual perceptions of being obese and awareness of the relationship to cardiovascular disease and mortality among patients of three major ethnic groups.

STUDY DESIGN: We surveyed adult patients at four medical clinics to ensure representation from various ethnic and socioeconomic groups. The 30 question instrument included demographics, height and weight as well as perceptions and attitudes regarding obesity and weight loss. Data were analyzed with mean \pm SD or proportions where appropriate and logistic regression used to identify variables associated with perceived obesity ($p < 0.05$ was considered significant).

RESULTS: A total of 1006 patients completed the survey, of which 64% were female. The average age was 47 ± 15 years with 39% white, 38% Hispanic, and 23 % Afro-Americans. The mean body mass index (BMI) was 31 and 50% of the population sampled was obese (BMI >30): 58% of African- Americans, 53% of Hispanics and 40% of white patients. The perception of obesity varied significantly among obese people in the three groups (88% of white, 68% of Afro-American and 63% of Hispanic, $p < 0.001$), which remained significant after adjustment for age, employment status and education level. There were also significant differences in the awareness of cardiovascular risks and increased mortality associated with obesity among three groups. The majority of patients who perceived themselves as obese would like to lose weight but only half of them reported receiving advice from their healthcare provider.

CONCLUSION: Obesity is prevalent among medical patients. The perception of being obese and awareness of related cardiovascular risk and mortality varies significantly among ethnic groups, being least recognized by the Hispanics. Discussion with patients during clinic visits may help to improve self-recognition of obesity and promote weight loss.

Poster Presentation:

The Obesity Society's 2009 Annual Scientific Meeting, Washington DC, October 2009.

Access to Health Care in Adults Evaluated for Chronic Kidney Disease: Findings From The Kidney Early Evaluation Program

Varun Agrawal, MD; Bernard Jaar, MD; Laura Platinga, ScM; Jiuming Ye, MD; Peter McCullough, MD

Difficulty in access to health care can contribute to suboptimal blood pressure and poor health outcomes; however, little is known about such barriers in chronic kidney disease (CKD) care. We assessed access to health care by CKD status among participants of the Kidney Early Evaluation Program, a nationwide health screening program of adults at high risk for CKD from 2000-2007 (n=76,942). Participants responded to a questionnaire survey and had laboratory testing, with CKD defined as estimated glomerular filtration rate <60ml/min/1.73m² or random spot urine albumin:creatinine ratio >30mg/g. There were 20,094 (26.1%) subjects with CKD. CKD subjects were more likely to be older, female, Caucasian and had lower educational status (less than high school) and greater burden of cardiovascular disease as compared to subjects without CKD. Significant differences (p<0.0001) by CKD status existed in health care utilization i.e. last physician visit within 1 year (91.9% vs 84.9% in CKD and non-CKD subjects respectively), difficulty in getting medical care (19.0% vs. 21.5%), presence of health insurance (85.3% vs. 80.1%), having a generalist source of care (81.9% vs 78.8%), and having insurance benefit to pay for medications (78.4% vs 75.5%). Among subjects with health insurance (n=60,437), the insurance type was public in 38.3% and private in 47.4%. Multivariable analysis with adjustment for age, race, and cardiovascular disease revealed that presence of CKD was associated only with low educational status (odds ratio, OR=1.19, p=0.0181) and presence of public health insurance as compared to private insurance (OR=1.50, p<0.0001). Despite CKD subjects reporting no greater perceived difficulty in health care access as compared to subjects without CKD, low educational status and public health insurance were associated with CKD. In adults at risk for CKD, patient factors (socioeconomic status, awareness, adherence to treatment), insurance payer status and quality of physician services (availability, appropriate knowledge and attitudes) may be more important contributors to the quality of CKD care than utilization of health care delivery system.

Poster Presentation:

National Kidney Foundation, April 2010.

Risk Factors for Over- and Undertreatment of Hyperlipidemia in the Outpatient Setting

Ashish Verma, MD; Paul Visintainer, MD; **Siddarth Wartak, MD;**
Mohamed Elarbi, MD; Ejaz Khalid, MD; Michael Rothberg, MD

National guidelines recommend lipid-lowering therapy for patients with coronary heart disease (CHD), its equivalent (diabetes, peripheral arterial disease, or cerebrovascular disease) and those with over 20% ten-year risk of CHD. Quality-of-care studies demonstrate that high-risk patients are undertreated. We proposed to study the extent to which low-risk patients received unnecessary treatment and risk factors for over- and undertreatment. We undertook a retrospective cross-sectional study of 679 patients aged 35-80 years at our academic ambulatory clinic. Exclusion criteria were incomplete data, contraindication to statins, and treatment for hypertriglyceridemia. For each subject, we recorded age, gender, race/ethnicity, language, smoking history, total, HDL and LDL cholesterol, systolic blood pressure, antihypertensive therapy, CHD or equivalent, preventive health care (flu vaccination, mammography or prostate specific antigen) and physician's level of training. Subjects' 10-year cardiovascular risk was assessed using the Framingham equation. Patients were considered overtreated if they received statins with a 10-year risk <10% and undertreated if they received no statin with a 10-year risk >20% or had CHD or equivalent. Predictors of under- and overtreatment were assessed using multivariable logistic regression. Of 679 subjects included, 52% were female, 52% white, 32% smokers, 31% diabetic and 61% hypertensive. Overall, 37% took statins. Of 317 low-risk patients, 12% were overtreated while 20% of the 211 high-risk patients were undertreated. Diabetics and those with over 20% ten-year risk constituted 57% and 37% respectively of the undertreated patients. In multivariable analysis, overtreatment was associated with higher LDL (OR 4.1 per 30 mg/dl, CI 2.4, 6.9), more cardiac risk factors (OR 4.6 per risk factor, CI 2.3, 9.4), and preventive health care (OR 4.37, CI 1.31, 22.8). Undertreatment was associated with younger age (OR 1.03, CI 1.0, 1.05), lower LDL (OR 3.0, CI 2.1, 4.3) and fewer risk factors (OR 1.7, CI 1.15, 2.5). We conclude that both over- and undertreatment are common. Physicians' decisions appear to reflect LDL values and risk factors rather than true cardiovascular risk.

Poster Presentation:

American Heart Association Joint Conference – 50th Cardiovascular Disease Epidemiology and Prevention and Nutrition, Physical Activity and Metabolism Conference, San Francisco, CA, March 2010.

Grafts as a Predictor of Peri-Operative Atrial Fibrillation In Patients Undergoing Coronary Artery Bypass Grafting: A Single Center Retrospective Analysis

Siddarth Wartak, MD; Prabhdeep Sethi, MD; Jane Garb

BACKGROUND: Atrial fibrillation (A Fib) and Atrial Flutter are the two most common types of dysarrhythmia in patients undergoing coronary artery bypass surgery (CABG) and is associated with increased morbidity and mortality. Studies have shown the presence of atrial fibrillation significantly alter flow in saphenous vein and arterial grafts. We sought to investigate if there was an association between the type and quantity of grafts and postoperative A Fib.

METHODS: We queried the Society of Thoracic Surgery (STS) National Database for CABG operations, with or without valve procedure, performed at our institution between January 2002 and July 2007. Patient clinical, demographic and operative risk factors in the development of perioperative A Fib (within 30 days) were examined using multiple logistic regression. We also examined the association of postoperative A Fib major adverse cardiac outcomes (MACE), using chi-square analysis.

RESULTS: A total of 3534 patients received CABG; 259 (7.5%) of these received concurrent valve replacement or repair. The incidence of postoperative A Fib was 34.4%. Factors that were significantly associated with increased risk of A Fib included a history of peripheral vascular disease ($p < 0.01$), hypertension ($p < 0.05$), increased age or weight (both $p < 0.001$). Factors that demonstrated a lower association were the use of arterial grafts ($p < 0.05$); diabetes ($p < 0.05$); and Hispanic ethnicity ($p < 0.001$). Use of saphenous vein grafts was not related ($p = 0.30$) to an increase association of postoperative A Fib. Postoperative A Fib was significantly associated with perioperative death ($p < 0.025$) and readmission within 30 days ($p < 0.05$) but not postoperative stroke.

CONCLUSIONS: The use of arterial grafts in patients undergoing CABG in our cohort was a negative predictor for postoperative atrial fibrillation, however, saphenous vein grafts did not have a predictive value. Patients with postoperative atrial fibrillation have an increase mortality and morbidity as previous studies have demonstrated. Confirmation of these results require further investigation.

Poster Presentation:

Society of Cardiovascular Angiography and Intervention 33rd Annual Scientific Session, San Diego, CA, May 5-8, 2010.

Predictors for Getting a Stress Test in Patients Hospitalized for Chest Pain

Srikanth Penumetsa, MD; Manmeet Singh, MD

BACKGROUND: Chest pain is one of the most common causes of hospital admission. Evidence suggests that stress testing should not be performed in patients with a low pre-test probability for coronary artery disease. However, there is wide variation in current practice and little is known about predictors for getting a stress test. We examined hospital admission records to quantify patient- and physician-specific factors that are associated with patients getting a stress test as a part of work up for chest pain. We hypothesized that cardiologists would be less likely than hospitalists to order in-patient stress tests.

METHODS: A retrospective database review was conducted of all patients ≥ 21 years of age admitted to Baystate Medical Center between 1/1/07 and 12/31/08 with an admitting diagnosis of chest pain (ICD-9 codes 786.50, 786.51, 786.59 and 413.9). When patients had more than 1 admission during the study period, only the first admission was counted. The dependant variable of interest was stress test performed (yes vs. no). Predictors studied include patient demographics, co-morbidities (e.g. diabetes, hypertension and obesity) and attending specialty (cardiologist, hospitalist, or primary care physician (PCP)). In addition, a random sample of 8% of admission charts was examined for documentation of pre-test probability of significant coronary disease. A multivariate logistic model was built to predict stress testing as a function of demographic predictors, co-morbidities, and physician specialty.

RESULTS: A total of 2337 admissions met inclusion criteria. The mean patient age was 58 years, 54% were female and 77% were white. Patients were admitted based on their PCP affiliation to hospitalists (62%), cardiologists (21%), PCP (10%) or the medical teaching service (6%).

Stress testing was performed on 1602 patients (68%, 95% CI 67%-70%). Stress test type was available for 1437 patients and the most frequently ordered test was nuclear exercise test. Significant variability in ordering stress test was observed according to medical specialty ($P < 0.0001$), with the highest rates observed for PCPs (79%) and hospitalists (76%), and lower rates observed for medical resident service (53%) and cardiologists (56%). In the multivariate analysis the following patient variables were independently associated with getting a stress test: Age < 70 years (OR 2.0, 95% CI 1.5-2.5), uncomplicated hypertension (OR 1.2, 95% CI 1.0-1.5) and fluid balance complications (OR 0.3, 95% CI 0.1-0.9). Compared to cardiologists, hospitalists were 2.7 times (95% CI 2.2-3.5) and PCPs 3.3 times (95% CI 2.3-4.9) as likely to order a stress test. The medical teaching service was not more likely than cardiologists to order a stress test (OR 0.9,

95% CI 0.6-1.3, NS). Review of a random sample of charts revealed that only 21% (33/160) of patients had a pretest probability documented by the admitting physician. Receipt of a stress test was not associated with the documented pretest probability (Pearson's $R=0.02$, NS).

DISCUSSION:

Among patients hospitalized for chest pain, admitting physician specialty is a stronger determinant of stress testing than any patient-level characteristic. Pretest probability of coronary artery disease is rarely documented and does not appear to enter into decision making around stress testing.

Oral Presentation:

SGIM Regional Meeting, Providence, RI, April 2, 2010.

Poster Presentation:

SGIM National Meeting, Minneapolis, MN, April 28-May 1, 2010.

Patients' Knowledge about Coronary Heart Disease: A Cross-Sectional Analysis

Siddarth Wartak, MD; Jennifer Friderici, Amir Lotfi, MD;
Michael Rothberg, MD; **Syed Hussain, MD; Ashish Verma, MD;**
Amit Bhargava, MD; Ashita Talsania, MD;
Reva Kleppel, MSW, MPH; Deborah Naglieri-Prescor, PhD

BACKGROUND: Coronary Heart Disease (CHD) is the leading cause of death in most countries. The Interheart Study identified 6 risk factors and 3 protective factors, the modification of which could prevent 90% of myocardial infarctions. Awareness of these factors has not been studied in general patient populations. Our objectives were 1) assess the level of awareness of risk and protective factors among patients; 2) identify patient characteristics associated with risk factor knowledge; and 3) evaluate knowledge of specific risk factors among patients with that risk factor.

METHODS: A cross-sectional, anonymous survey was administered to 2200 patients aged \geq 40 years attending 4 general medicine practices and a cardiology clinic in Western Massachusetts. The paper and pencil survey consisted of the following sections: demographics, comorbidities associated with CHD, health maintenance behavior, and knowledge of 6 risk factors (smoking, obesity, hypercholesterolemia, hypertension, diabetes, and stress) and 3 protective factors (fruit and vegetable consumption, exercise, and moderate alcohol intake). The options for each proposed risk factor and protective factor were "increases risk," "decreases risk," and "no effect on risk." Responses were dichotomized as "correct" vs. "incorrect." A multivariable model was developed to assess high knowledge scores.

RESULTS: A total of 1702 subjects completed surveys (response rate 77%). The sample was 62% female; 56% white, 28% Hispanic and 13% African-American; with a median age of 55 years (interquartile range 45-65 years). Most subjects had \geq 1 risk factor for CHD (83%, 95% CI 81%-85%).

The average subject identified 5 of the 6 risk factors. Recognition rates were highest for obesity (89%, 95% CI 88%-91%) and lowest for diabetes (71%, 95% CI 69%-73%). Recognition rates were much lower for protective factors, with the average respondent correctly identifying only 1 of 3. Sixty-seven percent (95% CI 65%-70%) of subjects correctly identified fruit/vegetable consumption, and 66% (95% CI 64%-68%) correctly identified exercise, as protective factors. Only 6% of subjects (95% CI 5%-7%) recognized moderate alcohol consumption as a protective factor, and 54% (95% CI 51%-56%) answered that alcohol increases risk of CHD.

The ability to identify at least 4 of 6 risk factors was positively associated with graduating high school (OR 2.6, 95% CI 1.3-5.0) and white race (OR 2.1, 95% CI 1.1-4.2). The ability to identify at least 1 of 3 protective factors was positively associated with graduating high school (OR 2.3, 95% CI

1.2-4.2), white race (OR 2.5, 95% CI 1.4-4.3), and clinic in an affluent area (OR 2.2, 95% CI 1.3-3.9). A personal history of CHD was not associated with higher knowledge scores.

Diabetics were more likely than non-diabetics to identify diabetes as a risk factor (80% vs. 68%, $P < 0.0001$) and patients with high cholesterol were similarly more likely to identify cholesterol as a risk factor (89% vs. 83%, $P = 0.0007$).

DISCUSSION: Patients, especially those with limited education and low socioeconomic status, should be educated about the benefits of exercise, fruit/vegetable consumption, and moderate alcohol consumption. Although patients with diabetes are more likely than those without diabetes to recognize their risk, 1 in 5 is not aware that diabetes is a risk factor.

Oral Presentation:

SGIM Regional Meeting, Providence, RI, April 2, 2010.

Poster Presentation:

SGIM National Meeting, Minneapolis, MN, April 28-May 1, 2010.

A Rare Etiology for Pancreatitis in an Adult Nursing Home Patient

Amit Bhargava, MD; Curtis Andrews, DO; Raquel Belforti, DO

LEARNING OBJECTIVES: Discuss the presentation of a rare form of iatrogenic pancreatitis. We will also highlight the importance of prompt clinical diagnosis and discuss current diagnostic modalities and management.

CASE PRESENTATION: A 55 year-old male nursing home resident with a past history of type 2 diabetes mellitus, alcohol abuse, and stroke resulting in expressive aphasia, debility, and long-term PEG tube placement, was admitted for evaluation of abdominal pain and non-bilious vomiting with increased restlessness and agitation for one day. Upon admission, vital signs showed tachycardia with pulse 117, BP 154/98, RR 18, and O₂ saturations of 99% on 2L via a nasal cannula. On physical examination the patient was a nonverbal, anicteric, frail gentleman clutching his abdomen. The abdominal exam initially revealed a benign abdomen with normoactive bowel sounds. The PEG tube site was unremarkable. Cardiovascular, respiratory and musculoskeletal exams were also unremarkable. Pertinent laboratory findings included a leukocyte count of 19.6 k/mm³, ALT of 11 units/L, an AST of 17 units/L, an Alk Phos of 63 units/L and total bilirubin of 0.3 mg/dL. Serum lipase was elevated at 1745 units/L and amylase at 1454 units/L. Lipid profile was within normal parameters. Given the elevation of pancreatic enzymes and subjective abdominal pain, the patient was diagnosed with acute pancreatitis of unknown etiology and his tube feedings were held. On hospital day 3 the patient's clinical picture improved and his lipase decreased to 88units/L, thus his tube feeds were restarted. Within three days he was again increasingly agitated and his lipase was found to be 1300 units/L. The patient's feeds were again held, further investigation was performed, yielding no gallstones, no recent ETOH use, normal lipid profile, and no recent medication changes. During the patient's hospital stay, it was noticed that there was an association between the elevation of pancreatic enzymes and tube feedings. A CT abdomen with IV contrast was performed and showed migration of the gastric tube out of the stomach, through the pyloric sphincter, into the duodenum leading to obstruction of the pancreatic ducts. After replacement of the PEG tube, the lipase levels quickly normalized, pain was relieved, and feedings were well tolerated.

DISCUSSION:

Acute obstructive pancreatitis secondary to PEG tube migration is a known, but very rare complication of PEG tube placement. More common complications include wound infection, peritonitis, pneumoperitoneum, aspiration, and inadvertent removal of the tube. Tube migration most commonly has been seen when using devices without external bumpers, foley catheters, and not using radiologic confirmation after tube placement.

With any presentation of acute pancreatitis or cholangitis in a patient who has a gastric tube in place, prompt imaging should be done to verify correct tube placement and rule out migration. Both plain film radiography or CT scan are adequate for locating the distal end of the tube. Prompt imaging in this case would have prevented prolonged hospitalization. With removal of the obstruction, the pancreatic enzymes normalize within days and refeeding can then be restarted with excellent prognosis.

Oral Presentation:

SGIM Regional Meeting, Providence, RI, April 2010.

A Fulminant Complication of Advanced Lymphoma

Jaime Herenandez-Montfort, MD; Chirag Vaidya, MD

LEARNING OBJECTIVE: Expand the differential diagnosis of metabolic acidosis and describe the clinical course of type B lactic acidosis in the setting of hematological malignancy.

CASE PRESENTATION: 27 year-old gentleman with history of hepatitis C virus, HIV on HAART (efavirenz, emtricitabine and tenofovir) and large diffuse B-cell stage IV lymphoma with recent salvage RICE protocol chemotherapy 1 week prior to admission, presented to our emergency department with a 5 day history of abdominal pain, general malaise and productive yellow sputum. On the day of admission his temperature was 37 C, pulse of 112 beats per minute, respiratory rate 25 breaths per minute with oxygen saturation of 100% on room air and blood pressure of 110/40 mm Hg. Physical exam was relevant for tachypnea with bilateral clear lungs fields, hepatosplenomegaly and diffuse abdominal superficial tenderness without evident fluid shift. His WBC count was $57.9 \times 10^3/\mu\text{L}$ with 10% blasts, Hb 9.8 g/dL, HCT 28, platelet count $30 \times 10^3/\mu\text{L}$, albumin 3.7 g/dL, INR 1.3 and serum creatinine was 0.6 mg/d L. Arterial lactate level was 10 mEq/L. Arterial blood gas showed pH 7.28, pCO₂ 32 mm Hg, PO₂ 68 mm Hg, bicarbonate level of 14 mEq/L and anion gap of 24. Chest X-ray showed a right small pleural effusion and abdominal CT with contrast showed an abnormal loop of small bowel. Current HIV medications were held and intravenous thiamine, vancomycin and piperacillin-tazobactam were initiated. Despite initial management, arterial lactate level was persistently elevated in a range of 9-10 mEq/L. Blood, urine and stool cultures remained negative. On hospital day 3, our patient agreed on continuing his care under comfort measures, expiring 5 days after admission.

DISCUSSION: Type B lactic acidosis (LA) is a rare and often lethal complication in the setting of hematological malignancy. The development of type B LA in the setting of hematological malignancy is an uncommon entity with several proposed pathophysiologic mechanisms like the presence of liver or kidney dysfunction as a consequence of tumor infiltration, ischemic changes or other underlying causes. Another possible explanation involves tumor cell overexpression of certain glycolytic enzymes and mitochondrial dysfunction. Thiamine deficiency and chemotherapeutic agents that compete with its transport have also been associated. Retrospective case series had only shared the presence of bulky disease or large tumor burden, which also share our case description. Thiamine repletion, chemotherapy and hemodialysis in case of renal dysfunction are current treatment options that are not proven effective particularly in chemotherapy non-responders. Consequently, further research on therapeutic options is paramount. This case shows a fulminant metabolic presentation of type B LA with concomitant advanced lymphoma requiring a high index of suspicion. In our patient important clinical clues for the diagnosis included past medical history, compensatory tachypnea without a clear underlying pulmonary source and an elevated anion gap.

PREFERENCE: No preference

Oral Presentation: SGIM Regional Meeting, Providence, RI, April 2010.

Differentiation Syndrome (DS) A Mimicker of ARDS

Ashita Talsania, MD; Aashish Samat, MD; Michael Rosen, MD

DS (formerly known all-trans retinoic acid [ATRA] syndrome) can be a life-threatening complication in up to 30% of patients with acute promyelocytic leukemia (APL) undergoing induction with ATRA. The pathogenesis of DS is not fully understood. We describe a case of DS only after two doses of ATRA. Case presentation: A 48-year-old rehabilitation specialist with history of asthma was diagnosed with APL. Initial examination was normal except for bruising over the extremities. Patient was started on Idarubicin and ATRA. The next day she developed fever (102o F), dry cough, shortness of breath and hypoxia (saturation of 91% on 5 L/min O2). CT angiogram showed mild diffuse groundglass opacities (interstitial edema) and mild bibasilar atelectasis. The patient was started on cefepime for CAPNA and dexamethasone in addition to her chemotherapy. Over the next 2 days, the patient clinically deteriorated requiring intubation and ICU care. Laboratory data showed worsening thrombocytopenia with no evidence of disseminated intravascular coagulation (DIC). Work up including blood cultures, legionella antigen, mycoplasma antigen, bronchial lavage and urine cultures was negative. At this point differential was ATRA vs. acute respiratory distress syndrome (ARDS). Consequently patient's dexamethasone was increased to 10mg q6 for ATRA syndrome. Eventually patient's condition improved allowing transfer to the regular floor.

DISCUSSION: The combination of ATRA and chemotherapy induces complete remission in 90% of patients with APL. ATRA made APL the most curable subtype of adult acute myeloid leukemia. DS represents a major toxicity of ATRA. The typical onset is 7 days (range 3–15) from treatment initiation. Resolution of DS occurs within 4 days (range 2–8 days) from dexamethasone initiation. DS is characterized by fever, dyspnea, hypotension, bone pain, respiratory distress, pulmonary infiltrates, hyperleukocytosis, pleural or pericardial effusion, congestive heart failure, renal failure and eventually multi-organ failure. Potential mechanism of the syndrome includes release of vasoactive cytokines, increased adhesion molecules on myeloid cells, and acquisition of migratory properties by leukemic cells. Due to the severity and poor prognosis of DS once the full-blown signs have been developed, early treatment is mandatory. Preemptive use of steroids at the earliest clinical manifestation of DS any time during ATRA therapy has been adopted as the standard management. Although the syndrome may occur without concomitant hyperleukocytosis, the risk is increased in patients who develop hyperleukocytosis during ATRA and suspicion should be high. Although steroid prophylaxis is controversial steroids may be used if WBC is more than $5 \times 10^9/l$ (Blood 2009; 113: 775). Conclusion: Our case illustrates how DS can mimic ARDS however it is important to distinguish one from the other as treatment with steroids helps resolution of symptoms as in our patient who predominantly had respiratory symptoms.

Poster presentation: SGIM Regional Meeting, Providence, RI, April 2010.

Arterial Compression of a Vein: May Thurner Syndrome

Ashita Talsania, MD; Aashish Samat, MD; Talal Khairi, MD

INTRODUCTION: Extensive lower extremity swelling starting at the groin should raise the possibility of severe venous obstruction. External compression of the left iliac vein should be suspected in cases of complicated DVT or in cases of unprovoked DVT. Case presentation: A 45-year-old non-smoking Caucasian woman, with no significant past history, and no family history of thrombophilia, presented with one-day of swelling in the left leg. Exam was unremarkable except for swelling of left lower extremity extending from the groin to the foot and was warm and mildly tender to touch. Venous duplex of the left leg showed extensive clot from the common femoral vein to the popliteal bifurcation, with no blood flow. Anticoagulation was initiated. Venogram showed occlusion of the common iliac vein an inch from its junction with the IVC with adequate collateral indicating subacute to chronic obstruction. Extensive thrombosis in the iliac vein was found distal to the occlusion. In view of extensive left iliofemoral thrombosis, a filter was placed in the infrarenal IVC, a stent was placed in the common iliac vein, and thrombectomy was performed. After TPA injection collateral filling was no longer present, suggesting resolution of the thrombus.

DISCUSSION: For the described patient the location of the venous occlusion, the extensive degree of thrombus, and the presence of stenosis are consistent with May-Thurner syndrome. May-Thurner syndrome is compression of the left common iliac vein due to overlying right common iliac artery leading to extensive left lower extremity DVT. Historically, it has been noted that lower extremity DVT is more common on the left than on the right. Virchow noted that the occurrence of thrombosis was five times more common on the left side and proposed compression of the left common iliac vein by the right common iliac artery as the underlying cause. May and Thurner proposed that the pulsatile right iliac artery might cause chronic injury to the left iliac vein, resulting in pathologic findings due to intimal fibrosis. They attributed these spurs to scarring from repetitive compression of the common iliac vein by pulsations of the overlying common iliac artery. This iliac vein compression syndrome, also known as May-Thurner Syndrome, is most commonly seen in women in the third to fifth decades of life. It typically presents either as a large iliofemoral deep-vein thrombosis or as chronic venous insufficiency. Invasive venography through femoral or popliteal venous access remains the gold standard for the diagnosis.

CONCLUSION: In conclusion, May-Thurner Syndrome is a less known cause of left leg venous thrombosis. Extra-venous compression of the iliac vein should be considered in a patient with an unprovoked extensive left lower extremity DVT, particularly in young and middle-aged women.

Poster Presentation: SGIM Regional Meeting, Providence, RI, April 2, 2010.

When Cellulitis is More Than a Simple Infection

Aashish Samat, MD; Ashita Talsania, MD;

Stephen Ryzewicz, MD, FACP, FASAM

CASE REPORT: 42-year old gentleman with smoking history presented with sore throat and redness of his neck. Initial ER evaluation diagnosed allergic reaction and treated him with antibiotics and prednisone. He returned with neck pain and difficulty breathing supine.

ON EXAMINATION: Obese gentleman with inflamed looking anterior neck and hoarse voice with no stridor nor trismus, edematous floor of mouth, no purulence and poor dentition. Remainder of his examination was normal. Fiber optic exam via right naris was normal except for mild edema at base of tongue. Labs: White count 16,000. CT neck showed phlegmon but no abscess formation and significant inflammation of submental region. He was started on piperacillin-tazobactam and clindamycin in view of findings suggestive of Ludwig's Angina likely secondary to poor dentition. After 3 uneventful days of treatment he developed increasing hoarseness, difficulty speaking and complained of inability to lie flat because of respiratory compromise. Examination showed increased localized swelling, redness, tenderness but no fluctuance. Pt appeared uncomfortable and was getting fatigued. Tongue looked normal but mild pointing area of purulence developed beneath the tongue. Repeat CT neck findings were consistent with advanced stage of phlegmonous change progressing towards abscess formation. Despite being on IV antibiotics, there had been progression of the infection. Incision and drainage of sublingual and submental spaces was performed. Post procedure, cough and stridor developed, requiring nasal intubation. He did well and was extubated in 2 days, and discharged on oral antibiotics with follow up with dentist.

DISCUSSION: Ludwig's Angina, although uncommon, remains a potentially serious complication of oro-dental infection. Despite a reduction in pre-antibiotic mortality rates that exceeded 50%, it remains a lethal entity because of impending airway obstruction. Streptococci, staphylococci, and bacteroides are most frequently isolated from soft-tissue culture. Effective treatment is based on early recognition of the clinical process, early and aggressive use of appropriate parenteral antibiotics and protection of airway. Untreated this condition is fatal. Surgical intervention is indicated in patients who develop localized abscess while on antibiotics or are unresponsive to medical management. As this entity is now uncommon, delay in diagnosis and management may occur which may result in serious complications. Therefore, it is imperative to recognize Ludwig's Angina as part of the differential diagnosis in a patient presenting with either an apparent allergic reaction or cellulitis of the face and neck.

Poster Presentation: SGIM Regional Meeting, Providence, RI, April 2010.

HIV Testing in the Emergency Department at Baystate Medical Center: A Pilot Program

Anneta Golubchik, MD; Daniel Skiest, MD; Michael Lemanski, MD;
Zenaida Ortega, MSW; Maileen Llavona

BACKGROUND: The CDC now recommends routine HIV screening of patients aged 13-64, when the individual accesses the health care system. For many patients, the emergency department (ED) is the only contact point with the health care system. The rapid HIV test can be done as a point of care test in the ED with the benefit of immediate initial results and rapid linkage to care. Numerous barriers to testing exist in the ED. We initiated a parallel track HIV testing program in an urban hospital ED in a high prevalence city (Springfield, MA, 0.7%).

METHODS: A multidisciplinary team (ID, ED, HIV counselor, lab, risk management) met over a one year period to plan and implement the program. A full time grant funded, health educator/counselor randomly approached non-critically ill patients in the Baystate Medical Center ED, (Springfield, MA- population ~150,000) and obtained informed consent after initial HIV counseling. Patients were tested Monday- Friday day shift. In addition, ED personnel were encouraged to refer at risk patients. Rapid HIV testing was done using OraQuick Advance (finger stick). Initial reactive results were confirmed by western blot. The HIV Health Educator was responsible for linking patients to an HIV provider. The study was IRB approved.

RESULTS: Numerous barriers to initiating the testing program were encountered, but all were successfully navigated with a team approach including an ID physician, ED physician champion, HIV educators, and ED nurse. From March 2009-March 2010, 1087 of 1971 (55%) patients consented to rapid HIV testing. Three patients had a reactive, rapid HIV test: two were new diagnoses. Both new positive rapid tests were confirmed by western blot and were successfully linked to an HIV provider. The seropositivity rate was 0.18%. Among the 704 patients who declined testing, 115 agreed to answer reasons for refusing testing. Reasons included "recently tested" (55), "not perceived at risk" (36), "too sick to get tested" (7), "do not want a finger stick" (4), "known HIV positive" (4), "not interested in study" (2). The vast majority of tested patients were randomly approached by the HIV educator; only 10 were referred by an ED clinician.

CONCLUSIONS: We successfully initiated an HIV rapid testing program in a busy ED. There was a perception among the HIV educators that the requirement for research informed consent was a barrier to testing. Despite initial skepticism, the ED personnel were supportive of the program; however, referrals for ED testing from ED clinicians were infrequent, despite ongoing education of ED staff. The HIV seropositivity rate was lower than expected. We are currently exploring reasons for the low positivity rate.

Thrombocytopenia And Centripetal Rash In An Elderly Woman

Emily Baiyee, MD; Michael Rosenblum, MD;
Maura Brennan, MD; **Loren Inigo-Santiago, MD**

Rocky Mountain Spotted Fever (RMSF) is considered one of the most virulent human infections. 5-10% of those infected die and many more require intensive care. The literature on the disease in elders is sparse but the clinical presentation is atypical and the course often more severe in this vulnerable population.

68 y/o woman from Myrtle Beach, SC, known to go for daily dog walks traveled to Springfield, MA. Two days prior to presentation she developed nausea, vomiting, low grade fever, weakness, and diarrhea and decreased appetite followed by a nonpruritic, erythematous rash which started on the wrist, arms and face. Her weakness worsened and the rash spread centrally over the rest of her body associated with confusion.

Physical exam was noteworthy for a generalized, erythematous, rash. Labs : wbc 7k/mm³, hgb 11.32Gm/dL, hct 35.5, platelets 47k/mm³, sodium 129mmol/L, CRP 43.2mg/dL and ESR 102mm/hr. Blood culture, RPR, RMSF IgG and Ehrlichia antibody obtained approximately 4-5 days after her symptoms began were all unrevealing.

The classic clinical presentation in a patient from an endemic area strongly suggested the RMSF as the culprit. Thrombocytopenia is common in RMSF (platelet count before illness 260k/mm³). Skin biopsy revealed a neutrophilic infiltrate consistent with rickettsial disease (leucocytoclastic vasculitis) although not highly specific for RMSF. The non-confirmatory IgG/IgM antibody for RMSF was felt to be a false negative because it was drawn 4-5 days after onset of illness. The patient showed marked clinical improvement on doxycycline.

Adults in their sixties have the highest incidence of RMSF with 3.1 cases per million. A steady rise has occurred since the nadir in 1998. This increase may reflect enhanced awareness of RMSF as well as a change in human-vector interactions. However, the true prevalence is likely significantly higher since there is underreporting of both fatal and nonfatal cases.

The diagnosis may be missed more frequently in geriatric patients who often present atypically. Only 3% of older adults from a series from 1981 had the classic triad of fever, rash and tick exposure. The greater morbidity/mortality is thought to result from immunosenescence and impaired lymphocyte function.

It is vital to make an early diagnosis in order to promptly initiate appropriate therapy. A thorough knowledge of both the classic presentation of RMSF as well as the atypical features often seen in older patients is crucial. Geriatricians should have a low threshold to start empirical treatment.

Poster Presentations:

American College of Physicians, MA Chapter, Waltham MA, November 2009.
American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Recurrent Diabetic Ketoacidosis in a Patient with Abnormal Uterine Bleeding

Jaime Hernandez-Montfort, MD; Raquel Belforti, DO

Caring for patient's in diabetic ketoacidosis (DKA) requires not only aggressive management, but also the search for a nidus precipitating the hyperglycemic state.

CASE PRESENTATION: A 45 year-old African American female with a past medical history of uncontrolled insulin dependent diabetes, recurrent episodes of DKA, gastroparesis, hypertension, and sickle cell trait was admitted to the hospital for a chief complaint of abdominal pain and multiple episodes of biliary vomiting for 3 days. Upon presentation the patient was found to be afebrile, tachycardic in the 120s and hypertensive 171/70. Physical examination was relevant for an alert and interactive lady with normal fascies and body habitus. The remainder of the exam was normal, without evidence of neuropathy or retinopathy. Laboratory findings included a normal white cell count, mild chronic iron deficiency anemia, potassium 4.3, bicarbonate 23, anion gap 13, beta hydroxybutyrate 0.83, and a glucose of 348. In reviewing the patient's history further, in the last year she had 8 admissions for nausea, vomiting, and abdominal pain in the setting of DKA. The patient stated that she frequently goes into DKA due to her "heavy periods." Of her 8 last admissions, there is clear documentation for 3 admissions being during the patient's menses, with no other etiology found for her DKA. In those admissions, extensive workup included non diagnostic EKGs, urine and blood cultures, chest and abdominal imaging, normal thyroid, pancreatic and liver enzymes. In addition, she had normal plasma metanephrines and cortisol studies. Her gynecologic history revealed menarche at age 12, two pregnancies leading to one miscarriage and one spontaneous vaginal delivery. Her menses was on a regular 30-day cycle up until 4 years ago, when she started noticing menorrhagia and dysmenorrhea. She has been evaluated extensively and recently diagnosed with uterine fibroids

DISCUSSION: Catamenial hyperglycemic crisis leading to DKA has been reported in 10 patients throughout the literature. Although a well known association between menstrual cycle and altered glucose control exists, the underlying mechanism remains unclear. Possible explanations include worsening glucose intolerance due to estrogen peak at the end of luteal phase; a change in quantity and quality of food intake during menses; and endometriosis. There is no evidence to prove that suppression of the ovulatory cycle will attenuate menstrual hyperglycemia. This case shows the importance of recognizing catamenial hyperglycemic crisis as a clinical entity in women of reproductive age with no other underlying identifiable causes for DKA. The hope is that with more patients identified, there may be more opportunities for research to better understand this process and find appropriate therapies.

Poster Presentation: American College of Physicians, MA Chapter, Waltham MA, November 2009.

Goodpasture's Syndrome Preceded by Upper Respiratory Illness

Suchimita Samanta, DO; Mario Aycart,
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Goodpasture's syndrome is a rare illness, with an incidence of 1:1,000,000. It is thought to be an autoimmune process, characterized by pulmonary hemorrhage, glomerulonephritis and production of anti-GBM (glomerular basement membrane) antibodies. Mechanisms by which this disease is incited are poorly understood. This case illustrates how a preceding upper respiratory illness potentially triggered the onset of Goodpasture's. This is a 45-year-old female with a history of Graves' disease and Systemic Lupus Erythematosus whose initial symptoms consisted of low-grade fever and pharyngitis. She was seen by her primary care doctor and treated for an upper respiratory infection with a 5-day course of azithromycin. Following hemoptysis, macroscopic hematuria and presented to our hospital 10 days later with symptomatic anemia. On arrival to the ED, her temperature was 97.6 F, pulse 78, respirations 20, BP 127/68, oxygen saturation 99% on room air. She appeared fatigued but was alert, awake, and able to answer questions appropriately. Head examination revealed pale conjunctiva. Cardiovascular and lung examinations were within normal limits. Abdominal exam exhibited lower quadrant tenderness bilaterally. Skin exam revealed facial malar rash. Neurological exam was intact. Initial work-up revealed severe anemia (Hgb 5.4) and acute renal failure (Cr 11.6). ANA and ASO titers were positive. She required transfusion of several units of blood. Gross hematuria with casts and progressive renal insufficiency required her to start hemodialysis. A renal biopsy showed diffuse, crescentic and necrotic glomerulonephritis with linear deposits on immunofluorescence, compatible with Goodpasture's disease. There was no evidence in the biopsy for post-streptococcal glomerulonephritis. Further labwork revealed +anti-GBM circulating antibodies. She was placed on cyclophosphamide, high-dose prednisone, and plasmapheresis was started. Six days after admission she developed moderate hemoptysis. A CT scan of her chest revealed diffuse alveolar infiltrates compatible with hemorrhage. Her pulmonary function remained stable, but her renal function did not improve. She continues on hemodialysis. Discussion/Conclusions: Goodpasture's disease is a rare illness of unknown etiology. Previous case reports have suggested a preceding viral illness. In this case, group A streptococcal infection may have been the potential trigger, as she had an acute pharyngitis and (+) ASO titers immediately preceding the illness. Early and accurate diagnosis and immediate treatment is crucial because of the potential for life-threatening pulmonary hemorrhage and renal failure. Therapy may include a combination of immunosuppressive agents, plasmapheresis, steroids and hemodialysis. In her case, the prognosis for renal recovery is very reserved, because of the need for immediate dialysis at time of presentation and grim biopsy results.

Poster Presentation:

American College of Physicians, MA Chapter, Waltham MA, November 2009.

Uncommon Cause for a Common Presentation

Aashish Samat, MD; Ashita Talsania, MD; Sivakumar Natanasabapathy, MD

INTRODUCTION: Lactic acidosis is a frequently encountered medical condition which is usually associated with seriously ill patients. We present a patient with asthma exacerbation who serendipitously was found to have lactic acidosis which improved with reduced frequency of albuterol nebulizers.

CASE PRESENTATION: 33 year old female with a history of asthma, presented with asthma exacerbation. Her symptoms began 2 weeks ago and over the last 3 days prior to her ED visit she was using her albuterol nebulizers every 2 hours including at night. In the ED she was wheezy throughout and was saturating 100 % on RA with a RR of 16/min. She was given continuous updrafts for 2 hours along with 125 mgs of IV methyl prednisolone. However she continued to remain symptomatic and was admitted for inpatient treatment. Her Blood tests revealed a high anionic gap metabolic acidosis with a lactate level raised at 6.9 mmol/l. She looked well despite her lactic acidosis and underwent a CT scan of her abdomen to look for a potential source however none was found. To confirm if there may be an element of respiratory muscle fatigue or hypoxemia contributing to this an ABG was done which showed 7.41/31/125/16. There was no history of diabetes or HIV in her or the family to account for drug intake by unintentional means. The only change in her medications was the increased frequency of albuterol intake. With improvement of her symptoms she required less frequent albuterol updrafts. A repeat blood test 6 hours post treatment showed a lactate of 1.9mmol/l. This corresponded with a reduced frequency of albuterol intake and a reduction in her pulse rate. A retrospective diagnosis of lactic acidosis secondary to albuterol was made.

DISCUSSION: Lactic acidosis is a well described phenomenon in severe asthma. The proposed mechanisms include patients in occult shock, respiratory muscle oxygen demand outstripping oxygen supply, increased production by the lung parenchyma, and changes in glycolysis were caused by beta agonist administration. Stimulation of adrenergic receptors leads to increase in glycogenolysis, gluconeogenesis, and lipolysis. Increased free fatty acids inhibit conversion of pyruvate to acetyl-coenzyme A with consequent increases in lactic acid. In our patient who had moderate degree of lactic acidosis but looked well and her acidosis improved with reduced frequency of albuterol use, we propose that she had Type b lactic acidosis secondary to excessive albuterol use.

Poster Presentation:

American College of Physicians, MA Chapter, Waltham MA, November 2009.

A Review of Perineal Cutaneous Herpes Simplex Virus (HSV) Infections in Hospitalized Patients Admitted in a Tertiary Care Hospital

Mayu Sekiguchi, MD; Kathleen Gibson-Tierney, RN; Armando Paez, MD

BACKGROUND: Perineal cutaneous HSV lesions are sometimes difficult to differentiate from pressure ulcers, a largely preventable hospital-acquired condition. There is limited literature about these wounds.

OBJECTIVE: To describe wound characteristics, associated illnesses, clinical course, wound treatment and outcomes of suspected HSV (S-HSV) and HSV culture-positive (HSV-CP) perineal ulcers in hospitalized patients.

STUDY DESIGN: This is a retrospective study of S-HSV perineal wounds evaluated by single wound care nurse at Baystate Medical Center from May 2005 to August 2008. S-HSV lesions are defined as ulcerative wounds that are "atypical for pressure ulcers", "scattered", "circular", "located in non-pressure areas", "punched-out appearance" and/or "with associated vesicles." Subjects' age, sex, Braden score, concurrent illnesses, wound description, pertinent laboratory tests including HSV wound culture results and clinical course of the wounds are collected.

RESULTS: Seventy-one subjects have S-HSV infection. Thirty-five (49.3%) HSV wound cultures are sent; six (8.45%) have (+) results. Subjects with both S- and HSV- CP ulcers have "At Risk" Braden score (15.9, mean), high BMI (31.04, mean) and low albumin (2.51 Gm/dL, mean). Eighty-five percent have concurrent infectious illness and 17% have malignancies. Subjects with HSV-CP ulcers are old (60.5 yrs, mean), mostly females (n=5), require hemodialysis (n=5), are either critically ill (n=3) or neutropenic (n=3). Two are HIV (+) and 2 are given high dose steroids. Five are treated with acyclovir or valacyclovir; three have clinical improvement in wound appearance. Two subjects died.

CONCLUSIONS: HSV-CP wounds are uncommon. Subjects tend to be old, females, immunocompromised and require hemodialysis. This study is limited to HSV (+) wound culture. S-HSV perineal wounds need further study.

Poster Presentation:

American College of Physicians, MA Chapter, Waltham MA, November 2009.

Sirolimus Induced Lung Injury: An Unusual Cause of ARDS **Mohamed Elarabi, MD; Ashita Talsania, MD**

INTRODUCTION: Sirolimus is a relatively new immunosuppressant used in solid organ transplantation.

Its provides adequate immunosuppression, lacks intrinsic nephrotoxicity & improves HTN & post-transplantation DM. This has established sirolimus as a calcineurin-inhibitor sparing drug. Side effects are thrombocytopenia, hyperlipidemia, edema & rash. Sirolimus-induced lung injury is uncommon. We report a case of severe ARDS in an older pt.

CASE: A 74 year old lady who was S/P cadaveric kidney transplantation in 1997 for ESRD began sirolimus treatment in 2007 for chronic allograft nephropathy. She presented with a few wks of progressive SOB, hypoxemia & hemoptysis. Her parameters were c/w ARDS & she was intubated for several days. A chest CT revealed prominent bilateral upper lobe patchy interstitial & alveolar infiltrates. A PE was ruled out & low PA wedge pressures made heart failure unlikely. Multiple negative BAL cultures (mycobacterial, fungal & viral) & a negative PCP smear ruled out infection. Sirolimus was held & calcineurin inhibitors & steroids commenced. She gradually improved & was successfully extubated shortly after discontinuing sirolimus. Of note, serum sirolimus levels were low normal in the year preceding her presentation. She made a complete recovery.

DISCUSSION: Low sirolimus blood levels & acute lymphocytic alveolitis suggest an immune-related mechanism rather than a direct toxic effect. Dose reduction is insufficient; the drug must be discontinued. Recovery is gradual. Sirolimus is by far the most likely cause of this pt's ARDS since she was taking the medication, alternative diagnoses were comprehensively eliminated & discontinuing the drug led to radiological & clinical improvement.

CONCLUSION: Little is known about sirolimus toxicity in elders. Transplantation patients are living longer and older adults are increasingly seeking transplants. There is a growing need to study the specific risks and benefits of immunosuppressive treatments for geriatric patients. The principle of 'one size fits all' is obsolete. Optimal immunosuppressive therapy needs to be tailored to the individual. Sirolimus-induced lung toxicity, despite low serum levels, should be kept in the differential diagnosis for solid organ transplant recipients on sirolimus, once infectious causes are ruled out. Discontinuation of sirolimus may lead to complete recovery. This case highlights the need for caution when using sirolimus in the elderly population.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Cognitive Impairment in the ICU: Could More Have Been Done for This Elder?

Gurmukteshwar Singh, MD; Maura Brennan, MD

INTRODUCTION: The average age of critical care patients is rising. Besides higher mortality and functional decline, up to 45% of elderly ICU patients develop protracted (>2 years) cognitive impairment. Strategies to decrease risk are inconsistently employed. The authors report a case in which deficits persisted due in part to suboptimal use of prophylactic interventions.

DESCRIPTION: A healthy 89 year old cognitively intact man sustained multiple rib and ankle fractures in a vehicle crash. He was hemodynamically stable; his neurologic exam was non-focal. No formal cognitive testing was done but he was oriented. Morphine was started along with hypertonic saline eye drops for corneal edema. Over the 8 days of his surgical ICU stay, he struggled with arrhythmias, pneumonia and conjunctivitis. His ankle fracture was repaired and a pacemaker placed. On day 3 he became confused and agitated; geriatrics was consulted. Further serology and imaging was unrevealing. The geriatrician recommended minimizing sedation, a bowel regimen, analgesia and discontinuing irritant eye drops. He stabilized medically and surgically but still had hypoactive cognitive impairment at discharge.

DISCUSSION: Delirium leads to increased length of stay and a host of poor outcomes in critically ill elders. Those with pre-existing dementia are at highest risk. Cognitive deficits in the ICU may be unrecognized or dismissed as “expected”. Initial cognitive evaluations with validated tools provide a baseline and facilitate early diagnosis of delirium, assessment of decisional capacity and targeting of those at highest risk for prophylactic interventions. Unfortunately, this is often neglected. Preventive measures including reorientation, early mobilization, cognitive stimulation, sleep protocols, visual and hearing aids, appropriately selected sedatives (dexmedetomidine instead of midazolam), pain control, bowel and bladder management and timely removal of catheters and restraints are beneficial. Frequent monitoring with the CAM-ICU and delirium screening checklists speeds detection, initiation of preventive measures and comfort. Medications for symptom control (antipsychotics, sedatives) should be used only after a non-pharmacologic approach fails.

CONCLUSION: Routine use of simple interventions can decrease cognitive impairment, reduce length of stay and improve outcomes for elders in the ICU. Geriatricians can play a vital role in improving care for this vulnerable group of patients.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

A Double "HIT"

Abdulrahman Alkabanni, MD; Sandra Bellantonio, MD

The incidence of heparin induced thrombocytopenia (HIT) with prophylactic heparin use in the elderly is unknown. Evidence suggests that LMWH is associated with decreased risk of developing HIT compared to unfractionated heparin (UFH) (1). We present an elderly woman who developed HIT while on prophylactic UFH.

CASE: A 73 yr old with CAD, DM, CKD developed a L. supracondylar femoral fx following a fall. Due to moderately increased perioperative risk & multiple existing comorbidities, she elected non-operative tx & was discharged to subacute rehab in a knee immobilizer on UFH prophylaxis. Ten days later, she was re-admitted with delirium, ARF & cystitis. Despite the lack of signs for DVT, a marked drop in her plt count from 296,000/mm³ to 50,000/mm³ between the 2 hospitalizations, while on UFH, raised the suspicion of HIT. A significantly elevated D-Dimer of >99.99 mg/L (nl 0.43-2.40 FEU mg/L) & normal fibrinogen of 160mg/dL (nl 150-450 mg/dL) prompted doppler studies which were positive for bilateral DVTs. Heparin was stopped & replaced by argatroban infusion. Heparin induced platelet Abs were positive, as well as the more specific serotonin release assay, confirming the diagnosis of HIT.

DISCUSSION: HIT is a complication of heparin therapy characterized by thrombocytopenia or > 50% drop in plts, as well the presence of anti platelets Abs. HIT may be complicated by arterial or venous thrombosis (bilateral DVT in our pts case). Of note, the rate of HIT is much higher with UFH compared to LMWH (2). Rx consists of stopping heparin & starting another form of anticoagulation, warfarin or a thrombin inhibitor like argatroban. Fondaparinux, a synthetic heparin has been used as well as it doesn't induce an immune response.

CONCLUSION: Heparin prophylaxis is commonly used in older adults, especially after fx. It may be wiser to use LMWH rather than UFH as it is associated with lower risk of HIT, however, LMWH is much more costly. Monitoring plt count for any pt on heparin, even if only on prophylaxis dose is important. The elderly may have subtle or no findings of thrombosis, thus with HIT clinicians must have a high index of suspicion for DVT. More studies are needed to learn how HIT affects the geriatric pt in particular.

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Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Geriatrics: The Art and Heart Behind the Science

Amit Bhargava, MD; Maura Brennan, MD

INTRODUCTION: The true nature of medicine is often the topic of scholarly debate; it is both an art and a science. The science clarifies pathophysiology and may lead to disease-specific interventions and even cure. However, the art allows us to understand the patient behind the illness and holistically care for their complex human needs. We report two cases that exemplify the art of Geriatrics and ongoing need for humanity in medicine.

CASE 1: A 67-year-old illiterate lady with vascular dementia and depression presented to geriatric evaluation clinic with memory loss. She was depressed, tearful and initially reluctant to engage. In an attempt to understand the person behind the consult, the traditional line of disease specific questioning was abandoned to allow her to fully express her feelings. The patient had not told any of her previous providers, but expressed a sense of abandonment by her family and disclosed thoughts of suicide and revealed that she was having urges to cut herself. We learned that she recently been prescribed Cymbalta by a consulting neurologist, unbeknownst to both her primary care physician and psychiatrist. In combination with Aricept, this may have over activated her, causing suicidal ideation. The psychiatrist was updated and saw her the next day. The patient and daughter contracted for safety.

CASE 2: A 46-year-old lady with Werner's syndrome (progeria) and severe coronary artery disease was referred to geriatrics for dementia. She had memory deficits and was distressed by her phenotypic appearance; she resisted cognitive testing and attempted to conceal her limitations. These unrecognized deficits were the root cause of her poor function at home and noncompliance with therapy for coronary artery disease and diabetes mellitus. Previous providers had been unaware of the magnitude of her cognitive problems.

DISCUSSION: Francis Peabody once wrote, "The secret of the care of the patient is in caring for the patient."⁽¹⁾ More than ever, the key to successfully treating our patients and avoiding adverse outcomes lies in art of using transparent communication, the art of understanding an individual behind an illness, and the art of practicing patient centered care. Only then will we provide care that is satisfying to both the patient and the physician.

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Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Warfarin-Associated Intracranial Hemorrhage: At the Crossroads of Prevention

Jaime Hernandez-Montfort, MD; Michael Picchioni, MD

ABSTRACT BODY: Frequent use of warfarin in elderly patients with atrial fibrillation for the prevention of stroke has resulted in increasing rates of warfarin-associated intracranial hemorrhage (ICH) and an associated 50% 30-day mortality rate.

An 83 year-old independent, community-dwelling female with history of hypercholesterolemia, osteoporosis and atrial fibrillation on warfarin therapy for secondary stroke prevention presented to the emergency department from home after a witnessed episode of confusion and coffee-ground emesis associated with headache. Her other medications included pravastatin and alendronate. On presentation, she was afebrile with a heart rate of 80 beats per minute, blood pressure of 170/80 mmHg and a respiratory rate of 15 breaths per minute. Physical examination was relevant for a lethargic female with a Glasgow coma scale of 12: eye opening on verbal command, confusion while answering questions and ability to withdraw her extremities from pain. Non-contrast head CT on admission showed interventricular hemorrhage involving the lateral, third and fourth ventricles with obstructive hydrocephalus and no intraparenchymal or subarachnoid hemorrhage. Laboratory findings were significant for INR of 2.4. The patient received 6 U of fresh frozen plasma and subsequently had an emergent left external ventricular drainage. Family members were anxious to know about the risks on restarting warfarin therapy upon discharge.

There are 10,000 cases of warfarin-associated ICH yearly in the U.S that primarily occur in patients aged ?? and usually within the therapeutic range of INR. Large hematoma volumes, intraventricular extension and shift of midline structures are associated with worse outcomes. Emergent reversal of anticoagulation with FFP and vitamin K are the mainstay of therapy. However there are limiting factors to their administration including significant amounts of volume and a relatively longer onset of action respectively. The role of neurosurgical evacuation is not well defined, although treatment may be appropriate in selected patients. To date, there are no studies that can provide an accurate estimation of the risk of recurrent ICH in survivors of warfarin-associated ICH who are subsequently restarted on warfarin.

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Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Hypogammaglobinemia in Elders

Carmela Mancini, DO; Maura Brennan, MD; Sandra Bellantonio, MD

BACKGROUND: Immune responsiveness declines with age; however, potential contributing factors are not well studied. Likewise, the effect of a specific immunodeficiency, such as hypogammaglobinemia, on overall health, including cognition is poorly understood. We present a case of IgG deficiency in an elderly pt.

CASE: 75 y/o with a complex PMH including steroid & O2 dependent asthma, recurrent bronchiectasis & pneumonia who had over a dozen admissions in recent years. The pt was recently diagnosed with IgG deficiency with low levels of total IgG (582mg/dl) & subclasses 1 (220mg/dl) & 2 (143mg/dl) & was given IVIG to help stem recurrent infections. Nonetheless, she was admitted 2 months later with pneumonia. She also had 4 months of fatigue, wt loss & cognitive decline & was forced to give up working as a seamstress. The pt had no prior hx of dementia. Geriatrics was consulted. She scored 17/30 on the MMSE & was oriented to person & place. Exam was remarkable for dyspnea at rest & diffuse rhonchi & wheezing. The geriatricians were concerned about a protracted delirium, atypical pathogens & an indolent CNS infection. There also remained the question of the role of IgG deficiency on the pt's clinical presentation & recent decline.

DISCUSSION: Diagnostic criteria for IgG subclass deficiency requires a relative lack of >1 of the 4 IgG subclasses with a normal total IgG in a pt with recurrent severe infections plus an inadequate response to a vaccine challenge. In clinical practice, the term "IgG subclass deficiency" often refers to a subclass deficiency alone, as was the case in our pt who had no documentation of an inadequate vaccine response. Most pts remain asymptomatic, while others develop severe & recurrent sinopulmonary infections. Tx may include prophylactic abx, aggressive management of co-morbidities & IVIG. Pts must be monitored closely; some will progress to more severe immune disorders & chronic, life threatening sinopulmonary disease.

CONCLUSION: Overall immune function declines with age, but there is limited data on specific immune disorders, such as IgG deficiency & the utility of diagnosing & treating such disorders in geriatric pts. It is unclear if an aging immune system contributes to cognitive & functional decline, making this an area for much needed research.

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Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Perineal Cutaneous Herpes Simplex Infections in a Hospitalized Patient: A Differential Diagnosis to Pressure Ulcers

Mayu Sekiguchi, MD; Kathy Gibson-Tierney, NP; Armando Paez, MD

CASE PRESENTATION: An 81 year old obese female (BMI = 42.6) with type 2 DM, heart failure, and DJD status-post right knee replacement was admitted to the hospital for acute renal failure. She was diagnosed with rapidly progressive glomerulonephritis requiring treatment with high-dose (60mg daily) prednisone and cyclophosphamide. She had limited mobility (Braden scale 11/23) and poor nutritional status (albumin 2.2). On hospital day (HD) 19, three painful approximately 1cm x1cm “scalloped bordered” ulcers developed along the right inguinal and bilateral buttock areas. Wound care service was consulted for evaluation and treatment of possible pressure ulcers. Herpes simplex virus (HSV) wound culture was obtained because the wounds were not located along bony prominences. History of previous HSV infection was unknown.

Proper bed positioning, off-loading, nutritional support and local wound care were initiated. On HD 22, wound culture was positive for HSV. Patient was treated with acyclovir 200mg PO every 12 hours with decrease in wound size upon hospital discharge on HD 26.

DISCUSSION: Appropriate diagnosis of wounds in hospitalized patients is important. The case highlights the value of recognizing cutaneous HSV infections in patients with risk factors for pressure ulcers. Infection may present with ulcerative skin lesions similar to pressure ulcers without typical vesicular appearance of herpes infections. The vesicles are frequently destroyed by pressure, shearing forces, friction and moisture which are often present in perineal and buttock areas. Ulcers are typically painful and are not particularly located along bony prominences. This is believe to be a recurrence of infection in immunocompromised states rather than a primary infection. The key to diagnosis is a high index of suspicion. Risk factors include HIV infection and receipt of immunosuppressive agents particularly in transplant patients and those with autoimmune and rheumatological disorders. A positive HSV wound culture will confirm the diagnosis. Recognition of this condition has important implication in light of the Medicare limitations on payment for hospital-acquired conditions.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Moral Dilemma: Full Code or Futile Code?

Maya Sekiguchi, MD; Maura Brennan, MD

BACKGROUND: Many clinicians defer discussions about advance directives (AD) until it is often too late. The problem is magnified with cognitively or psychiatrically impaired patients. We report a case of a hospice pt near death who was emergently admitted without a clear AD. This led to confusion on the part of caregivers and unnecessary suffering for the pt.

CASE: A 67yo SNF resident with schizoaffective disorder and terminal cancer requested "full-code"; he lacked family and a health care proxy. As his disease worsened, he was enrolled into hospice, fully-aware of his poor prognosis but was "not yet ready" to sign a DNR form. Later he became delirious and lethargic, unable to participate in complex discussions. Thus, SNF began legal proceedings to seek an emergency guardian to change his code status. In the interim, hospice and SNF ethics committees met and agreed that the pt should be transported to the hospital despite his terminal prognosis since he was full-code. Thus, he was transferred to the hospital while awaiting appointment of a guardian. He was in critical condition; CXR showed complete white-out of his left lung. The next day the pt remained obtunded and required vasopressors. A CT chest showed a large solid mass which filled his left lung without drainable pleural fluid. His oncologist, risk management and the hospital ethics committee were consulted. A rapid consensus was reached that further attempts to extend life would prove futile. He was made "comfort measures only" and died within a matter of hours.

DISCUSSION: This case is not unique. Frequent mishaps occur in our complex system of healthcare from a lack of AD, specified decision-makers and adequate documentation, especially for geriatric psych pts. In such cases, the burden of clarifying clinical goals and legal solutions often shifts to hospital staff. This delays goal setting which results in the provision of burdensome and ultimately futile interventions which may also be financially overwhelming to the medical system. Often providers may feel "forced" to provide care that is against the essential principle of "do not harm". Ideally, AD and realities should be discussed early while pts are cognitively capable. This could be in the outpatient setting or perhaps prior to discharge from the hospital. It is also imperative that decisions around goals be clearly documented and communicated on all transfers of care to avoid confusion and ensure that pts' wishes are respected.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

Leg Pain From Pericardial Effusion

Ashita Talsania, MD; Aashish Samat, MD; Maura Brennan, MD

INTRODUCTION: Leg pain is common in older patients and has many causes. The authors report a case in which pedal edema and leg pain was due to a large pericardial effusion. This is the first such case to be reported in the literature.

CASE: An 84-year-old lady had an extensive but unrevealing evaluation for pericardial and pleural effusions. Over the next year she was admitted 3 times with pedal edema and leg pain; each time she refused pericardiocentesis and was discharged. She had no cardiac symptoms. On the last of these admissions, she appeared healthy. Her pulse was 90 and regular with a normal volume and character. She was hemodynamically stable with no signs of tamponade. Jugular veins were distended to the angle of the mandible; no change on inspiration. S1 and S2 were normal; with no added sounds. The chest was clear. There was mild pitting edema over the ankles. An echocardiogram showed an EF of 75% - 85% and a circumferential effusion which was 52 x 52 x 56 x 89 mm in size. The right ventricle was collapsing and 1400ccs of pericardial fluid was drained. Her leg pain promptly resolved. Further work up was unrevealing.

DISCUSSION: The pericardium normally contains 15-30 ml of fluid. Pericardial effusions can be idiopathic or due to a local or systemic disorders. The speed of fluid accumulation impacts presentation. A slow process allows gradual distension of the pericardium resulting in an indolent onset of symptoms. Rapid accumulation of even 80 mls of fluid may produce tamponade. Our patient lacked the classic signs of chest pain, SOB, light-headedness; her only complaint was leg pain. 16% of adults over 50 have leg discomfort. This is likely higher in elders since its common causes (claudication, arthritis, neuropathy, etc.) increase with age. It was only the leg discomfort which led to the diagnosis and convinced her to accept treatment. Despite warnings of possible tamponade and death, the patient refused pericardiocentesis until she felt that her quality of life required her to proceed.

CONCLUSIONS: Pericardial effusions may present atypically in elders. Geriatricians should search for signs of increased right heart pressure if there is no other explanation for pedal edema. Little is known about whether the causes of pericardial effusions differ for geriatric patients. This is a fruitful area for collaborative research by geriatricians and cardiologists.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

**Recurrent Digtoxicity:
Digibind Dosing Challenges for Older Hemodialysis Patients**
Ashita Talsania, MD; Manmeet Singh, MD; Maura Brennan, MD

INTRODUCTION: Geriatric patients are vulnerable to adverse drug events due to inappropriate prescribing, pharmacokinetic and pharmacodynamic changes and drug interactions. Atrial fibrillation (AF) is the most common arrhythmia in elders and heart failure is essentially a geriatric disease and digoxin is often prescribed for both. The authors report a near fatal case of recurrent digtoxicity in an elderly renal failure patient whose digoxin level "rebounded" as digibind levels fell.

CASE: A 79 year man with AF on chronic hemodialysis, had fast AF despite amiodarone so digoxin was prescribed. Four days later was admitted delirious with a digoxin level of 4.5ng/ml. He was in atrial flutter with 4:1 block; he thereafter suffered an asystolic arrest. He was resuscitated and given digibind antibody. He improved cognitively and hemodynamically and was discharged two days later. However, was promptly readmitted with obtundation, a heart rate in the 40's and a digoxin level of 3.9 ng/ml. He had complete AV block with a ventricular escape rhythm. He had NOT taken any digoxin post discharge. Digibind antibody was readministered; was discharged uneventfully 7 days later.

DISCUSSION: Digoxin is widely used; digtoxicity is a serious problem for elders. It is very difficult to dose. There is a narrow therapeutic index, many interactions with other drugs, bioavailability and clearance with alterations in the severity of pathologic states. Digoxin has a large volume of distribution. Digoxin specific antibody fragments (Fab) are the most effective treatment for severe digtoxicity. Fab is effective in renal failure but the elimination of the fab-digoxin complex is prolonged. Dialysis fails to remove digoxin or Fab efficiently. "Rebound" digtoxicity occurs when the immune fragments are hepatically metabolized releasing the digoxin back into the circulation. This real risk of rebound digoxin toxicity mandates a longer period of observation in older hemodialysis patients.

CONCLUSION: Heart failure and atrial fibrillation can be considered geriatric syndromes; dialysis patients are aging. Cardiologists and internist may fail to adjust loading doses of digoxin and overlook the prolonged clearance of both digoxin and digibind for elders with renal failure. Geriatricians with their sophisticated understanding of drug metabolism and the vulnerabilities of older patients should counsel other physicians and prevent dangerous, premature discharges.

Poster Presentation:

American Geriatric Society Annual Meeting, Orlando, FL, May 2010.

“Rapa Lung”: An Unusual Cause of ARDS

Mohamed Elarabi, MD; Ashish Verma, MD

INTRODUCTION: Sirolimus is a relatively new and potent immunosuppressant used in solid organ transplantation. It is a macrocyclic lactone that causes arrest of the cell cycle of T- and B lymphocytes. Lack of intrinsic nephrotoxicity, beneficial effects on arterial hypertension and post-transplantation diabetes mellitus, while simultaneously providing adequate immunosuppression, have established Sirolimus as a calcineurin-inhibitor sparing drug. Its main side effects are thrombocytopenia, hyperlipidemia, edema and rash. Sirolimus-induced lung injury (SILI) is an uncommon side effect. We report a case that presented with severe acute respiratory distress syndrome.

CASE: A 74 year old Caucasian female with end-stage renal disease secondary to hypertensive nephrosclerosis had a cadaveric donor kidney transplant in 1997. Since 2007, she had been on Sirolimus due to chronic allograft nephropathy. Two years later, she presented with a few weeks of progressive shortness of breath, hypoxemia and hemoptysis. Her parameters were consistent with a diagnosis of ARDS. Pt was intubated and needed several days of mechanical ventilation. CAT scan of her chest showed patchy interstitial and alveolar infiltrates, most prominent in the upper lobes. Pulmonary embolism was ruled out. Low pulmonary artery wedge pressure readings made heart failure unlikely. Infectious etiology was eliminated by multiple negative BAL cultures (mycobacterial, fungal and viral) and negative PCP smear. Sirolimus was held and calcineurin inhibitors and steroids commenced. The patient made gradual improvement and was successfully extubated few days after discontinuation of Sirolimus and administration of corticosteroids. Of note, Sirolimus levels were low normal in the year preceding her current presentation. Sirolimus is the most probable offending agent for the ARDS in this patient as it happened while she was on the drug, alternative diagnoses were comprehensively eliminated and clinical and radiological improvement ensued upon discontinuation of Sirolimus.

DISCUSSION: Sirolimus inhibits human fibroblast cell proliferation in cell cultures from transbronchial biopsies of lung transplant recipients. A few case reports of interstitial pneumonitis and bronchiolitis obliterans organizing pneumonia have been recently described in solid organ transplant recipients. Low sirolimus blood levels and acute CD4 lymphocytic alveolitis suggest an immune-related mechanism rather than a direct toxic effect of the drug. Discontinuation of the drug rather than decreasing it's dose leads to gradual recovery.

CONCLUSION: Sirolimus-induced lung injury must be considered in the differential diagnosis for solid organ transplant recipients on Sirolimus presenting with nonspecific pulmonary symptoms, respiratory tract infection like symptoms or respiratory failure. This should be the case even if the drug levels are relatively low. Discontinuation of the drug rather than reducing it's dose leads to gradual recovery.

Poster Presentation:

American College of Physicians Nationals, April 2010, Toronto, Canada.

Paraneoplastic Cerebellar Degeneration an Extremely Rare Complication in a Case of Non-Hodgkin's Lymphoma

Ranjit Dhelaria, MD; Srikanth Penumetsa, MD; Armen Asik, MD

CASE: A 66 years old male patient presented to his local hospital with sub acute onset of dysarthria, diplopia and intermittent gait unsteadiness. He had a past medical history of diabetes and hypertension. He was a non smoker and had no history of alcohol excess. He was initially diagnosed with lacunar syndrome but in view of progressive symptoms, he was transferred to tertiary hospital. His neurologic exam was significant for dysmetria, nystagmus, dysarthria and truncal ataxia. A CT scan and MRI of the brain were negative for acute stroke and space occupying lesion. Cerebrospinal fluid analysis showed; white cell count of 17 with lymphocytic predominance, 1 red blood cell, protein 74 and glucose 64 mg/dl. He received a brief course of empirical intravenous Acyclovir with no improvement in symptoms. CSF analysis for infectious etiologies including PCR for Herpes simplex virus, cytomegalovirus, and enterovirus, Lyme disease and VDRL titers were negative. Paraneoplastic cerebellar syndrome was suspected and patient was started on intravenous immunoglobulin, pending further CSF results. He further had a Pan CT that revealed three small lymph nodes around the liver and a PET scan confirmed small hyper metabolic lymph nodes measuring 1.1 cm in the celiac region. An upper-GI endoscopy was normal and random biopsies of the esophagus were negative for malignancy. Endoscopic ultrasound guided FNA of these lymph nodes showed monoclonal kappa B cell lymphoma, which was CD10, CD20 positive and BCL-2, CD3 and CD5 negative and was reported as follicular cell in origin. Bone marrow biopsy was normal and CSF cytology was negative for malignant cells. At this time he had no response to IVIG and therefore was started on high dose steroids with no significant change in his condition. He was referred to a cancer institute for a second opinion, where it was concluded that patient has Paraneoplastic Cerebellar degeneration most likely due to Non-Hodgkin's lymphoma. Further CSF studies showed an intense reactivity with the molecular layer of the cerebellum (on sagittal section of rat brain), which did not correspond to well characterized antibodies including Hu, Yo, Tr, Ma2, CV2/CRMP5, Ri or antibodies to VGKC, NMDA and AMPA receptor. He was treated with Rituxan, Cytoxan and Prednisone (R-CHOP). Vincristine was held because of concern for potential neurotoxicity. His neurologic condition stabilized with no significant improvement at this time. Over the next few months he received 6 cycles of the above regimen followed by local radiotherapy at the site of previously detected lymph nodes. His repeat CT and PET scan showed no evidence of disease activity. Patient's neurological status improved minimally following treatment and rehabilitation.

DISCUSSION: Paraneoplastic cerebellar syndrome is a rare complication of Non-Hodgkin's lymphoma, with only two cases reported in the literature so far [1, 2] and one of which identified serum antibodies that cross-reacted with rat cerebral and cerebellar protein in patient with cerebellar degeneration and NHL [1]. Several other paraneoplastic neurological syndromes have been reported in NHL including,

motor neuron disease, Lambert-Eaton myasthenic syndrome, autonomic dysfunction, motor and sensory neuropathy. Pathogenesis of these syndromes is incompletely understood and autoimmune mechanism has been described in many cases [4, 5]. In our patient, his neurologic presentation prompted investigation for underlying malignancy, which led to a diagnosis of NHL. However a specific autoantibody was not identified. He received high dose steroids and intravenous immunoglobulin with minimal improvement of his condition, although there was no further progression. Plasmapheresis was considered but was not given as there was no definite antibody identified and his neurological condition stabilized. His tumor burden was small and following treatment, his lymphoma is in remission; however there was only minimal improvement in his neurological condition. Various types of antibodies have been identified in Paraneoplastic cerebellar degeneration (Table 1) [6, 7]. Early tumor diagnosis is essential, because effective treatment of the cancer still appears to be the most efficient treatment option for the neurological symptoms [6]. Immuno-modulatory therapy should nevertheless be initiated as early as possible and seems especially helpful for peripheral syndromes and limbic encephalitis. In summary, Paraneoplastic cerebellar degeneration is a very rare, but possible complication of NHL and our present case confirms this association. Clinicians must be aware of this association as NHL is a potentially treatable condition and the only effective treatment of this syndrome is treatment of the underlying condition. As these syndromes can predate the diagnosis of cancer, it is important to perform a thorough workup in patients with this presentation, for early diagnosis of an underlying potentially treatable cancer.

Table 1: Antibodies detected in various cancer types in paraneoplastic cerebellar degeneration.

Syndrome	Antibody type	Frequently associated cancer type
Paraneoplastic Cerebellar Degeneration	Anti-Hu	Small cell lung cancer
	Anti-PCA-2	Small cell lung cancer
	Anti-CRMP5/CV2	Small cell lung cancer, thymoma
	ANNA3	Small cell lung cancer
	Anti – Yo	Breast, ovary
	Anti – Ta/Ma2	Testis
	Anti – Ri	Breast
	Anti – Tr	Hodgkin's Lymphoma

Poster Presentation:

American College of Physicians Nationals, April 22-24, 2010 Toronto, Canada.

Introduction of Avagard Alcohol-Based Surgical Scrub Associated with a Surgical Site Infection Cluster: The Problem with a Culture of "Cutting Corners"

Anneta Golubchik, MD; Sarah Haessler, MD

BACKGROUND: In 2002, the CDC published guidelines designed to improve hand-hygiene practices in health care facilities, including surgical hand antisepsis. Agents used for surgical hand antisepsis should substantially reduce microorganisms on intact skin, contain a non-irritating antimicrobial preparation, have broad spectrum activity and be fast acting and persistent. A traditional surgical scrub consists of pre-wash prior to first scrub of the day and between cases, cleanse under nails under running water, scrub nails, followed by 3 minute surgical scrub, rinse, and dry with sterile towel. CDC Surgical hand antisepsis was introduced lately, recommending using either an antimicrobial soap or an FDA approved alcohol-based hand rub with persistent activity. The practice should include: removal of jewelry and watches nails cleaning, application of the product, rubbing alcohol-based product till dry (follow exactly the manufacturer's instructions). Accordingly, the optimal practice will be to provide personnel with efficacious hand-hygiene products that have low irritancy potential, particularly when these products are used multiple times per shift. Various manufacturers have marketed products with alcohol as their active ingredient, combined with emollients. One of them- Alcohol-based Product X was trailed in the beginning of September 2005 at our institution. Post- trail evaluation was conducted with otherwise favorable feedback reported by surgical teams. Product was perceived as improving hand health and saving time. It was approved for use and introduced in all OR in December 2006.

PROBLEM OBSERVED: Our Large Academic Medical Center has an average 2.02% rate of SSI for All Surgery (standard deviation 0.39%). All Surgery includes Vascular, Neurosurgery, Orthopedics, GI, and Breast, Thoracic, Cardiac, GYN and General surgery with laparoscopic procedures. SSI rate was ?? Quarterly Report at the end of March 2006 showed dramatic increase of SSI in All Surgery up to 3.18% in comparison with average 2.02% for the previous several quarters. The lowest is being in February and December 2006.

INVESTIGATION: Team- work approach was introduced to identify organism incidence, surgeon factor incidence, standard practice of instrumentation and central sterile processing. Environmental review involved in-hospital facilities, storages and reprocessing building.

Eventually, no connection was identified with a single surgeon or one particular microorganism. No errors were found in any processing or instrumental cleaning techniques. No construction, renovation or modification was underway at Large Academic Medical Center during this period of time.

Careful analysis concluded that the only a new element- hand wash product X- was introduced to OR routine approximately a year prior to significant spike in SSI.

Direct observation of X product usage by surgical personnel was conducted by OR management. It revealed improper use such as limited scrub before application of product and confusion about steps how correctly use the product. Most of the surgeons were under impression that “goop and go” technique was just as sufficient as traditional scrub method. Product was withdrawn from the use at our academic Medical Center in September 2007. A surgical personnel continues to use a traditional scrub method.

MEASURES TO SOLVE THE PROBLEM:Reinforcement of hand washing technique started in February 2006. Practices included visuals-“wash-rinse-dry-apply-reapply” posters in the OR, educational materials, PowerPoint Presentations for staff and on-site instructions. Results The rate of All Surgery SSI decreased to 1% in December 2007. It did trend back upward to almost average 2.02% (1.85%) in June 2008.

DISCUSSION: We believe that culture of “cutting corners” leads to increase in SSI rate, not the product itself if properly used. The complex educational approach to almost every member of surgical team may play a significant role in trending down SSI after removing the hand wash product X. Eventually, SSI rate came back to its average number which again support our theory that people hand washing practice matters, not the product.

Poster Presentation:

The Society for Healthcare Epidemiology of America, San Diego, CA, March 2009.

Effectiveness of a Protocol-Driven Continuous Quality Improvement Initiative on Dialysis- Related Outcomes in Eight Outpatient Hemodialysis Units

Daniel Landry, DO; Jean Dowd, RN; Barbara Greco, MD; Stephen Sweet, MD

OBJECTIVES: The goals of our study were to evaluate the usefulness of a continuous quality improvement (CQI) model applied across several dialysis centers in achieving multiple KDOQI targets for maintenance hemodialysis (HD) patients.

METHODS: We performed a prospective analysis of 8 dialysis facilities within Fresenius Medical Care (FMC) from February 1, 2007 to June 30, 2009. During this period, a "Plan, Do, Study, Act" (PDSA) CQI initiative was undertaken for achieving KDOQI targets in prevalent HD patients. Individual unit CQI teams reviewed patient data and identified changes needed to achieve care goals (PLAN). Management protocols were then created and implemented. Adherence to protocols and outcomes for the individual units were monitored (DO) at monthly team meetings. Protocols were refined based upon achieving targets (STUDY). When shortcomings were identified, modifications were made and the PDSA cycle was again initiated (ACT). Protocols were standardized across units. Anemia management included coordination of dosing intravenous iron supplementation and erythropoietin based on trending changes in weekly hemoglobin levels and monthly iron studies for each patient. A systematic referral process was established to a dedicated team of vascular access surgeons for placement, monitoring and revision of AV fistulas for incident ESRD patients and for all pre-ESRD patients with GFR <20 seen by nephrologists prior to initiation of dialysis. A multi-unit CQI team composed of the medical director, medical staff and clinical managers from all of the individual units was responsible for major protocol changes while "champions" at the individual dialysis unit level (charge nurses, clinical managers, and dieticians) were responsible for the execution and monitoring of protocols. Dedicated vascular access nurse practitioner/physician assistant "champions" ensured timely vascular access referrals.

RESULTS: As of June 30, 2009, our protocol-driven CQI efforts have resulted in a favorable shift in the percentage of patients achieving target Hb within the 11-12 gm% target and a corresponding decrease in the number of Hb measurements <10 gm and >13 gm%. Our overall dialysis catheter prevalence rate decreased from 12.1 to 8.2%. Three of our dialysis units ranked among the top 20 FMC Units based on Ultrascore which encompasses achievement of multiple KDOQI targets and lower mortality rate.

CONCLUSIONS: A protocol-driven, nurse/dietician-championed CQI program that continuously evaluates process, results and overall adherence is effective in achieving KDOQI goals in a multiple-unit model.

Oral Presentation:

Annual Dialysis Conference, Seattle, WA March 2010.

Left Ventricular End Diastolic Pressure Does Not Predict Contrast Induced Nephropathy

Fadi Saab, MD; Srikanth Penumetsa, MD; James R. Cook, MD;
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 Gregory R. Giugliano, MD; Mark Schweiger, MD

ABSTRACT: Background: Contrast induced nephropathy (CIN) may account for up to 10% of hospital acquired acute renal failure and can lead to prolonged hospital stay and worse outcomes. Several risk factors for CIN have been identified, but studies examining the relationship between left ventricular end diastolic pressure (LVEDP) and CIN are lacking. We studied LVEDP as a surrogate for volume status during cardiac catheterization and its effect on CIN.

METHODS: We retrospectively analyzed data from 1397 patients undergoing coronary angiography who were hospitalized between 2007 and 2008. CIN was defined as a > 25% or > 0.5 mg/dl increase in serum creatinine above baseline during the hospital stay following contrast administration. Multivariable logistic regression modeling was performed to determine the predictors of CIN after adjusting for age, gender, congestive heart failure, use of intra aortic balloon pumps (IABP), diabetes and contrast volume. LVEDP was divided into terciles (<12 mmHg, 12-20 mmHg, >20 mmHg) and added to the model.

RESULTS: The mean age of patients was 62 +/- 12 years and 30% of patients were women. CIN was identified in 160 patients (11.45%). There was no difference between patients with low ejection fraction (<40%) and normal ejection fraction. The predictors of CIN were age, female gender and the use of IABP (Table). LVEDP was not a predictor of CIN.

CONCLUSION: LVEDP was not a predictor of CIN suggesting that the use of LVEDP as a surrogate for volume status may not be accurate. The finding of female gender as a strong predictor of CIN requires further evaluation.

Poster Presentation:

The Society for Cardiovascular Angiography and Interventions, San Diego, CA, May 2010.

	Odds ratio	P value	95% confidence interval
Age (>75 years)	1.95	0.002	1.29-2.97
Female gender	1.74	0.003	1.21-2.52
IABP	4.03	0.006	1.49-10.84
LVEDP	1.16	0.154	0.94-1.44

How Do the Linear Dimensions Contribute to Left Atrial Enlargement: A Real-Time Three Dimensional Echocardiographic Study

Gui Hua Yao, **John Abboud, MD; Neelima Vallurupalli, MD;**
James R. Cook, MD; Leng Jiang, MD

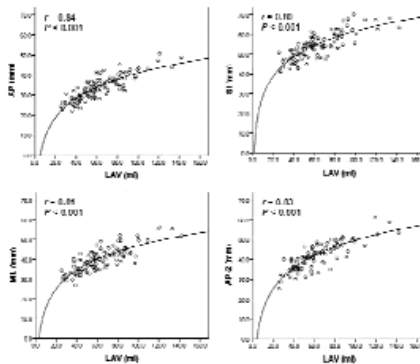
BACKGROUND: The concept that left atrium (LA) expansion in the anterior-posterior (AP) dimension may be constrained by the thoracic cavity, forcing LA enlargement predominantly in the superior-inferior (SI) and medial-lateral (ML) dimensions, has not been tested previously. We explored how LA linear dimensions grow when it enlarges using three-dimensional echocardiography (3DE).

METHODS: We performed full volume 3DE in 100 consecutive patients (mean age 59.0 ± 15.2 years, female 56%) with sinus rhythm and adequate imaging quality. From the 3DE data sets, LA volume was derived and 4 linear dimensions were measured on corresponding cross sectional views: AP dimension on apical long-axis view, SI and ML dimensions on apical 4-chamber view, and AP-2 dimension on apical 2-chamber view. The relationship between LA dimensions and LAV was performed using logarithmical regression analysis.

RESULTS: 1) LA volume was 62.8 ± 23.7 ml (range from 25.4 to 125.1 ml). 2) All LA linear dimensions correlated logarithmically and equally well with LA volume ($r = 0.84$ for AP, 0.80 for SI, 0.81 for ML and 0.83 for AP-2, respectively, all $P < 0.001$). 3) The increases in all linear dimensions were significantly blunted when LA size was severely enlarged. 4) For a wide range of up to 80 ml in LAV values was in correspondence to a very narrow range of only 10 mm in dimensional values, especially when the LA was severely enlarged.

CONCLUSION: All 4 measured dimensions correlate with LA volume and increase equally as LA enlarges, but their increases are significantly blunted when LA size is severely enlarged. The use of any linear dimension as a surrogate of LA volume would result in a significant underestimation of LA size.

Logarithmical regression analysis between LA dimensions and volume.



Poster Presentation:

American College of Cardiology, Atlanta, GA, March 2010.

ACCESS to Health Care in ADULTS evaluated for Chronic Kidney Disease: Findings From The Kidney Early Evaluation Program

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Difficulty in access to health care can contribute to suboptimal blood pressure and poor health outcomes; however, little is known about such barriers in chronic kidney disease (CKD) care. We assessed access to health care by CKD status among participants of the Kidney Early Evaluation Program, a nationwide health screening program of adults at high risk for CKD from 2000-2007 (n=76,942). Participants responded to a questionnaire survey and had laboratory testing, with CKD defined as estimated glomerular filtration rate <60ml/min/1.73m² or random spot urine albumin:creatinine ratio >30mg/g. There were 20,094 (26.1%) subjects with CKD. CKD subjects were more likely to be older, female, Caucasian and had lower educational status (less than high school) and greater burden of cardiovascular disease as compared to subjects without CKD. Significant differences (p<0.0001) by CKD status existed in health care utilization i.e. last physician visit within 1 year (91.9% vs 84.9% in CKD and non-CKD subjects respectively), difficulty in getting medical care (19.0% vs. 21.5%), presence of health insurance (85.3% vs. 80.1%), having a generalist source of care (81.9% vs 78.8%), and having insurance benefit to pay for medications (78.4% vs 75.5%). Among subjects with health insurance (n=60,437), the insurance type was public in 38.3% and private in 47.4%. Multivariable analysis with adjustment for age, race, and cardiovascular disease revealed that presence of CKD was associated only with low educational status (odds ratio, OR=1.19, p=0.0181) and presence of public health insurance as compared to private insurance (OR=1.50, p<0.0001). Despite CKD subjects reporting no greater perceived difficulty in health care access as compared to subjects without CKD, low educational status and public health insurance were associated with CKD. In adults at risk for CKD, patient factors (socioeconomic status, awareness, adherence to treatment), insurance payer status and quality of physician services (availability, appropriate knowledge and attitudes) may be more important contributors to the quality of CKD care than utilization of health care delivery system.

Poster Presentation:

National Kidney Foundation, Orlando, FL, April 2010.

Long-Term Gentamicin Lock Catheter Prophylaxis is Associated With Gentamicin-Resistant Gram-Positive Bacteremias in Chronic Hemodialysis Patients

Daniel L. Landry, DO; Stephen J. Sweet, MD; Stephen L. Gobeille, PS; Sarah D. Haessler, MD; **Chirag K. Vaidya, MD;** Gregory L. Braden, MD

Short-term studies (< 1-year) show that antibiotic locks are successful in reducing the rate of catheter-related blood stream infections (CRIs) in chronic hemodialysis patients. There are no data on the long-term consequences of this practice. Over a 4-year period (October 2002 through September 2006) we utilized a gentamicin/heparin lock (GHL) protocol in 1488 chronic hemodialysis patients with a tunneled catheter in 8 outpatient units and one inpatient unit. Within the first year of the GHL protocol, our CRI rate decreased from 17 to 3.7 events per 1000 catheter days (relative risk reduction = 0.78). Eight months later, febrile bacteremias began and over the next 40 months 17 patients developed 19 episodes of coagulase negative *Staphylococcus* (CNS) resistant to gentamicin (gent-R). No gent-R bacteremia occurred in 25 non-catheter dialysis patients with CNS infection during the study. An additional 12 patients (Non-CNS) developed other gent-R gram-positive bacteremias (8 *Enterococcus faecalis*, 1 MRSA, 2 *Streptococcus* and 1 *Brevibacterium* species). The mean duration of days on antibiotics until blood culture clearance was 25 days in the CNS group and 10.6 days in the non-CNS group. Gram-positive gent-R infections were associated with removal of the dialysis catheter in 13 patients, bacterial endocarditis in 4, 14 hospital and 2 intensive care unit admissions, and 6 deaths within 60 days of infection (21% mortality rate). In conclusion, while the use of a GHL effectively lowered the CRI rate in our dialysis population, gent-R bacteremia emerged with significant morbidity and a high mortality rate. When deciding to institute antibiotic locks for hemodialysis catheters, the benefits of GHL in reducing the incidence of CRI must be weighed against the risks of developing antibiotic-resistant bacteremia. Alternative non-antibiotic catheter locks (e.g. ethanol, taurolidine or methylene blue with citrate) may be a preferable alternative.

Poster Presentation:

American Society of Nephrology, San Diego, CA, October 2009.

Can You Hear Me Now? Found: 2 'Lost' Hearing Aids in Otic Canal of Elderly Woman with Mild Dementia

Benito SanGil, MD

INTRODUCTION/OBJECTIVE: Innovation renders hearing aids inconspicuous so they are able to fit small auricular spaces, and have better cosmetic appeal. Long-term care providers strive to augment and correct sensory deficits. Apart from enhancing quality of life, intact hearing helps mitigate risk of delirium and depression. Hearing aids -- unlike eyeglasses, are designed to be camouflaged by adaptation to skin color and miniaturization. When fractured, hearing aid parts may get concealed in constricted spaces like the ear canal. Furthermore, earwax can cover and cement broken parts, with potential for complications like otitis or perforation.

DESIGN/METHODOLOGY: An 88 yr old demented (MMSE 25/30) woman, independently living at a continuum-of-care retirement community had a routine office visit. She was asymptomatic, attentive, and followed conversation. A hearing aid worn in the left ear was removed for otoscopy, and found intact on inspection. There was greater build up of cerumen in the left ear compared to the right, with an uncharacteristic glisten to it. The glistening object was uncovered by gentle flushing with abulb-syringe and body-temperature-tap-water. A 7-mm rubbery nodule surfaced and was gently removed by further flushing and flexible curette extraction. On repeat otoscopy, the left tympanic membrane (TM) remained obscure. More wax and another rubbery fragment blocked full view of the ear canal. Further attempts to remove obstruction sitting in the sensitive inner 3rd of the ear canal were ceased when efforts proved uncomfortable. Resident was referred to an ENT specialist who removed the 2nd nodule by flushing and soft curette. After discussion with the resident's daughter, she confirmed the "loss" of 2 hearing aids in the past 6 months which had been promptly replaced by the vendor.

RESULTS: A Medline keywords search for "otic, foreign body, ear canal, and elderly" yielded 46 publications from 1982-2008. Otic retention of hearing aid molds, batteries and their complications have been reported but retention of hearing aids has not. Miniaturized parts tend to be fragile and easily detached. In the ear canal these parts can be obscured by wax buildup. In time, cerumen and foreign bodies could chemically react with potential morbid consequences such as otitis and perforation. The literature discourages instilling commonly used products to dissolve earwax in the context of a foreign body because of potentially corrosive reactions, resulting in further harm. Providers must be vigilant in otic examination of hearing aid users, especially in long-term care settings. There is high prevalence of cognitive impairment that may result in resident's diminished capacity to manage hearing aids. Detached hearing aid fragments may go undetected as 'lost' units, with part(s) potentially concealed in the ear canal.

CONCLUSION/DISCUSSION: In long term care settings it is important to conduct careful ear examinations and to remove hearing aids when present, in order to fully visualize the external canal. Providers must be circumspect of finding obscured TMs on otoscopy. Earwax and obscure otic foreign bodies should not be left impacted as there is potential for migration to adjacent structures causing further morbidity. As hearing aids have become smaller, it is important to have a high index of suspicion for retained detached parts, especially in demented residents. It is important for long-term care providers to consider removing obstructions while being attentive to resident comfort. The literature does not support use of common cerumen softening agents thus, gentle flushing with body-temperature-tap-water should be considered. If comfort precludes further manipulation, referral to the ENT specialist is warranted.

Poster Presentation:

American Geriatrics Society, Orlando, FL, May 2010.

Examining the Hendrich Fall Risk Models and the Morse Fall Scale

Cheryl Reilly, RN, PhD; Christine Gryglik, MSN, APN, BC;
Mary Brunton, RN, PhD; Deborah Morsi, RN; PhD

OBJECTIVES: Patient falls are common adverse events in acute care facilities. The Hendrich Fall Risk Models (HFRM) and the Morse Fall Scale (MFS) are recommended as evidence based risk assessment tools yet few validation studies exist. Study aims were to evaluate the diagnostic accuracy of the HFRM, HFRM II, and MFS and to compare fall rates using the Hendrich Models.

STUDY DESIGN: A retrospective case-control design was used to evaluate the tools. A retrospective cohort design was used to compare fall rates. A random sample of 100 inpatients admitted to an academic medical center who fell were matched with a control, yielding a purposive sample of 200. All hospitalized patients were included in the analysis of rates.

RESULTS: For the HFRM, sensitivity ranged from .58 to .74, specificity from .42 to .60, and accuracy from 53% to 65%. For the HFRM II, sensitivity ranged from .42 to .76, specificity from .50 to .58, and accuracy from 50.54% to 65%. For the MFS, sensitivity ranged from .76 to .82, specificity from .27 to .34, and accuracy from 54.5% to 55%. The mean fall rate per 1,000 patient days was 2.27 (SD=0.27) using the HFRM and 2.79 (SD = 0.47) using the HFRM II. The difference was 0.52 (95% CI = 0.29, 0.74) in fall rates was significant.

CONCLUSIONS: Although some studies support the predictive validity of these models, findings suggest there may be difficulties with their translation into practice. In this study, low estimates of diagnostic accuracy suggest these instruments are little better than chance alone at detecting true fallers. The accurate identification of high risk patients is central to the initiation of prevention strategies and ultimately the avoidance of falls and related injuries. Study results support the notion that evidence based practice may be profoundly contingent on practice based evidence.

Poster Presentation:

Massachusetts Nurse Executive Organization's Fall Symposium, 9/09

Oral Presentation:

Proceedings of the Eastern Nursing Research Society, 2010.

How Much Do Women Know About Hysterectomy? A Survey of Women in an Academic Obstetrics and Gynecology Practice

Oz Harmanli, MD; **Shamini Kirupanathan, MD**; Heather Sankey, MD; Alexander Knee, MD; Iris Ilarslan

OBJECTIVES : To assess women's knowledge about hysterectomy and the demographic factors which may influence their perceptions.

MATERIALS AND METHODS: In this cross-sectional observational study, all adult women who were seeking any type of care at our academic obstetrics and gynecology outpatient facility from June to August of 2009 were asked to complete a self administered anonymous questionnaire about hysterectomy and their perceived effects on sexual and reproductive function. We needed 300 subjects for a power of 80% and $p < 0.05$ to show 20% difference in percent correct score for education level. We recruited 500 participants in order to compensate for incomplete surveys. We assessed the accuracy of their knowledge and analyzed the demographic factors such as education, age, marital status, sexual preference insurance status, religion, and the reason for the visit. P value of 0.05 was used to determine significance.

RESULTS : Women in 18-59-age range comprised 93% of our sample; 56% were married; 73% were college graduates; 80% were Caucasian, and 81% had private insurance. The reason for the visit was either annual visit or a non-obstetrical problem for 64% of the participants while 14% were pregnant. Mean correct score was 63% with a standard deviation of 20%. Women in 18-24-age bracket scored the lowest (54%) while 50-59 year old women had the highest score (68%). Women with private insurance achieved higher scores than the women on public assistance (64 and 55%). College graduates were significantly more accurate than the rest (59 and 64%). Reason for visit did not make any difference.

When asked the meaning of hysterectomy, 29% included removal of ovaries and tubes as a part of hysterectomy. Six percent did not know the uterus was necessary to get pregnant, 5% thought it was possible to get pregnant after removal of the uterus. 24% responded that menstrual function would continue after removal of the uterus. The question for whether removal of the uterus resulted in climacteric changes was correctly answered only by 34%. Six percent thought their external appearance would be different after removal of the uterus. 7% of women thought their femininity would be affected by hysterectomy.

When sexual function was asked, significant number of the subjects noted that sex was possible but not as enjoyable (6% after total and 9% after supracervical hysterectomy), and 17 and 25%, respectively, were without an opinion about it.

While 59% of women did not agree that removing the entire uterus eliminated the cervical cancer risk, 66% concluded that she would continue to need Pap smears after total hysterectomy. Twenty two percent did not have any knowledge about the risk of cervical cancer or need for Pap after total hysterectomy. Of note, while age and education level did not make a difference in this response, type of insurance did.

CONCLUSION: Women's knowledge about hysterectomy is not satisfactory. Detailed counseling is necessary especially for women who are younger, on public assistance and lack college degree.

Poster Presentation:

Society of Gynecological Surgeons Annual Meeting, April 2010.

Adherence to Practice Guidelines for Atypical Glandular Cells on Cervical Cytology

Cara Robinson, DO; Kathryn Sharpless, MD, PhD; Peter Schnatz, DO

OBJECTIVES: To determine if compliance with practice recommendations for atypical glandular cells (AGC) on cervical cytology has increased between 1998-2001 and 2004-2007 and to determine if cytopathologists' recommendations on AGC reports influence the rates of evaluation.

METHODS: Data from 284 cases of AGC was collected between January 2004 and December 2007, inclusive, and compared to those from 1998-2001. The rates of cytology report recommendations were also determined.

RESULTS: Histologic sampling was performed in 76.1% of the AGC cases, and 58.8% had a comprehensive evaluation. These rates are higher than those from years 1998-2001 (63.5% and 35.8%, respectively, $P < 0.01$). Rates of evaluations of women with AGC favor neoplasia (FN) did not increase between the two time periods. Rates of comprehensive initial evaluations, and endometrial sampling in women age 35 and above did not increase between 2004-2005 and 2006-2007. Of the AGC reports that did contain cytopathologist recommendations, 28% were consistent with the current management guidelines, 26% recommended a partial histologic evaluation, and 46% recommended repeating the Pap. Women whose AGC report recommended a comprehensive evaluation or partial histologic evaluation were more likely to have a comprehensive work-up (79%) than those whose reports did not contain recommendations (55%, $P < 0.01$) or recommended repeating the Pap (51%, $P < 0.02$).

CONCLUSIONS: Adherence to practice guidelines for the evaluation of women with AGC has improved, but continues to be suboptimal in these high risk patients. Continued educational efforts aimed at improving adherence to current published guidelines are needed for both clinicians and cytopathologists.

Poster Presentation:

American Society for Colposcopy and Cervical Pathology 2010 Biennial Meeting, Las Vegas, March 27, 2010.

Does Surgical Volume Influence Short-term Outcomes of Laparoscopic Hysterectomy?

Elena Tunitsky-Bitton, MD; Ayse Cital, MD; Reyhan Ayaz, MD;
Sertac Esin, MD; Alexander Knee; Oz Harmanli, MD

OBJECTIVE: To evaluate whether surgical volume has an impact on short-term outcomes of laparoscopic hysterectomy.

STUDY DESIGN: This is a retrospective analysis of 1016 laparoscopic hysterectomies.

RESULTS: The surgeons were divided into 2 groups based on a cutoff of 30 cases. Patient characteristics, the rates of laparotomy (4.5% vs 6.7%), and serious complications (3.6% vs 5.5%) were similar between 9 “high” and the remaining 39 “low volume” gynecologists, respectively (P_.05). Mean operating time was longer in the “low volume” group. Compared with their first 29 hysterectomies, the “high volume” surgeons decreased their operating time significantly in their subsequent cases. The “high volume” surgeons improved their conversion rate (9.2% vs 2.4%; P_.0001) over time but not their serious complications.

CONCLUSION: In laparoscopic hysterectomy, increasing the surgical volume can reduce the operating time and the risk for conversion to laparotomy but not the rate of serious complications.

Oral Presentation:

AUGS (American Urogynecologic Society), September 24-26, 2009

Publication Pending:

Tunitsky E, Cital A, Ayaz R, et al. Does surgical volume influence short-term outcomes of laparoscopic hysterectomy? *Am J Obstet Gynecol*, 2010;202.

Electrolyte Profile of Pediatric Patients with Hypertrophic Pyloric Stenosis

Godfrey Tutay, MD; Geoffrey Capraro, MD; Blake Spirko, MD;
Jane Garb, MS; Howard Smithline, MD

BACKGROUND: Traditional teaching holds that obstruction that is high in the gastrointestinal tract usually is associated with hypochloremic, hypokalemic metabolic alkalosis as gastric hydrogen ions are lost from vomiting. The classic example of this is hypertrophic pyloric stenosis (HPS). Papadakis et al in 1993 suggested that the prevalence of electrolyte derangement in HPS may be diminishing in the past 3 decades, but were not able to show significant difference in electrolyte derangement over the 3 decades investigated.

OBJECTIVE: This study will determine the proportion of HPS patients demonstrating metabolic and electrolyte abnormalities over a ten year period. We seek to determine if acid-base status of patients with HPS has changed over time and explore the factors that might contribute to electrolyte and acid-base profile.

DESIGN/METHODS: This study is a retrospective chart review of 205 pediatric patients less than 6 months old with ultrasound or upper gastrointestinal series-confirmed HPS diagnosis at a tertiary, regional pediatric center in Springfield, MA (Baystate Children's Hospital) from 2000 to 2009. We examined the first set of electrolytes (the serum bicarbonate (CO₂), serum potassium (K) and serum chloride (Cl)) of the index visit and determined the proportions of the normal, high and low levels of each electrolyte.

RESULTS: Over the ten year period (2000-2009), the proportion of HPS cases with normal serum CO₂ level was 62% (n=127), low serum CO₂ 20% (n=40) and high CO₂ 18% (n=38). The proportion with normal serum K was 57% (n=117), low K 8% (n=17), and high K 35% (n=71). Of note 26% (53) of K value reports indicated slight hemolysis, and 9% (19) indicated moderate to gross hemolysis. The proportion with normal Cl was 69% (141), low Cl 25% (52), and high Cl 6% (12). Logistic regression analysis demonstrated that the prevalence of metabolic alkalosis significantly increased across the decade, while the prevalence of metabolic acidosis decreased.

CONCLUSIONS: Although patients with HPS can progress to hypokalemic, hypochloremic, metabolic alkalosis, the more common presentation of HPS is a normal electrolytes profile with some patients presenting with metabolic acidosis and others metabolic alkalosis. Thus, serum electrolyte derangement is a poor marker for HPS.

Poster Presentations:

14th Annual New England Regional Society for Academic Emergency Medicine Conference Shrewsbury, Massachusetts, April 2010
Pediatric Academic Societies Meeting, Vancouver, Canada, May 2010.

Randomized Controlled Trial Comparing Metformin with OCP vs. OCP Alone in the Treatment of Adolescents with Polycystic Ovary Syndrome (PCOS)

Chelsea Gordner, DO; Edward Reiter, MD;
Nancy Dunbar, MD; Holley Allen, MD

OBJECTIVE: To compare response to Met and OCP versus OCP alone in adolescents with PCOS.

DESIGN/METHODS: Thirty-five adolescent females with symptoms of PCOS presenting to our Pediatric Endocrinology Clinic were randomized to receive OCP or OCP + Met. Patients were evaluated at baseline, 3 and 6 months. The primary outcome was free testosterone (FT) and secondary outcomes included menstrual regularity, hirsutism scores (HS), acne scores (AS), BMI, and fasting glucose and insulin levels.

RESULTS: Thirty-five patients were enrolled and 27 (77%) completed the study. The dropout group was older than the completers (mean age 16.4 vs 15.0, $p = 0.035$) but did not differ in other baseline characteristics. Of the 27 completers, 15 were randomized to OCP and 12 to OCP + Met with no difference in baseline characteristics between groups. Pill counts were evaluated for compliance; 7 of 26 (27%) provided pills at the 3 month visit and 2 of 26 (8%) at the 6 month visit. After 6 months, except for SHBG, there was no statistical difference between groups for FT, Total T, BMI, AS, HS, fasting glucose or insulin levels. Both groups had significant increases in the SHBG ($p < 0.001$): SHBG rose 76.9 nmol/L (350%) in the OCP group and 21.08 nmol/L (139%) in the OCP + Met group. FT decreased ($p = 0.01$) in both groups: FT decreased by 0.73 ng/dL (43%) in the OCP group and by 0.67 ng/dL (32%) in the OCP + Met group. In both groups combined, there was an increase in HDL ($p = 0.025$), decrease in AS ($p = 0.003$), and decrease in insulin level ($p = 0.022$). Subgroup analysis of patients with insulin resistance (fasting insulin > 16 UIU/mL) did not reveal any different response in the IR group.

CONCLUSIONS: In adolescents Metformin did not provide any added clinical benefit to OCP's in the treatment of PCOS.

Poster Presentation:

Pediatric Academic Society Meeting, May 2010.

Awards:

LWPES Travel Award

Craniocervical Artery Dissection in a 3 year old

Brendan Kelly, MD; **Amanda Conti, MD; Melody Brewer, MD**

Case Study: CW is a 3 year old male with autism who presented with a reluctance to bear weight on his right leg. While at school, he suddenly jumped up, started crying, and would not bear weight on his right leg. This was not associated with changes in mental status, seizure like activity, vomiting or headache. The patient had no known trauma. On initial evaluation, CW seemed to be in pain and complained of dizziness. Physical exam, x-rays of his right leg, an abdominal x-ray, and ultrasound were unrevealing. CW's pain improved over twenty-four hours and he slowly started to bear weight on his leg. On repeat neurological exams, he was noted to be ataxic. An MRI revealed acute and subacute infarcts in the left PCA territory. Chronic infarcts were also present within the right inferior cerebellum in the distribution of the right PICA. MRA of the neck revealed dissection of the right vertebral artery at the level of C2. Pt was started on anticoagulation.

DISCUSSION: The risk of ischemic stroke in childhood is 7.8 per 100,000. Craniocervical artery dissection [CAD] is the cause of ischemic stroke in 7.5% of childhood cases. The risk is higher for males and African American children. Adults and children with CAD most commonly have intracranial dissections and these are more common in males. CAD differs in adults and children as the most common symptom(s) for adults is unilateral occipital headache and/or posterior neck pain and in children, pain is not a principal symptom, with only half of children complaining of head or neck pain. Adults commonly have vertigo, diplopia, or nausea and vomiting, whereas children commonly experience hemiparesis. Vertebral artery dissection usually occurs in the upper part of the vertebral artery at the C1–C2 level of the vertebrae. This most likely occurs because of the rotation of the head at the atlanto-axial joint. Dissection may be precipitated by fibromuscular dysplasia, connective tissue disorder, trauma, or may be classified as spontaneous. Spontaneous dissection of the cervical arteries is a rare cause of stroke in the general population, but in the young, it is a major cause, accounting for about 10%–25% of ischemic events. Treatment in children with CAD is similar to that in adults. Children should be treated with LMWH or coumadin for at least 6 weeks, with ongoing treatment dependent on radiologic assessment. Head injury is common in children and we recommended restricting activity and wearing a helmet to our patient while being treated with Coumadin.

Insulin Resistance and Nephrolithiasis: Risk in Obese Adolescents

Rishita Tiwari, MD; Thomas Campfield, MD; Christal Whittcopp, MD;
Gregory Braden, MD; Holley Allen, MD

BACKGROUND: Nephrolithiasis is a cause of morbidity in adults with obesity, metabolic syndrome and in Type 2 DM. Uric acid and mixed calcium-uric acid nephrolithiasis is frequently seen in this population. Insulin resistance plays a key role in the development of renal stones in adults. Metabolic studies show that insulin resistance is associated with defects in renal ammonium production leading to low urinary pH, a major risk factor for stone production. There are no studies describing the association of renal stones and obesity in children, nor of the association of urinary pH and insulin resistance.

OBJECTIVE: This study examines the relationship of urinary pH and obesity in adolescents and characterizes the relationship between insulin resistance based on HOMA-IR with urinary stone forming parameters.

METHODS: A total of 25 obese adolescents between the ages of 12-18 years were enrolled. A 24 hour and a freshly obtained urine sample were analyzed for urinary pH and promoters and inhibitors of stone formation. We compared obese insulin resistant to obese non insulin resistant adolescents. The following were used to evaluate metabolic syndrome - fasting insulin and glucose, fasting lipid profile, oral glucose tolerance test if done, and liver function tests.

RESULTS: Our population of 25 adolescents with a mean age of 14.4 years (range 11.89-18.34, SD- 2.03) consisted of 11 females and 14 males with a mean BMI of 35.9 (25.9-48.1, SD 5.73). The mean BMI SDS was 2.39 (1.76-2.55, SD- 0.35). There were 14 insulin resistant subjects (mean HOMA IR - 7.84) while 11 were non insulin resistant (mean HOMA IR - 2.59). The mean 24 hour urinary pH in the IR group was 6.11 (SD 0.63) and in non IR group was 6.40 (0.69) [$p = 0.13$]. The mean freshly obtained urinary pH in the IR subjects was 5.7 (SD 0.59) and in non IR subjects was 6.13 (SD 0.61). The mean urinary oxalate level was 0.64 mmol/L in the IR group and 0.24 mmol/L in the non IR group [$p = 0.12$]. The Pearson's correlation coefficient between the freshly obtained and 24 hour urinary pH was 0.73. The coefficient between HOMA IR and 24 hour urinary pH was -0.37 while that between HOMA IR and freshly obtained urinary pH was -0.36.

CONCLUSIONS: Our study showed that insulin resistance is associated with a tendency to excrete more acidic urine with a higher oxalate concentration. We found that the pH of a 24 hour urinary sample correlates well with the pH of a freshly obtained urine sample.

Platform Presentation:

Pediatric Academic Societies, Vancouver, BC, Canada, May 2010.

Does a Pediatric Hospitalist Result in Higher Quality of Care?

Susan Harp, MD; Christine McKiernan, MD;
Paul Visintainer, PhD; Abhay Singh

BACKGROUND: Studies in the last three decades have shown hospitalist-based medicine to be time efficient, cost efficient, and acceptable to physicians, without adverse effects on patient morbidity and mortality. Pediatric literature to date has focused on comparing length and cost of stay, and re-admission rates, but not quality of care. Practice guidelines may represent best practice based on medical evidence, and adherence could be considered a surrogate to best quality of care for hospitalized patients.

OBJECTIVE: The aim of this study is to compare the quality of care of febrile infants treated at an academic medical center by pediatric hospitalists, as compared to community physicians. Quality of care was measured by adherence to the practice guidelines for the treatment of febrile infants within the institution.

DESIGN/METHODS: A chart review was conducted on 548 admissions that met eligibility criteria to assess adherence at 3 key decision-making points within the febrile infants guideline: (1) assessment of risk status by medical history, physical exam, and laboratory values, (2) LP obtained/attempted, and (3) antibiotic administration. Included were all children age 3 months or younger with the admitting or final diagnosis of fever, children under the age of 1 month with a fever during the hospital admission, or children age 3 months or younger with persistent fever. The time periods studied were 1/1/06-1/31/07 and 1/1/08-1/31/09. A pediatric hospitalist program was initiated in a step-wise fashion in 2007. The comparison groups included community physicians prior to the initiation of the hospitalist program, and after the hospitalist program was fully implemented.

RESULTS: Compliance to the febrile infant guidelines was analyzed using Pearson chi², Fisher's exact, and logistic regression methods. Across all groups, compliance was highest in infants under the age of 1 month (64%) compared to all ages 1-3 months (43%), and the lowest in infants age 3 months (15%). From 2006 to 2008, there was 50% increase in compliance, adjusting for physician practice type (RR 1.5, 95%CI 1.2-1.76, p=0.001). Controlling for time period, hospitalists were on average 21% less compliant than community doctors, however this difference did not achieve significance (RR 0.79, 95%CI: 0.53 - 1.10).

CONCLUSIONS: An increase in compliance was associated with the institution of the hospitalist system, but was not associated with increased compliance by the hospitalist group.

Poster Presentation:

Pediatric Academic Society Annual Meeting, Vancouver, B.C., May, 2010.

The Value of Vitamin D Therapy in Neonatal Familial Hypocalciuric Hypercalcemia (FHH)

Ksenia Tonyushkina, MD; Edward Reiter, MD; Holley Allen, MD; Mary Alice Abbott, MD, PhD; Nancy Dunbar, MD, MPH

BACKGROUND: FHH is caused by inactivating mutations in the Ca-sensing receptor (CaSR) gene resulting in an elevated set point for serum Ca inhibition of PTH secretion.

OBJECTIVE: We report a case of FHH with prenatal fractures and a novel mutation in the CaSR gene.

DESIGN/METHODS: A female infant born full-term was admitted at 2 wks for suspected non-accidental trauma (NAT). Initial lab testing revealed Ca of 12.3mg/dL. Skeletal survey showed osteopenia, multiple healing fractures, bowed femora. A markedly elevated PTH of 204 pg/ml and a very low spot urinary Ca/Cr ratio of 0.02 were noted. Ca metabolism parameters of infant's mother were unremarkable and family history was noncontributory. Father was unknown. Treatment was initiated with Vit D3 400IU daily to suppress PTH. The infant was switched back to regular formula from the low Ca formula that had been started.

RESULTS: Now age 1year, growth and development have been normal. Ca levels remain 11.2-13.0 mg/dl with spot urine Ca/Cr ratios always < 0.02. PTH levels slowly decreased over 6 weeks into the high normal range, while 1,25D fell by 60%. A repeat skeletal survey at age 3 months demonstrated normal bone mineralization, resolution of metaphyseal erosions, and fractures. Genetic testing: A CaSR gene mutation study showed heterozygosity for a T>C nucleotide substitution at c.1664 in exon 6, resulting in an amino acid change I555T. A point mutation in the same codon also leading to a missense change has been reported in a single patient with FHH.

CONCLUSIONS: This child appears to have a neonatal form of FHH due to a novel mutation of the CaSR. Vit D3 supplementation led to relatively quick resolution of hyperparathyroidism and significant improvement of bone lesions and osteopenia. These data provide support for Vit D therapy in neonatal FHH.

Poster Presentation:

PAS in Vancouver, May 2010.

Two Week DMSA Chelation: Is it a Reasonable Alternative to the Standard Nineteen Day Course

Hilary Branch, MD; Jessica Walsh, DO

BACKGROUND: Elevated lead levels remain a concern for children today. Elevated blood lead levels (BLL) have been found to be associated with lower IQ scores, increased risk of renal tubular acidosis, effects on growth, heme synthesis, speech delay and increased behavioral problems. New exposures continue to be identified. In 2006, the CDC found that more than 1 out of 100 children under age 6 had elevated lead levels. Select children should be chelated. Objective: This study will evaluate if a twice daily, 14-day course of DMSA is as effective as the current standard 19-day course (3 times a day for 5 days followed by twice a day for 14 days), at lowering blood lead levels for children with blood lead levels over 25 mcg/dl.

DESIGN & METHODS: This study retrospectively reviewed charts of children (aged 13 to 85 months) seen and treated at the Baystate Children's Hospital Pediatric Environmental Health Clinic for BLLs greater than 25 lg/dl from 1993 to August 2009. From 1993 to 2003 an IRB approved study randomized patients to receive either twice daily dosing of DMSA for 14 days or twice daily dosing for 14 days followed by daily dosing for 14 more days. Data for the study compared children treated twice daily with DMSA for 14 days to patients treated with the standard 19-day course. BLLs were measured at baseline and up to 180 days after the start of therapy. Analyses used t-tests and mixed effects regression to compare the BLLs of treatment groups over time.

RESULTS: The 19-day course had a statistically significant larger mean drop in blood lead levels by day 28 ($p < .05$). However, by day 42 and subsequently, there was no difference in BLLs between the dosing regimens.

Poster Presentation:

Pediatric Academic Societies, Vancouver, BC, Canada, May 2010.

Mean Difference in BLL Values Between Treatment Groups

Time (days)	Mean Difference	
	BLL	p-value
7	6.73	0.035
14	2.55	0.255
28	-4.73	0.038
42	2.69	0.347
56	2.16	0.313
86	2.71	0.259
180	2.34	0.468

CONCLUSIONS: Though the 19-day course of treatment shows a more significant drop in lead levels by day 28, this difference is lost by day 42. The goal of chelation is to decrease the total body burden of lead. Six weeks from start of chelation both dosing regimens appear to give similar results. Treating only twice a day and for a shorter period of time is less expensive, minimizes medication exposure and is easier for families. Chelating with DMSA for two weeks BID may be reasonable alternative to the 19-day treatment.

Does a Condom Availability Program in an Inner City Public School Decrease the Rates of Gonorrhea and Chlamydia Infection?

Sharon Wretzel, MD; Paul Visintainer, PhD; Laura Koenigs, MD

BACKGROUND: Sexual activity among adolescents remains high, as does the rate of sexually transmitted infection (STI) acquisition. There are no data to date that suggest that condom availability (CA) programs in high schools can help decrease the rate of transmission of STI. However, in 2005, Holyoke Public Schools (HPS) instituted a CA program to reduce the rate of STI transmission.

OBJECTIVE: To determine whether a CA program in an inner city school can decrease the rates of gonorrhea (GC) and chlamydia (CH) in adolescents that city.

STUDY DESIGN: Using department of public health data, we examined rates of GC and CH among males and females, age 15-19, for 3 years prior to and after the implementation of the CA program in HPS using poisson regression analysis. We also compared these data with the GC and CH rates for same age and gender categories of Springfield, MA whose school district is similar in socioeconomic status but does not have a CA program.

RESULTS: Holyoke males, age 15-19, had a significant decrease in the rate of STDs (GC and CH combined) post CA, when compared to similar aged males in Springfield ($p < .05$). Further, Holyoke males showed a tendency ($p = 0.07$) for a decline in GC post CA, with rates in Holyoke declining faster than Springfield. Holyoke females, ages 15-19, did not show a tendency for GC decline after 2005, but did demonstrate a tendency towards declining GC when compared with their counterparts in Springfield.

CONCLUSIONS: The significant decrease in rate of STIs in males in Holyoke post CA may be due to the CA program. Interestingly, this CA program has institutional barriers to condom access. Our research demonstrates that such programs may be successful despite such obstacles. Future advocacy will include recommending a CA program for the Springfield Public Schools, our control group.

Oral Presentation:

Pediatric Academic Societies Annual Meeting, Vancouver, British Columbia, Canada, May 2010.

Pulsatile Hemodynamics in Normotensive Children Compared to Children with Essential Hypertension

James Sheehy, MD; Iriina Litvak, Kelly Smith, Yvonne Paris, MD; Robert Rothstein, MD; Gary Mitchell, MD

PURPOSE: To compare arterial stiffness in children with essential hypertension (EH) to normotensive (NT) controls.

METHODS: We prospectively evaluated 8 EH children, 10-18 years old, referred to pediatric cardiology, and compared them to 9 NT children from primary care clinic. Children with EH (systolic blood pressure > 95% on three measurements) were included if they were not on blood pressure medication and had normal echocardiogram, urinalysis, renal ultrasound including Doppler, electrolytes and creatinine. We used calibrated arterial tonometry, echocardiography with Doppler flow and body surface measurements to assess carotid-femoral pulse wave velocity (CFPWV, a measure of aortic wall stiffness) and aortic impedance to pulsatile flow (characteristic impedance, Z_c). Z_c was calculated from the ratio of change in carotid pressure (dP) and aortic flow (dQ) in early systole ($Z_c = dP/dQ$). We computed normalized impedance (Z_c/Z_0), which adjusts for body size, by expressing Z_c as a fraction of peripheral resistance (Z_0). Pressure amplification, which is produced by the increase in arterial stiffness moving from the compliant aorta into the stiffer peripheral arteries, was computed as the ratio of carotid/brachial pulse pressure (PP). Amplification decreases as aortic stiffness increases. Studies were analyzed in a blinded fashion and groups were compared using an unpaired t-test with $p < 0.05$ as significant. Values are mean \pm SD.

RESULTS: Children with EH demonstrated isolated systolic hypertension with markedly elevated central (carotid) and peripheral (brachial) PP, excessive normalized impedance to pulsatile flow (Z_c/Z_0) and loss of amplification. In contrast, CFPWV did not differ.

CONCLUSION: Increased normalized impedance to pulsatile flow in the setting of normal CFPWV indicates improper matching between aortic diameter and resting flow, suggesting that aortic adaptation to somatic growth and increased flow is impaired in children with EH.

Poster Presentation:

American Academy of Pediatrics, October 2009.

Pharmacy – Nursing Intervention to Improve Accuracy and Completeness of Medication Histories

Edward Tessier, PharmD, MPH; Elizabeth Henneman, PhD, RN, CCNS, FAAN; Brian Nathanson, PhD; Karen Plotkin, PhD, HHCNS-BC; Mark Heelon, PharmD

PURPOSE: To quantify the effects of a new medication history-taking program for nurses on the medication reconciliation process.

METHODS: Pharmacists and nurses developed a novel, systematic survey tool for nurse-driven medication history-taking. An educational intervention and step-by-step tool were evaluated with nursing students in a randomized, crossover controlled environment using mock patients and standardized interviews. Drug omissions were compared between controls and those using the tool. A refined tool was later implemented on four inpatient medical/surgical units in a teaching and a community hospital. Medication error rates pre/post intervention were compared. Rates of drug discrepancies pre/post-intervention were compared via review of electronic histories, computerized orders, and discharge summaries of 100 randomized patients at the community hospital.

RESULTS: Reconciliation accuracy improved with tool use in the controlled environment (87% vs. 74%, $p < 0.01$). Increased percentage of patients without discrepancies (Pre = 20% vs. Post = 42%, $p = 0.027$), reduced drug omissions at discharge (Mean: Pre 0.7(1.2) vs. Post 0.2(0.5) $p = 0.017$), and a trend toward reduced drug omissions during hospitalization (Mean: Pre 1.2(1.8) vs. Post 0.6(1.2) $p = 0.061$) occurred with tool use at the community hospital. The most common medications involved in a delay or omission were multivitamins, laxatives, antidepressants, anti-diabetic agents, platelet inhibitors, and acid suppressing agents.

CONCLUSION: A systematic approach by nurses to obtain a medication history produces a measurable improvement in the medication reconciliation process.

Presentations:

An evaluation of a collaborative nurse-pharmacist intervention for improving the medication reconciliation process: impact on safety.

ASHP Clinical Midyear, Orlando, FL, December 2008.

Better medication history taking: the way to improve medication reconciliation.

Western Massachusetts Association of Hospital Pharmacists, West Springfield, MA, and

New England Rural Hospital Performance Improvement Summit, Portsmouth, NH, April 2009

Publication:

Tessier EG, Henneman EA, Nathanson B, Plotkin K, Heelon M. A pharmacist-nursing intervention to improve the accuracy and completeness of the medication histories. *AJHP* (Vol 67) April 15, 2010, pp 607-611.

Is Improvement in Blood Glucose Control Following a Diabetes Education Intervention Associated with Changes in Depression or Diabetes Distress?

Sofija Zagarins, PhD; Garry Welch, PhD; Jane Garb, MS

BACKGROUND: Depression is more common in diabetes patients compared to the general population, and depressive symptoms have been shown to impact diabetes outcomes, including glycemic control. However, in diabetes patients depressive symptoms are highly correlated with diabetes-specific distress, and previous non-interventional studies have suggested that diabetes distress may have a greater effect on diabetes outcomes than depression itself.

OBJECTIVE: To conduct the first analysis to examine the relative effects of change in depressive symptoms and change in diabetes distress on change in glycemic control.

STUDY DESIGN: We used data from a randomized controlled trial involving $n=234$ Type 2 diabetes patients, in which patients were randomized to receive diabetes education with or without motivational interviewing (MI). We measured glycemic control (HbA1c), self-care behaviors (SCI-R), depressive symptoms (CES-D), and diabetes distress (PAID) at baseline and at 6 months.

RESULTS: HbA1c decreased by $-0.6\pm 1.3\%$ from baseline to 6 months for the total group ($p<0.01$). Self-care behaviors improved significantly (mean change \pm SD: 9.1 ± 13.8 ; $p<0.01$), while depressive symptoms showed a trend to decrease (-1.2 ± 8.4 ; $p=0.08$) and diabetes distress decreased significantly (-9.6 ± 16.5 ; $p<0.01$). In multiple linear regression analyses adjusting for treatment effect and change in self-care behaviors, change in depressive symptoms was not associated with change in HbA1c ($p=0.23$). Change in diabetes distress was significantly associated with change in HbA1c ($p<0.01$), such that a 10-point decrease in diabetes distress was associated with a -0.3% reduction in HbA1c. These results were unchanged after further adjustment for appropriate covariates.

CONCLUSIONS: Reducing diabetes distress, rather than depression, may have a greater impact on blood glucose control for patients with poorly controlled T2DM.

Mammographic Asymmetries: Review of Terminology and Strategies for Increasing Cancer Detection

David March, MD; **Paryssa Khadem, MD**; Giovanna Crisi, MD;
Vivian Miller, MD; Dmitry Rakita, MD

OBJECTIVES: Asymmetric soft-tissue-density findings (AF) that lack the convex borders and conspicuity of a true mass are commonly visualized on mammography. There are 3 subtypes of AF (ACR BI-RADS® Breast Imaging Atlas—4th edition): asymmetry (visualized on a single projection), focal asymmetry (visualized on two projections), and global asymmetry (visualized on two projections, involving at least one quadrant). Use of the ACR BI-RADS® terminology to describe the types of AF improves consistency and clarity of reporting and also provides more consistent case data for research studies investigating the prevalence and significance of different mammographic findings.

The large majority of AF is due to benign causes, including normal fibroglandular or ductal tissue, benign masses, overlying skin lesions, or the sequelae of surgery, trauma, or infection. However, infiltrating ductal or lobular carcinoma and DCIS may also present as AF, and detection of these malignancies can be challenging because their appearance may be identical to normal tissues. The ability to detect AF and to recognize suspicious changes in these findings over time (increase in size, density, or conspicuity) are important components of mammographic interpretation.

STUDY DESIGN AND FINDINGS: This exhibit will review the terminology for the 3 subtypes of AF with case-based demonstration of the different types. Strategies for increasing detection of potentially malignant AF will be presented. Instructive cases with proven outcomes will provide the reviewer with the opportunity to identify the mammographic finding and decide on the subtype of AF that is depicted, prior to being provided with subsequent imaging studies, clinical information, and pathologic findings. Common normal and pathologic entities that produce AF will be summarized. Case studies with pertinent supplemental imaging, imaging follow-up, clinical history, and pathology will be presented. Mammographic findings will be correlated with sonography and MRI in some cases.

CONCLUSION: Most AF on mammography are benign; however, malignancies may present in this manner and the findings may be subtle. Detection, description using the terminology defined in the ACR BI-RADS® Breast Imaging Atlas, and understanding the potential significance of AF are important aspects of mammographic interpretation and reporting.

Electronic exhibit and oral presentation:

Annual American Roentgen Society Meeting, San Diego, CA, May 2010.

Approach to the Imaging of Genitourinary Infections: A Review

Roozbeh Houshyar, MD; Tara Catanzano, MD

PURPOSE/AIM: To review imaging findings of genitourinary infection on various modalities including radiography, US, CT, MR and nuclear studies. Emphasis will be placed on renal infection.

CONTENT ORGANIZATION:

1. Clinical importance of GU infection, presentation and imaging based on time course of infection
2. Imaging modalities available for evaluation; radiography, ultrasound, CECT, MR, Nuclear Imaging. Review of multimodality approach.
3. Local and systemic methods of spread of GU infection and their imaging findings
4. Follow-up imaging of GU infection
5. Sample cases for each modality
6. Sample cases of complications of GU infections

SUMMARY:

1. Become familiar with clinical importance, presentation and imaging of GU infections with respect to time course of presentation.
2. Gain familiarity with imaging modalities best suited for evaluation of GU infection and learn a multimodality approach to the evaluation of GU infection.
3. Learn about local and systemic complications of GU infections and their imaging presentation.

Electronic Presentation:

Radiological Society of North America, November / December 2009.

Falsely Negative Hepatobiliary Scintigraphy Studies in Biliary Atresia **Erez Vidan, MD; Kevin Moriarty, MD; Barry Hirsch, MD; James Polga, MD**

LEARNING OBJECTIVES: Educate the viewer regarding a potential false negative result owing to a less common subtype of biliary atresia, which negates the conventional claim in the literature that hepatobiliary scintigraphy is 100% sensitive in excluding the diagnosis of biliary atresia.

SUMMARY: Hepatobiliary scintigraphy, although not highly specific in the diagnosis of biliary atresia, is conventionally thought to be 100% sensitive in excluding the diagnosis once bowel activity is seen. However, there are instances where scintigraphy will show bowel activity - thus presumably ruling out biliary atresia - when in fact the patient has biliary atresia, owing to a less common subtype of the disease. We present two cases of falsely negative scintigraphy results in two patients with biliary atresia proven by intraoperative cholangiogram and biopsy. We hope to make the viewer aware that the classic notion that scintigraphy is 100% sensitive in excluding biliary atresia when bowel activity is seen should be regarded with caution.

Presentation:

Society of Nuclear Medicine, 56th Annual Meeting, June 13-17, 2009, Toronto, ON, Canada.

Pancreatic Cystic Lesions: Review of Imaging and Indications for Treatment and Surveillance

Arel Golombeck, MD; Dmitry Rakita, MD; **Thomas Wigginton, MD;**
Daniel Case, MD; William Renner, MD; Margaret Phillips, MD;
Stephen Pomeranz, MD

PURPOSE/AIM: The purpose of this study is to: 1. Review the types of cystic lesions that occur in the pancreas. 2. Review CT and MRI criteria to help separate benign from malignant processes. 3. Review the optimal resection and surveillance regimen for pancreatic cystic lesions.

CONTENT ORGANIZATION:

- I. Review of pancreatic cystic lesions: prevalence, pathology, differential diagnosis
- II. Review of benign vs. malignant imaging findings
 - Computed Tomography
 - Magnetic Resonance Imaging
- III. Sample cases: oncologic risk assessment based on imaging and other modalities
- IV. Review of optimal resection and surveillance regimen of pancreatic cystic lesions.
- V. Summary and Recommendations

SUMMARY: Recent advances in detecting pancreatic cystic lesions have led to their more frequent identification. Differentiation of benign from malignant lesions is crucial. Malignant lesions are associated with a solid component, main pancreatic duct dilation, bile duct dilation, or lymphadenopathy. Presence of these features combined with use of tumor markers or cytology may guide further diagnostic workup, expedite a treatment strategy, or inform a regimen for surveillance.

Poster Presentation:

Radiological Society of North America, November 2009.

Validation of a Model of Partial-Thickness Wound Healing Using Rats as Their Own Controls

Xuan Luu, MD; Peter Wu, MD; Reginald Alouidor, MD;
Ashley Kusialas, PA-C; Andrew Lee; Patrick Lee, MD

BACKGROUND: Previous studies of wound healing in rodents, have used littermates or clones as controls. We aimed to develop a wound healing model in rats, where each animal serves as its own control to minimize the effects of variables such as nutritional status, immunologic status and infection on wound healing. Our secondary aim was to compare the adjuvant effects of calcium alginate (Kaltostat®, ConvaTec, Skillman, NJ) with petroleum gauze (Xeroform®, Covidien, Mansfield, MA) on partial thickness wounds.

METHOD: Two partial thickness wounds were created using a 12 mm Nouvag dermatome (Robbins Instrument) on the dorsum of 12 lean in-bred Bio-Breeding Zucker Diabetic rats (BBZDR-BL). The wounds were approximately 12 mm x 24 mm and 0.4 mm deep. One wound on each rat was randomized to be dressed with Xeroform® and the other with Kaltostat®. Dressings were changed and wounds were photographed daily by unblinded investigators. Blinded investigators reviewed the wounds daily for infection and progression of healing. Blinded investigators reviewed serial photographs to determine time to healing.

RESULTS: Eleven animals survived to complete wound healing. Visual inspection of the wounds revealed that the mean number of days to healing with Kaltostat® dressings was 5.12 ± 0.80 versus 5.14 ± 0.61 days with Xeroform® ($p=0.95$).

CONCLUSIONS: There is no difference in the rate of healing between wounds dressed with Kaltostat® versus Xeroform®. BBZDR-BL rats appear to be an excellent model for studying healing of partial-thickness wounds. By using animals as their own controls, systemic factors for wound healing remain consistent, while the local wound environment can be manipulated.

Poster Presentation:

The Symposium on Advanced Wound Care (SAWC), April 2010

Tumor-Targeted Delivery of TRAIL Using *Salmonella Typhimurium* in Metastatic Breast Cancer in the Syngeneic Murine Model

Connie Rossini, MD; Sabha Ganai, MD, PhD;

Richard Arenas, MD; Neil Forbes, PhD

OBJECTIVES: To evaluate the effectiveness of targeted delivery of TNF-related apoptosis-inducing ligand (TRAIL) by *Salmonella typhimurium* to metastatic breast cancer in a syngeneic murine model.

STUDY DESIGN: Metastatic breast cancer lesions in the lung were created by tail vein injection of 4T1 cells in eight week old Balb/c mice. The mice were then treated with attenuated *Salmonella typhimurium* *msbB- purl- xyl-* (VNP20009), VNPpTRAIL, or phosphate-buffered saline (PBS). The mice were sacrificed after 12 days and the lung tissues were stained with hematoxylin and eosin and rabbit anti-*Salmonella* antibody. A group of mice underwent tail vein injection of 4T1 tumor cells and were randomized at 12 days into treatment with VNPpTRAIL or PBS. These mice were sacrificed when they became morbid from their disease.

RESULTS: Mice treated with VNPpTRAIL had an average number of lung metastasis of 10 ± 4 and control mice developed 18 ± 14 ($p=0.17$). Tumor burden determined by the area of the metastatic lesions in the treated mice was found to be significantly less than the control group ($p=0.0006$). Mice treated with VNPpTRAIL with extensive metastatic disease were found to live longer than control mice, 16-20 days compared to 14-18 days, respectively ($p=0.02$, Log-Rank test). Lung to body weight ratio as a predictor of extent of lung metastasis was also reduced in the VNPpTRAIL group at 0.045 ± 0.016 compared to 0.061 ± 0.011 ($p=0.1$). Upon histologic evaluation of the lung tissues, staining for anti-*Salmonella* antibody was most often seen in the necrotic center of the tumors, a region known to be resistant to conventional chemotherapies.

CONCLUSIONS: Targeted therapy with *Salmonella typhimurium* and TRAIL shows decrease number and size of breast cancer lung metastasis in the murine model. Mice with extensive tumor burden showed an extended survival after treatment with attenuated *Salmonella typhimurium* and TRAIL.

Laparoscopic Plication of a Gastrojejunostomy with Endoscopic Guidance in the Porcine Model

Connie Rossini, MD; Viriato Fiallo, MD; Burritt Haag III, MD

OBJECTIVES: The purpose of this study is to determine if laparoscopic plication of a gastrojejunostomy with endoscopic guidance is a feasible surgical option for the gastric bypass patient who has regained weight due to a dilated gastric stoma.

METHODS AND PROCEDURES: After obtaining IACUC approval, a porcine model was used to simulate a gastric bypass with an enlarged gastrojejunostomy. The animals underwent a 60mm linear stapled gastrojejunostomy, and subsequently had endoscopic visualization to evaluate the size of the gastrojejunostomy. A laparoscopic plication of the gastrojejunostomy was then performed using 2-0 Ethibond suture on the medial, lateral and anterior surface of the anastomosis. These sutures were placed submucosally on the gastric side of the anastomosis to avoid entering the lumen. The resulting anastomosis was evaluated endoscopically and air pressure tested using insufflated air in the stomach.

RESULTS: The procedure was performed in a cadaveric and live porcine model a total of 4 times. An average reduction in the area of the gastrojejunostomy lumen of 68.1% was noted with a range from 43.9-84.8%. There were no leaks upon insufflation of the gastric pouch, as the sutures were not placed intra-luminally.

CONCLUSIONS: Laparoscopic plication of a dilated gastrojejunostomy after gastric bypass surgery is feasible in the porcine model. This procedure can reliably reduce the diameter of the gastric stoma and may provide a clinically useful way to promote weight loss in the gastric bypass patient who has regained weight secondary to an enlarged gastrojejunostomy.

Poster Presentation:

The Society of American Gastrointestinal and Endoscopic Surgeons, April 2010.

YKL-40 A Potential Biomarker for Colorectal Cancer

Hannah Swayze, MD; Christopher Chapman, MD; Qing Cao, MD;
Rong Shao, PhD; Richard Arenas, MD; Brooke Bentley

BACKGROUND: The increasing complexity in colon cancer treatment has generated a need to discover novel predictive biomarkers. No biomarker exists that can accurately stratify patients for optimal therapy nor effectively monitor for a favorable response. YKL-40, a serum secreted glycoprotein, has been detected in patients with cancer and has correlated with metastasis and a poor prognosis. However, to date, the expression profile of YKL-40 has not been described in colorectal cancer.

OBJECTIVE: To determine whether expression of YKL-40 is tumor specific in primary colorectal cancer and is conserved in metastatic disease in the hopes of developing a reproducibly measurable biomarker to correlate with cancer phenotype.

STUDY DESIGN: Data from tumor registry and medical records identified 175 patients with Stage IV disease. Patients were selected based upon available tissue from distant metastases. YKL-40 expression was analyzed by immunohistochemistry performed on the original tumor, lymph node and distant metastasis. Both the intensity and percentage of positively stained cells were scored.

RESULTS: Ten patients were identified with obtainable tissue specimens to measure YKL-40 expression. Intensity and percentage scores in the primary tumor, metastatic lymph node and distant metastasis within each patient equally expressed YKL-40. Expression profile was conserved irrespective of the treatment with chemotherapy and/or radiation. Interestingly, an increased expression of YKL-40 occurred in inflammatory cells within the stroma recapitulating the profile of expression in the primary and metastatic tumors.

CONCLUSION: Our preliminary results demonstrate the conservation in expression of YKL-40 with advanced and metastatic colorectal cancer. YKL-40 is ubiquitously expressed in Stage IV disease with a pattern that is recapitulated in the primary and metastatic tissues irrespective of treatment. The preliminary data also suggest that YKL-40 may serve as a good biomarker to guide treatment for Stage II and III colon cancer.

Publications:

Swayze, H.K., Chapman, C.N., Cao, Q.J., Shao, R., Bentley, B., and Arenas, R.B. YKL-40: A potential biomarker for colorectal cancer. (Abstract Publication *Gastroenterology* 136S1: 2009)
Swayze, H.K., Chapman, C.N., Cao, Q.J., Shao, R., Bentley, B., and Arenas, R.B. YKL-40: A potential biomarker for colorectal cancer. (Oral Presentation 16th *Annual Surgical Resident and Fellow Research Day of the New England Surgical Society*, Boston, MA, May 2009)
Swayze, H.K., Chapman, C.N., Cao, Q.J., Shao, R., Bentley, B., and Arenas, R.B. YKL-40: A potential biomarker for colorectal cancer. (Poster Presentation *Digestive Disease Week*, Chicago, IL, May 2009)

Poster Presentation:

International Digestive Disease Week in Chicago, Illinois, June of 2009

Podium Presentation:

New England Surgical Meeting, Boston, MA, May 2009.

Primary Repair of Facial Dog Bite Injuries in Children

Peter Wu, MD; Alana Beres, MD; Kevin Moriarty, MD

OBJECTIVES: The management of dog bite wounds is controversial and current data on risk of infection is variable and inconsistent. Furthermore, the use of prophylactic or empiric antibiotics for the treatment of these wounds is debatable. We investigated the rate of wound infections and other complications after primary repair of pediatric facial dog bite injuries.

STUDY DESIGN: We reviewed 87 consecutive patients age 18 or younger who suffered facial dog bite injuries from January 2003 to December 2008 and underwent primary repair. Variables examined were age, sex, setting of repair, whether surgical drains were used, and antibiotic administration. End points measured were incidence of wound infection, need for scar revision, and any wound complications.

RESULTS: The mean age of patients was 6.8 years and the majority were female (53%). All facial injuries were primarily repaired at the time of presentation either in the emergency department (ED, 46%), operating room (OR, 51%), or an outpatient setting (3%). All patients received an antibiotic course, none of the patients developed wound infection, and no subsequent scar revisions were performed. Three patients repaired in the OR underwent placement of a total of four closed-suction drains. The mean age of patients repaired in the OR was significantly younger than those repaired in the ED (5.7 ± 3.9 vs. 8.0 ± 4.5 , $p < 0.01$).

CONCLUSION: We found that primary repair of pediatric facial dog bite injuries is safe when performed in conjunction with antibiotic administration, however further cross-specialty studies are needed to fully characterize these endpoints in a larger population.

Proficiency-Based Virtual Reality Laparoscopic Skills Training: A 7-Year Experience

Peter Wu, MD; Ron Bush; Neal Seymour, MD

OBJECTIVES: The Baystate Medical Center (BMC) Department of Surgery implemented a proficiency-based program of laparoscopic virtual reality (VR) training for surgical residents in 2003. In 2006 training was made mandatory by the Surgical Education Office. The purpose of this study was to determine the effect of this training mandate by examining data collected from the Minimally Invasive Skills Trainer-Virtual Reality (MIST-VR) and the Surgical Education Platform (SEP) simulators.

STUDY DESIGN: The training program consisted of 8 MIST-VR tasks (2003-2006), and 6 SEP tasks (2005-2009). Residents utilized both platforms during the 2005-2006 transition year. Proficiency was defined as meeting pre-determined performance targets (task time, errors, and efficiency metrics) in either the Manipulate-Diathermy task (M-D, MIST-VR) or 2 basic laparoscopy skills tasks (SEP). Data comparisons were made by Spearman correlation and Mann-Whitney U test.

RESULTS: All 50 surgical residents over the last 7 years were reviewed. Forty-six residents performed 49.1 ± 37.9 VR task iterations (range 2 – 206); 4 residents recorded no data. Thirty residents (60%) achieved proficiency in either the M-D task or 2 SEP tasks. These 30 residents performed significantly more iterations than the 16 residents who did not achieve proficiency (57.2 ± 39.9 vs. 33.8 ± 29.1 ; $p < 0.05$). Average number of iterations per resident was significantly greater after training was made mandatory (2003-2005: 25.8 ± 22.1 vs. 2007-2009: 47.6 ± 26.1 , $p < 0.05$). Achievement of proficiency for total number of SEP tasks correlated with number of iterations performed ($r = 0.53$, $p < 0.01$; Spearman correlation). Six residents who performed 15 task iterations failed to achieve proficiency in any task.

CONCLUSIONS: The 2006 training mandate increased the number of task iterations among residents. Our data suggest that it is possible for novices to reach expert performance in the training lab given adequate opportunity and motivation. Reasons for failure to achieve proficiency include skill variations and insufficient number of iterations performed (including non-compliance with the curriculum).

Poster Presentation:

12th World Congress of Endoscopic Surgery, April 2010.

Does Gender Predict Responses? Teamwork and Gender in the Operating Room

Peter Wu, MD; Juliana Meyer, MD; Kristin Stueber, MD

OBJECTIVES: Gender differences and inequalities are well described in the business world, and traditionally manifest themselves as lower pay, longer intervals to promotion, and less favorable perceptions for women. Our purpose was to determine whether gender differences exist in the perception of surgeons and teamwork in the operating room.

STUDY DESIGN: A series of 4 standardized videos, each followed by a 15-item Likert-scale questionnaire (adapted from the OREEM), was administered to surgeons, surgical residents, operating room nurses, and surgical technicians regarding their perceptions of the surgeon's interpersonal skills and the function of the operating room staff as a team. Participant demographic information was collected such as OR role, age, gender, and number of years of experience.

RESULTS: A total of 112 questionnaires were administered. Overall, perception of the white female surgeon's personality and teamwork skills were more favorable than that of the white male surgeon, Hispanic female, and black male. In subgroup analysis categorized by job title, nurses perceived the black male surgeon less favorably than technicians, residents, and with a trend in surgeons ($p=0.07$). There was a non-statistically significant trend for participants with more than 30 years experience to score each of the surgeons more favorable than those with less experience.

CONCLUSIONS: The results show no surgeon gender differences however the white female video and years of experience showed a more favorable response overall. Given a larger population to sample as well as multiple facilities, we propose that there would be significant differences, as these trends suggest.

Poster Presentation:

Massachusetts chapter of the American College of Surgeons,
December 2009.

An Intervention to Promote Resident Teaching in Morning Report

Gina Luciano, MD; Beth Carter, MD;

Pat McArdle, PhD; Kevin Hinchey, MD

OBJECTIVES: The goal of this intervention is to improve the educational quality of morning report by promoting resident teaching through a carefully designed toolkit and chief resident mentorship. The multi-part toolkit includes a worksheet to create learning objectives, a guideline for a successful presentation, and an evaluation sheet. Our toolkit promotes resident teaching through a means of formal preparation, presentation structure and evaluation.

STUDY DESIGN: The toolkit includes –

Guideline: Describes core components of a presentation: an account of the case by the presenter, a prioritized differential, case discussion and summary of key learning objectives.

Worksheet: Focuses the resident-teacher on 2 learning objectives.

Evaluation sheet: Evaluates the necessary components of the presentation for post-session feedback.

The chief resident meets with each morning report leader prior to the presentation to refine learning objectives and give teaching advice. During the conference, the chief resident supports the teacher in achieving their session goals and afterwards reviews the evaluation sheets with the teacher for timely feedback. Residents completed a Likert-style questionnaire about presentation quality before and after the intervention. The mean scores were compared using unpaired t-test.

RESULTS: Following the intervention, the residents more strongly believed that the cases were presented in an organized manner and with all pertinent information included. The group believed that the presenters more often had clear learning objectives and accomplished those learning objectives following the intervention. Residents believed that the role of teacher and case expert belonged to the presenting resident more than the chief resident after the intervention. The overall rating of morning report post-intervention was better as compared to the pre-intervention survey ($p=0.015$).

CONCLUSIONS: This intervention improved the perceived quality of morning report by formalizing structure and expectations, implementing learning objectives and providing feedback through chief resident oversight.

Poster Presentation:

Northeastern Group on Educational Affairs Conference, Farmington, CT, March 2010.

*“The principal goals of
research and education
are to create people who
are capable of doing new
things, not simply of
repeating what other
generations have done —
people who are creative,
inventive and discoverers.”*

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