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 12th annual Research Week is Tuesday, May 17, 2011 through Friday, May 20, 2011. 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, 12:00-1:00 pm

Wednesday, May 18, 2011

12:00 pm: A 22 Year-old Woman with Fever and Jaundice: A Case of Diagnostic Error
Lisa Sanders, MD
Assistant Clinical Professor of Medicine, Yale University School of Medicine

Thursday, May 19, 2011

12:00 pm: Cellular Mechanisms of Insulin Resistance: Implications for Type 2 Diabetes, Obesity and Lipodystrophy
Gerald I. Shulman, MD, PhD, FACP
George R. Cowgill Professor of Physiological Chemistry, Professor of Medicine and Cellular & Molecular Physiology, Yale University School of Medicine; Investigator, Howard Hughes Medical Institute

LUNCHEON & AWARDS PRESENTATION

Chestnut Conference Center, Rooms 1A & B, 12:00-1:00 pm

Tuesday, May 17, 2011

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 17 through Friday, May 20, 2011
7:00 am – 7:00 pm
Lisa Sanders, MD

Lisa Sanders, MD is the author of the popular New York Times Magazine "Diagnosis" column, and the inspiration for the hit TV series, "House M.D." Her best selling book, Every Patient Tells a Story: Medical Mysteries and the Art of Diagnosis, was published in hardback in August of 2009 and in paperback in September of 2010. A board-certified internist, Dr. Sanders was educated and trained at Yale School of Medicine and remains on the faculty there teaching medical students and residents. Dr. Sanders’ monthly New York Times Magazine column "Diagnosis," explores how a doctor is able to make a diagnosis in patients whose baffling symptoms have brought them back to the office or emergency room time after time. In her book, Every Patient Tells a Story: Medical Mysteries and the Art of Diagnosis, Dr. Sanders takes the reader into the trenches of medical diagnosis. Dr. Sanders is able to translate the intricacies of medical science and technology into stories that the reader can understand and enjoy. Before going to medical school, Dr. Sanders was an Emmy award-winning producer at CBS News.

Gerald I. Shulman, MD, PhD, FACP

Dr. Shulman is the George R. Cowgill Professor of Physiological Chemistry, Medicine and Cellular & Molecular Physiology at Yale University. He is also an Investigator of the Howard Hughes Medical Institute. Dr. Shulman has pioneered the use of nuclear magnetic resonance spectroscopy to non-invasively examine intracellular glucose and lipid metabolism in humans. This approach has afforded a dynamic view of metabolism in humans, not before possible, that has led to several fundamental discoveries in our understanding of the regulation of liver, muscle and brain glucose metabolism in humans and its dysregulation in patients with type 2 diabetes. Dr. Shulman is a Fellow of the American Association for the Advancement of Science and he has been elected to the American Society for Clinical Investigation, the Association of American Physicians, the Institute of Medicine and the National Academy of Sciences.
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Pneumothorax during Conversion from Cricothyrotomy to Tracheostomy
Shawn Campbell, MD; Karthik Raghunathan, MD

CASE DESCRIPTION: A 35 year old male trauma victim presented to the ER requiring endotracheal intubation. Conventional direct laryngoscopy, followed by fiberoptic intubation attempts failed and an emergent cricothyrotomy was performed. During this time saturation was maintained with mask ventilation. Patient was stable on arrival to the OR for conversion from Cricothyrotomy to a Tracheostomy. Retrograde intubation, attempted with a semi-rigid airway exchange catheter, was unsuccessful. This was followed by the successful placement of an 8.0 Oral ETT via flexible fiberoptic bronchoscopy (FFB). Subsequently during the tracheostomy procedure, the patient became hypotensive and hypoxemic. A left-sided tension pneumothorax (PTX) was diagnosed via CXR despite relatively unchanged airway pressures, apparently equal breath sounds on auscultation, and unchanged tracheo-bronchial appearance on bronchoscopy. Urgent decompression was performed with a single chest tube relieving the PTX and immediately improving the patient's hemodynamics and saturation. Subsequently a second chest tube was required. Tension PTX presents rapidly with signs of respiratory and cardiac compromise—initially with a reduction in oxygenation and blood pressure, followed later by tracheal deviation, asymmetric breath sounds, and distended neck veins. The Australian Incident Monitoring Study showed that 25% of all PTX occur around tracheostomy. We found no reports of retrograde airway exchange catheter use causing PTX. Numerous studies recommend the use of FFB during tracheostomy to reduce the likelihood of PTX. However during this tracheostomy, bronchoscopic appearance was unchanged and evidence of a PTX (shift of tracheo-bronchial structures) was not seen.

CONCLUSION: Tension PTX is an important consideration in the differential diagnosis of hypoxemia surrounding the difficult airway. One must also realize the potential difficulty in using physical signs and/or bronchoscopy to confirm this diagnosis. A high index of suspicion needs to be maintained and intervention should be prompt (urgent needle/tube decompression) when alternative diagnoses seem less likely.

Poster Presentation:

A Case of Aortic Dissection Diagnosed with Carotid Ultrasound During Internal Jugular Cannulation
Sri Gutta, MD; Stanlies D'Souza, MD

INTRODUCTION: Stanford type A aortic dissection is a surgical emergency which requires early diagnosis and surgical management and is associated with high mortality. We present a case whereby visualization of carotid artery dissection during ultrasound guided central line placement led to the diagnosis of extensive aortic dissection.

CASE DESCRIPTION: A 62 year old male admitted to a peripheral hospital for stroke with right sided weakness, was given tPA and transferred to our hospital. He was brought to the operating room for profuse gastrointestinal bleeding. While ultrasound scanning of the neck for central line placement the anesthesiologist noticed a double lumen in the carotid artery (carotid dissection) which was bilateral. Subsequent transesophageal echocardiography revealed a Stanford A aortic dissection. CT angiography confirmed the diagnosis: with extensive dissection of the aorta from its origin to common iliac artery involving all branches. Laparotomy revealed extensive multi-organ ischemia.

DISCUSSION: Though acute dissection presents commonly as chest pain, syncope, stroke or abdominal pain, diverse manifestations are likely and sometimes diagnosis may be missed.1 Acute ascending aortic dissection may manifest as acute aortic regurgitation or may mimic acute myocardial infarction.2 Even though both TEE and MRI have high degree of sensitivity compared to CT scan, CT scan is the most common initial modality used.3 MRI has high sensitivity and specificity compared to TEE, but is rarely used as the first imaging tool when aortic dissection is suspected.3 As the condition is associated with high mortality early diagnosis and prompt surgical correction is essential.2 Our patient did not show the classical chest x-ray feature of a widening mediastinum. An initial CT scan without contrast did not show aortic dissection. The diagnosis was missed until ultrasound scanning of the neck was done to place central venous access.

CONCLUSION: One should have a high level of suspicion of aortic dissection if a patient presents with multiple symptoms (chest pain, stroke or abdominal pain). When placing a central venous access, one should carefully visualize the carotid artery for the presence of any abnormal features.

Poster Presentation:
**Epidural Abscess**

Daniel Hseuh, MD; Stanlies D’Souza, MD

**INTRODUCTION:** Labor Analgesia is ideally maintained with epidural analgesia when possible. Parturients with hardware in the back can be difficult to place an epidural and the risk of colonizing the prosthesis.

**CASE DESCRIPTION:** A 35 year old parturient with a history of scoliosis following correction with Harrington rods presented in labor following an uneventful pregnancy. Labor pain was initially managed with IV Butorphanol Tartrate. However at 4.5 cm dilation she requested and received an epidural. Unfortunately, she only received unilateral analgesia so another was placed following multiple attempts spanning an hour. Afterward, patient had good analgesia, gave birth uneventfully and was discharged routinely. Four days postpartum patient developed fever, headache, back and right sided radicular leg pain. An MRI was done that demonstrated L3-L4 epidural abscess. Initially she was treated conservatively but her symptoms persisted. Patient required laminectomy and drainage of abscess. Her symptoms resolved and she did well postoperatively and was discharged.

**DISCUSSION:** The incidence of epidural abscess in patients undergoing epidural catheter placement is very rare. In patients with hardware near the spine, a site as far away should be used to reduce the risk of colonizing the prosthesis. If this is not possible, prolonged or many attempts at neuraxial access should be avoided. Despite this, neuraxial analgesia is usually successful in these patients when attempted. Remifentanil PCA is an acceptable alternative for labor analgesia. Ultrasound has also been used to confirm midline position, depth to epidural space and selection of an appropriate interspace for placement.

**CONCLUSION:** In case of difficult epidural placement for labor in patient with special risks, prolonged multiple attempts should be avoided. Remifentanil PCA is an acceptable alternative and ultrasound may assist in selecting the best insertion site.

**REFERENCES:**

**Poster Presentation:**

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**Epidural Hematoma**

Daniel Hseuh, MD; Stanlies D’Souza, MD

**INTRODUCTION:** Patients at risk for epidural hematoma include those with a coagulopathy or on a combination of anti-coagulants and anti-platelet agents. Early detection and management are essential.

**CASE DESCRIPTION:** A 75 year old female (49 kg) had multiple vascular stents and amputations for lower extremity ischemia. She received lumbar epidural anesthesia for right below the knee amputation preoperatively. She had an INR of 1.2 and was on aspirin. Patient also had been receiving therapeutic LMWH until one day before surgery. Postoperatively, she had an episode of atrial fibrillation and was started on a heparin drip. She developed lower extremity paraplegia and lost sensory ability from T12 downward. An unknown amount of time followed symptom onset and clinical suspicion. Further delay followed clinical suspicion and MRI, which demonstrated a thoracic epidural hematoma extending from T11-L2. Decompression and laminectomy was done but follow up MRI demonstrated C7-T1 epidural hematoma. The patient had a second laminectomy. Despite this patient remained paraplegic and had urinary incontinence. She was discharged but subsequently readmitted with sepsis from decubitus ulcers and infected amputation stumps. She decompensated and was allowed to expire.

**DISCUSSION:** Epidural hematoma is a rare but potentially devastating complication of neuraxial anesthesia. Caution should be taken with patients on multiple anticoagulants, even if there is no specific contraindication. Motor weakness is the most specific and ominous symptom. Regular neurologic monitoring is important, especially in high risk patients or those that are not ambulatory. Once clinical diagnosis is made an immediate MRI is necessary, followed by emergency laminectomy.

**CONCLUSION:** Specific monitoring protocol for neurologic deficits, especially motor weakness should be in place as well as immediate MRI and neurosurgical team availability anywhere neuraxial anesthesia/analgesia is performed.

**REFERENCES:**
2. Br. J Anaesth 2008; 101: 400-4

**Poster Presentation:**
Automated Monitoring of Pulse Pressure Variation during Laparoscopy
Karthik Raghunathan, MD; Ryan Joyce, MD; Bader Al-Dossary, MD; William McGee, MD

CASE DESCRIPTION: Pulse pressure variation (PPV) was monitored in a patient undergoing laparoscopic segmental hepatectomy. The patient was deliberately maintained in a relatively hypovolemic state to reduce hepatic venous pressures, and thus, reduce the risk of hepatic bleeding. PPV (Figure 1) was significantly higher and pulse pressures (Figure 2) were significantly lower during the pneumoperitoneum. These variables dramatically changed with desufflation.

DISCUSSION: Pulse pressure variation during controlled mechanical ventilation has been documented as a reliable guide to determine fluid responsiveness. Reports of PPV-guided therapy during laparoscopy are sparse. Laparoscopy is known to cause an increase in the afterload and reductions in both the preload and ejection fraction. This produces an elevation of the central venous and pulmonary artery occlusion pressures, despite hypovolemia, making invasive pressure monitoring during laparoscopy difficult to interpret.

CONCLUSION: Determining volume status during laparoscopy is difficult as, both, pneumoperitoneum and absorbed carbon dioxide, effect intra-abdominal, intra-thoracic, and, vascular pressures. The effects of pneumoperitoneum in our patient were consistent with a reduction in venous return & stroke volume. Thus exhibiting an appropriate increase in PPV. During laparoscopy, PPV-based algorithms should account for the significant effects of pneumoperitoneum on cardio-respiratory interactions. More study of laparoscopic variation in PPV may allow for fluid therapy guided by this variable and also improve decision-making in other settings such as severe ascites and abdominal compartment syndrome.

Poster Presentation:
and also avoid tachycardia. Vaginal delivery is generally preferred by both obstetrician and patient alike. With arterial pressure-based cardiac output monitoring, deliberate titration of epidural, avoidance of anticoagulation, and careful coordination of specialties, the obstetric anesthesiologist can provide that opportunity.

**Poster Presentation:**

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**Hypoxemia with Hypercarbia During LVAD Initiation**

**Niva Patel, MD; Karthik Raghunathan, MD**

CASE DESCRIPTION: A 69 year old male presented for emergent Bi-Ventricular Assist Device (BiVAD) implantation. Echocardiography (TEE) showed severe biventricular dysfunction without a patent foramen ovale on a bubble study. After appropriate cannulation and with the initiation of mechanical ventilation, LVAD flow was initiated. During the next minute life-threatening hypoxemia was noted. Prompt arterial blood gas analysis confirmed severe hypoxemia but also showed hypercarbia suggesting a significant intra-cardiac shunt across the atrial septum. TEE showed a decompressed left atrium with significant right-to-left shift in the atrial septum. We recommended reduction of LVAD flow and prompt initiation of RVAD flow. Further, lung recruitment maneuvers were discontinued. The consequent reduction in right-sided pressures with increase in left-sided pressures resulted in resolution of the large gradient across the atrial septum, and resolution of the hypoxemia and hypercarbia. Full VAD support was then instituted without further incident.

CONCLUSION: During LVAD initiation in the presence of RV failure, the reduction in left-sided pressures with persistently elevated right-sided intra-cardiac pressures may create conditions favorable to right to left flow across the atrial septum. Such flow may occur despite the apparent absence of a patent foramen ovale during a bubble study and result in severe hypoxemia and hypercarbia due to significant reduction in pulmonary blood flow. Management involves initiation of RVAD flow and reduction in LVAD flow allowing pressure gradients across the atrial septum to equalize. Subsequently, flows can be returned to adequate levels without the risk of intra-cardiac right to left shunting.

**Poster Presentation:**
"Hysterical" Paradoxical Vocal Cord Motion Simulating Airway Emergency
Nikhil Thakkar, MD; Daniel Richman, MD

CASE DESCRIPTION: A 21 year old female with a history of spina bifida, severe asthma, pseudoseizures and anxiety presented for temporal mandibular joint arthroplasty. She has had multiple occasions of airway obstruction upon awakening from general anesthesia which lead to intensive care unit admissions in the past with no definite diagnosis. Upon completion of the current surgery, she was extubated after meeting standard extubation criteria. Immediately after extubation she developed stridor, paradoxical chest movements and signs of airway obstruction. A nasal flexible fiber optic laryngoscopy demonstrated vocal cord adduction on inspiratory effort. Diagnosis of paradoxical vocal cord motion (PVCM) was made and she was treated with intravenous midazolam, reassurance and non-invasive positive pressures ventilation (NIPPV). Her respiratory mechanics continuously improved over thirty minutes in the post anesthesia care unit at which point NIPPV was discontinued uneventfully and she was transferred to pediatric intensive care unit (PICU) for observation. She spent an uneventful night in PICU before discharge to home.

CONCLUSION: Paradoxical vocal cord motion (PVCM) is a condition associated with signs of airway obstruction secondary to non physiologic adduction of vocal cords occurring primarily on inspiration. The clinical presentation of PVCM ranges from mild dyspnea to acute, severe respiratory distress. This condition is often misdiagnosed as asthma exacerbation or other airway emergencies like post operative stridor or laryngospasm. Patients often suffer from severe side effects from unnecessary medications and invasive airway interventions like endotracheal intubation and tracheostomies secondary to misdiagnosis. A high index of suspicion is needed to diagnose PVCM. Laryngoscopy is considered the gold standard to diagnose PVCM. It is proposed that PVCM is primarily a conversion disorder (patients unconsciously "convert" unresolved psychological conflict into medical illness). Reassurance, anxiolytics (benzodiazepines), and NIPPV modalities are usually sufficient for treatment of PVCM in the acute setting. The patient should be referred for counseling and therapy for chronic management of PVCM.

REFERENCES:

Poster Presentation:

Invasive Arterial Pressure Monitoring during MRI
Daniel Richman, MD; Karthik Raghunathan, MD

CASE DESCRIPTION: A 76 year old male underwent open repair of a Type II Thoracoabdominal Aortic Aneurysm with partial cardiopulmonary bypass and a lumbar CSF drainage catheter. Significant intra-operative changes in neurophysiologic evoked potentials were noted with increasingly bloody CSF drainage. An urgent MRI spine was considered necessary. The patient was hypotensive requiring vasopressor titration. Conventional arterial pressure transduction (‘A-line’) was MRI incompatible. Narrow caliber pressure tubing extensions (0.050” internal diameter) were connected end-to-end for a total length of 288 cm, with one stopcock. The transducer was placed outside the MRI suite and after appropriate ‘zero’-ing, only slight damping, no resonance and clinically unchanged mean arterial pressure readings were recorded. Effective and safe invasive arterial pressure monitoring is possible in the MRI setting with conventional transducers.

CONCLUSION: Conventional “A-lines” are MRI incompatible but can be used in the MRI suite. By using the shortest series of pressure-tubing extensions necessary, narrowest caliber tubing available, no stop-cocks and by comparing pressures transduced via both short and long tubing prior to entering the MRI suite, one can estimate invasive arterial pressures during MRI scanning with acceptable accuracy. The transducer should be “zeroed”, outside the MRI suite, just above the level of the scanner table. Mean invasive arterial pressures recorded are likely to be adequate for clinical purposes.

Poster Presentation:
A Serious Complication Following a Caudal Block in an Ex-Premature Infant
Donald Schwartz, MD

INTRODUCTION: Caudal blocks are a commonly performed neuraxial block in pediatric anesthesia. Although they are generally very safe, serious complications can occur with the infant population at particular risk. Three recent published case reports of local anesthetic toxicity in infants following caudal blocks along with this case emphasize the need for pediatric anesthesiologists to evaluate ways to make caudal blocks safer.

CASE DESCRIPTION: A 5 month old 5 kg ex-premature infant presents for surgical repair of bilateral inguinal hernias and a circumcision. A spinal anesthetic is unsuccessful. General anesthesia and a caudal block are performed. The surgery is slow and a second caudal is placed at the end of the nearly 3 hour procedure (5 ml of 0.25% bupivacaine). Caudal placement is difficult, after which the infant becomes hemodynamically unstable with the following rhythm:

The pediatric advanced life support algorithm is initiated and followed, and intralipid use is considered. The infant is successfully resuscitated and recovered in the Pediatric Intensive Care Unit.

COULD THIS HAVE BEEN AVOIDED?

CHOICE OF NEEDLE: In the case described above, a sharp beveled hypodermic needle was used to perform the caudal block. This is a poor choice, since the tip can penetrate the soft bony back wall of the sacrum and offer little resistance on injection. Safer options include angiocatheters and blunt-tipped regional needles.

METHOD OF INJECTION: In the case described above, the local anesthetic was injected quickly as a single bolus. After checking for blood by aspirating back on the syringe, the local anesthetic (which should contain epinephrine) should be injected slowly and incrementally, with the time between each mini bolus lasting approximately 30 seconds. The EKG should be frequently checked for tachycardia and ST segment elevation, both signs of an intravascular injection.

USING ULTRASOUND: Ultrasound can be used during caudal blocks in either the transverse or longitudinal plane. Ultrasound can help find the sacral cornua and sacral hiatus when the anatomy is difficult to palpate.

TREATMENT OF LOCAL ANESTHETIC CARDIAC TOXICITY
PALS Algorithm for Pulseless VT/VF
-Initiate CPR
-Defibrillation 2 Joules/kg
-Reinitiate CPR
-Repeat defibrillation if still unstable rhythm, increase joule setting to 4 J/kg
-Reinitiate CPR
-Check rhythm. If still in VT/VF, administer medication
-Epinephrine (1:10,000) 0.01 mg/kg IV, may repeat every 3-5 minutes
-Repeat defibrillation if still unsuccessful (4 J/kg)
-Reinitiate CPR
-Check rhythm. If still in VT/VF administer medication
-Amiodarone 5 mg/kg IV bolus or
-Lidocaine 1 mg/kg IV or
-Magnesium 25-50 mg/kg IV (for Torsades de Pointes)
-Repeat Defibrillation/CPR/Epinephrine if still unsuccessful

INTRALIPID RESCUE: Since 2006, reports of lipid emulsion therapy for local anesthetic toxicity have appeared in the anesthesia literature. There are numerous case reports of successful resuscitations following intralipid administration, including one in an infant following a caudal block. If conventional resuscitative therapy is unsuccessful after a suspected local anesthetic arrest:
- administer intralipid 20%, 1-2 ml/kg over one minute
-start infusion at a rate of 0.25 ml/kg/min
-repeat bolus every 3 to 5 minutes up to a total dose of 3 ml/kg
-may increase infusion to 0.5 ml/kg/min

Poster Presentation:
No Diversion in Western Massachusetts

Niels Rathlev, MD; Del Blank, RN; Ben Osborne, MD; Adam Kellogg, MD; Haiping Li, MD; Jacques Blanchet, MD; John Santoro, MD; P. Visintainer, PhD; R. Conway, MD; L. Durkin, MD; R. Gerstein, MD; S. Strzempko, MD; M. Vig, MD

BACKGROUND: Massachusetts instituted a moratorium on ambulance diversion (No Diversion) on 1/1/09.

OBJECTIVES: Compare changes in process measures pre and post No Diversion. Participants included 6 community EDs (17 - 74,000 visits/year) and a Level 1 Trauma Center (112,000 visits/year). Two EDs were “high” diversion (>562 hours/year) and 5 were “low” diversion (< 260 hours/year).

METHODS: Ambulance arrivals for 2008 and 2009 were compared. Mean monthly measures were collected from each ED: 1) volume, 2) admissions, 3) elopements, 4) ED length of stay for all, admitted and discharged patients. Adjusting for seasonal variation, measures were collected for three 3-month periods: Period 1: year prior (Jan-Mar 2008); Period 2: just prior (Oct-Dec 2008); Period 3: after (Jan-Mar 2009). The outcomes were mean change and mean percent change over time using mixed-effects regression analysis. Linear mixed models were used to conduct within-hospital measurements, estimate changes in outcomes during each period and compare slopes of change across periods. Models were run for all, “high” and “low” diversion EDs using Stata v.11.1. Time was centered at 1/1/09. Results are presented as mean change per month in number and percent with 95%CIs.

RESULTS: Between 2008 and 2009, ambulance arrivals increased by 3065 in total and 87% went to the Level 1 Trauma Center ED. In “high” diversion EDs, volume showed differences in slopes between Periods 1 and 3 as well as Periods 2 and 3. Volume per month changed: Period 1: -81(-0.7%; -3.5, -2.0), Period 2: -255 (-3.6%; -6.4, -0.9) and Period 3: 296.8 (4.1%; 1.3, 6.9). No statistically significant changes were found for any other measure between Periods 1 and 2 as well as Periods 2 and 3.

CONCLUSIONS: No Diversion was associated with increased volume in “high” diversion EDs. The Level 1 Trauma Center received the majority of the increase in ambulance arrivals.

Poster Presentation:

Oral Presentation:

Sonographic Measurement of Optic Nerve Sheath Diameter and Correlation with Intracranial Pressure

Elizabeth Schoenfeld, MD, RDMS; Brian Euerle, MD; Amber Marshall, MD; Deanna Ford; Azher Merchant, MD; Deborah Stein, MD; Christopher Maulucci, MD

BACKGROUND: Several studies have suggested that measurement of Optic Nerve Sheath Diameter (ONSD) by non-invasive ocular ultrasound can predict elevated Intracranial Pressure (ICP) as measured by invasive monitoring or as suggested by CT findings.

OBJECTIVES: We sought to investigate the correlation between ONSD and invasively measured ICP, and ONSD and mortality, in patients with head trauma or intracranial hemorrhage.

METHODS: We prospectively enrolled trauma and neurosurgical ICU patients who had received intraventricular or intraparenchymal catheters as part of their standard ICU care. Investigators who were blind to current ICP readings performed ocular sonograms and measured ONSD both vertically and horizontally. ICP measurements were recorded immediately after each sonogram was completed. Subjects had measurements taken on up to four separate occasions. They were then followed for 30-day mortality.

RESULTS: Thirty-seven patients with ICP monitors were enrolled. Thirty-one patients had one or more ONSD measurements done concurrently with an ICP measurement. Correlation between ONSD and ICP was minimal (R= 0.2). When patients were divided into cohorts based on mortality, patients who died within 30 days of enrollment showed larger ONSD measurements than patients who survived (5.51 mm vs 4.99 mm, p < 0.02) when all measurements are considered. However, the statistical significance of this effect disappeared if only the first measurements or only the largest ONSD measurements per patient were used.

CONCLUSIONS: While previous research has suggested that sonographic measurement of ONSD may be a useful tool in patients with suspected elevated ICP, we did not find a correlation in patients who had already received intracranial pressure monitors. Optic Nerve Sheath Diameter was larger in patients who did not survive, but the differences, while statistically significant, may be too small to be clinically significant or useful.

Lightening Oral Presentation: Society for Academic Emergency Medicine, Regional Meeting, April 2011.

Oral Presentation: American Institute of Ultrasound in Medicine, National Meeting, April 2011.

The Reliability of Repeated Measures of the Time Constant for Post-Exercise Phosphocreatine Recovery Using a Weighted Intraclass Correlation Coefficient

Howard Smithline, MD; Robert Greenman, PhD; Long Ngo, PhD; Elyse Linson, BS

BACKGROUND: The time constant (τ) of post-exercise phosphocreatine (PCr) recovery is directly related to oxidative metabolism. The reliability of τ-PCr may be related to the magnitude of exercise as a result of either measurement difficulties or physiologic intersample fluctuations. One method for improving the reliability of τ-PCr may be to perform repeated measures during a single session. We theorize that τ-PCr calculated from repeated low-intensity exercise protocols will be more reliable than τ-PCr calculated from a single low-intensity exercise protocol (L-IEP). Additionally, it will have equal or greater reliability than τ-PCr calculated from a single high-intensity exercise protocol (H-IEP). The goal of this pilot study is to assess the point estimates of the reliability of τ-PCr for these different exercise protocols.

METHODS: Five volunteers performed the same procedure twice 1 week apart consisting of three sequential L-IEP followed by a H-IEP of isokinetic plantar flexion while in a 3T clinical magnet. 31P spectra of the posterior calf muscles were acquired every 10 seconds. The PCr fraction, PCr/(PCr + Pi), was normalized and fit to a monoexponential curve. We calculated the intraclass correlation coefficients (ICC) using linear mixed-effects models that incorporated weights (inverse variance) for the τ-PCr estimates.

RESULTS: The reliability estimate of τ-PCr is 0.27 when it is derived from a single L-IEP for each subject on each of the two visits. The reliability of τ-PCr increases to 0.92 when we utilize all three τ-PCr measures from both visits. We theorize that τ-PCr calculated from repeated low-intensity exercise protocols will be more reliable than τ-PCr calculated from a single low-intensity exercise protocol (L-IEP). Additionally, it will have equal or greater reliability than τ-PCr calculated from a single high-intensity exercise protocol (H-IEP). The goal of this pilot study is to assess the point estimates of the reliability of τ-PCr for these different exercise protocols.

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RESULTS: The reliability estimate of τ-PCr is 0.27 when it is derived from a single L-IEP for each subject on each of the two visits. The reliability of τ-PCr increases to 0.92 when we utilize all three τ-PCr measures from both visits. This supports our hypothesis that repeating measures during each visit increases the reliability of τ-PCr. The reliability estimate of τ-PCr is 0.86 when it is derived from a single H-IEP. The reliability of τ-PCr derived from repeated L-IEP on each visit is similar to the reliability of τ-PCr derived from a single H-IEP on each visit.

Poster Presentations:
International Society of Magnetic Resonance in Medicine, Quebec, May 2011.
Society for Academic Emergency Medicine, Boston, May 2011.
New England Regional Society for Academic Emergency Medicine, Hartford, CT, April 2011.

RARE Imaging of Post-Exercise Phosphocreatine Recovery – Validation and Reproducibility

Howard Smithline, MD; Robert Greenman, PhD

INTRODUCTION: The current standard for non-invasive measurement of muscle metabolic function is surface coil localized phosphorus-31 magnetic resonance spectroscopy (31P- MRS), which detects signal from only superficial muscles in a non-uniform fashion. In this work we have developed and compared a dynamic 31P RARE imaging method to 31P MRS for measuring the post-exercise PCr recovery time constant (PCr-tau).

METHODS: Five volunteers performed a plantar flexion leg exercise protocol on 3 days in a 3T clinical MRI system. Data was acquired using: 1) a 31P pulse-and- acquire MRS sequence and a 7-cm circular surface coil; 2) a 2D FSE sequence modified to acquire 31P images with chemical shift selectivity. The pixels (target pixels) from the PCr RARE images that corresponded to the same region sampled during the surface coil 31P MRS exam were determined and weighted by comparing the PCr RARE images to a flip angle map of the surface coil. A Pearson correlation analysis was performed to measure the correlation between the combined spectroscopy and each of the 2 combined imaging curves.

RESULTS: The PCr-tau values were 68, 80, and 77 seconds for spectroscopy, imaging day-1 and imaging day-2 respectively. All pairwise correlations were > 97, p < 0.01).

DISCUSSION: These results demonstrate the reproducibility and validity of the 31P RARE MRI method for measuring post-exercise PCr recovery. This methodology allows for measuring PCr-tau simultaneously from multiple muscle regions throughout a limb cross-section simultaneously. This will allow the study of muscles with different fiber types and blood flow patterns in normal subjects and in disease states.

Oral Presentations:
International Society of Magnetic Resonance in Medicine, Quebec, May 2011.
Poster Presentation:
New England Regional Society for Academic Emergency Medicine, Hartford, CT, April 2011.
Pharmacokinetics of High-Dose Oral Thiamine Hydrochloride
Howard Smithline, MD; Michael Donnino, MD; David Greenblatt, MD

BACKGROUND: High dose oral thiamine may have a role in treating diabetes, heart failure, and hypermetabolic states. The purpose of this study was to determine the pharmacokinetic profile of oral thiamine hydrochloride for 100 mg, 500 mg and 1500 mg.

METHOD: This was a randomized, double-blind, single-dose, 4-way crossover study. The area under the curve (AUC) for whole blood and plasma concentrations of thiamine was calculated. The overall effect of treatment condition (thiamine dosage) on AUC was tested using ANOVA for repeated measures. This was followed by the Student-Newman–Keuls procedure for evaluating all pairwise comparisons of the mean AUC values for the dosage groups.

RESULTS: The AUC values (nmol/L x hour) for plasma are: 150 ±13, 325 ± 16, 763 ± 72, and 2212 ± 418 and AUC values for whole blood are: 1083 ± 23, 1279 ± 55, 1732 ± 58, 3120 ± 297 for 0 mg, 100 mg, 500 mg, and 1500 mg respectively. The overall effect of dosage on AUC was significant as was all pairwise comparisons (p<0.05).

CONCLUSION: Our study demonstrates that high blood levels of thiamine can be achieved rapidly with oral thiamine hydrochloride and that blood levels increase linearly with dosage across the range we tested.

Oral Presentations:
Society for Academic Emergency Medicine, Boston, MA, May 2011.
New England Regional Society for Academic Emergency Medicine, Hartford, CT, April 2011.

Out-of-Hospital Cardiac Arrest Outcomes after Therapeutic Hypothermia Stratified by Rhythm Analysis
Ryan Coute, BS; Timothy Mader, MD; Brian Nathanson, PhD; Richard Misiaszek, MD; Michael Clapp, BA; Bryan McNally, MD, MPH

BACKGROUND: The 2010 AHA ALS guidelines recommend the use of therapeutic hypothermia (TH) for comatose cardiac arrest survivors after a first recorded rhythm of VF. The benefit of TH following resuscitation from non-VF rhythms is still unproven and may vary among patients who convert to a shockable rhythm (CS) during attempted resuscitation vs. those who were never shockable (NS).

OBJECTIVES: To compare mortality rates and neurological outcomes in patients with OHCA due to a non-shockable initial rhythm by TH status.

METHODS: A retrospective analysis of data from Cardiac Arrest Registry to Enhance Survival (CARES) through 2009. We conducted logistic regression (outcome=in-hospital mortality; good cerebral performance (CP) vs. else) and ordinal logistic regression analyses (outcome=good CP, alive w/cerebral impairment, death). The models adjusted for age, demographics, arrest location, CPR initiators, and other covariates.

RESULTS: Data on 2467 patients with a non-shockable initial rhythm were analyzed. TH was provided to 261 (10.6%). Unadjusted mortality in the TH group (83.9%; 219/261) was higher than the non-TH group (78.5%; 1,731/2,206), p=0.04, though differences by rhythm category were observed. The ordered logistic regression model yielded a proportional Odds Ratio (OR) for TH of 0.67 (95%CI=0.47-0.96). When modeling just CS (n=350), the OR=1.67 (95%CI=0.73-3.84) while a model with NS only (n=2117) gave an OR of 0.54 (95%CI=0.36-0.82). Additionally, with outcome good CP vs. else, the OR was non-significant overall, but 0.36 (95%CI=0.16-0.81) when an interaction term with rhythm category was used, and 3.98 (95%CI=1.13-13.96) when modeling just CS patients.

LIMITATIONS: This was a retrospective observational study. TH reporting was optional during the study period. As of 11/2010, it is a mandated field for all CARES participants.

CONCLUSION: We found TH to be associated with worse outcomes in this cohort however, the results were driven by NS patients. The less common CS patients tended to have better neurological outcomes with TH.

Poster Presentations:
Society of Academic Emergency Medicine (SAEM) Northeast Regional Conference April 6, 2011 Hartford, CT.
Society of Academic Emergency Medicine (SAEM) National Conference June 4, 2011 Boston, MA.
Increased Risk for Calcium Oxalate Nephrolithiasis after Roux-en-Y Gastric Bypass Surgery Starts in the Early Post-Operative Period

Varun Agrawal, MD; Daniel Landry, DO; Xiao Liu, MD; John Romanelli, MD; J. Enrique Silva, MD; Gregory Braden, MD

Hyperoxaluria and nephrolithiasis are known complications of Roux-en-Y gastric bypass surgery (RYGB), but little is known if this stone risk starts in the early post-operative period and whether it changes with time.

We prospectively studied 13 morbidly obese adults who underwent RYGB and had urine collections 2 weeks before, 1, 2, 4 and 6 months after surgery. Relative saturation ratio (RSR) with regard to calcium oxalate was computed by EQUIL. Non-parametric analyses were performed and results expressed as median (25th-75th %ile).

Eleven subjects were female, median age was 40(36-48) years and none had history of diabetes or nephrolithiasis. Body mass index decreased from 44.6 (41.6-47.6)kg/m2 to 34.1 (30.4-36.8)kg/m2 in 6 months, p<0.0001.

We observed significant decreases in urine volume [2100 (1537-3290) to 1360 (1200-1700)ml, p<0.0001], urine sodium [207.3 (145.6-258.4) to 92.5 (57.8-203.8)mmol/24h, p=0.002], urine potassium [70.1 (39.7-111.4) to 32.1 (22.4-53.8)mmol/24h, p<0.0001], urine magnesium [8.7 (4.2-14.1) to 7.1 (3.3-11.4)mmol/24h, p=0.016], urine phosphorus [1.0 (0.7-1.2) to 0.5 (0.4-0.9)mmol/24h, p=0.01], urine uric acid [0.6 (0.4-0.8) to 0.4 (0.3-0.6)g/24h, p=0.015] and creatinine clearance [144.0 (117.5-193.1) to 108.5 (90.8-164.8)m/min, p=0.046]. The increase in urine oxalate approached significance [28.6 (18.7-49.7) to 51.6 (25.2-85.0)mg/24hour, p=0.054]. No change was seen in urine pH, 24 hour urine creatinine or 24 hour urine calcium excretion.

Calcium oxalate RSR increased after RYGB [1.7 (1.2-3.6), 4.5 (1.6-9.2), 5.73 (2.1-12.2), 5.27 (2.7-9.1), 6.3 (3.4-13.9) at baseline, 1, 2, 4 and 6 months respectively, p=0.020]. One patient had critical supersaturation (RSR=23.7) at 1 month that peaked at 42.3 at 6 months after RYGB.

CONCLUSION: We conclude that calcium oxalate RSR and risk for nephrolithiasis start early and persist in the first 6 months after RYGB due to decreased urine volume, magnesium and increased urine oxalate. Studies of increased fluid intake and oral agents to bind enteric oxalate to reduce this risk are needed.

Poster Presentation:
2010 American Society of Nephrology Meeting, November 2010.

Effect of Patients’ Awareness of CAD Risk Factors on Health Related Behavior

Naweed Alzaman, MD; Siddharth Wartak, MD; Jennifer Friderici, MS; Michael Rothberg, MD

BACKGROUND: Coronary artery disease (CAD) is the leading cause of morbidity and mortality in the United States. Although many patients are aware of modifiable CAD risk factors, it is not known whether awareness of risk factors will translate into better health behaviors and control of these factors. We surveyed patients at risk for CAD and hypothesized that knowledge of a risk factor would be associated with better control of that risk factor.

METHODS: We administered a cross-sectional, anonymous survey to 2200 patients aged ≥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 CAD, health maintenance behavior, and awareness of 5 risk factors (smoking, obesity, hypercholesterolemia, hypertension (HTN) and diabetes (DM)), and 1 protective factor (exercise). Patients with specific risk factors were asked about control of that risk factor as follows: diabetes (A1C<7.0), hypertension (SBP<140), high cholesterol (medication adherence), obesity (attempts to lose weight), smoking (abstinence). We prospectively studied patients with information on awareness of risk factors and control of their control of each factor.

RESULTS: A total of 1702 subjects completed surveys (response rate 77%); 1504 patients had sufficient data for multivariable analysis. The sample was predominantly female (61.6%) and white (57.5%). The median age was 55 years, 78% had at least a high school degree, and 15% had CAD. No patient factors, including a history of CAD, were consistently associated with better control of all risk factors. Awareness of each risk factor was positively associated with control of that risk factor, but the association only reached statistical significance for exercise. The adjusted proportions of those who reported good control with control of that factor, but the association only reached statistical significance for exercise. The adjusted proportions of those who reported good control with control of that factor, but the association only reached statistical significance for exercise. The adjusted proportions of those who reported good control with control of that factor, but the association only reached statistical significance for exercise. The adjusted proportions of those who reported good control with control of that factor were as follows: HTN (74.6 % versus 68.6 %, p = 0.33), DM (32.5 % versus 19.5 %, p = 0.28), high cholesterol (79.2 % versus 79.1 %, p = 0.61), obese or overweight (76.4 % versus 62.2 %, p = 0.24), smoking (61.0 % versus 62.3 %, P = 0.28), and exercise (48.4 % versus 44.0 %, P value=0.028). For patients with a history of CAD, awareness was not associated with better control of any of the factors.
CONCLUSIONS: Awareness that sedentary lifestyle increase the risk for CAD was positively associated with exercising 3x/week. For other risk factors, awareness was not associated with better behavior or control, even for patients with CAD. Taken alone, educational efforts to increase awareness may have limited impact on risk factor reduction.

Oral Presentations:
2011 New England Regional SGIM Meeting, March 4th, 2011 Boston, MA
Baystate Medical Center/Internal Medicine Residency Programs Residents’ Grand Rounds – May 18, 2011.

Poster Presentation:
34th SGIM Annual Meeting; May 6th, 2011 Phoenix, AZ.

Adrenal Insufficiency Following Spontaneous Bilateral Adrenal Hemorrhage During Pregnancy With Spontaneous Recovery
Yousef Altowaireb, MD; Kamal Shoukri, MD; J. Enrique Silva, MD; Pooja Sherchan, MD

CASE: A 29 years-old female, G2P1, 12-weeks pregnant, presented with a sudden, right sided, throbbing flank pain. An MRI abdomen showed a right sided adrenal lesion without signal intensity to suggest hemorrhage. Biochemical workup suggested the lesion to be non-functional. 2 weeks later, she presented again with a similar pain, but in her left flank area. A Repeat MRI showed bilateral adrenal lesions with signal intensities in both sides suggesting hemorrhage of different onset. The right adrenal hemorrhage was described as occurring a week to several weeks earlier, whereas the left adrenal hemorrhage was felt to be of more recent onset. Workup at that time proved adrenal insufficiency. Secondary hematological and rheumatological causes of adrenal hemorrhage were ruled out. Steroids were required throughout pregnancy and around parturition, which proceeded uneventfully. A year following the initial event, elevated ACTH and high normal Cortisol levels were repeatedly observed after holding her Hydrocortisone dose for at least 24 hours. Cushing syndrome was biochemically excluded. This was interpreted as representing HPA axis recovery. Subsequently, she was successfully weaned off steroids. 2 years following the initial event, she had another pregnancy, but it proceeded uneventfully. No steroids were required, however, she had persistent elevations of ACTH and cortisol levels throughout that pregnancy consistent with HPA axis up-regulation during gestation. Again, Cushing syndrome was biochemically excluded. 4 years following the initial event, ACTH and Cortisol levels have normalized, indicating normalization of the HPA axis.

DISCUSSION: Spontaneous adrenal hemorrhage is defined as a hemorrhage in one or both adrenal glands occurring without predisposing factors or medical conditions (1). Although MRI is useful for showing adrenal lesions, precise onset of adrenal hemorrhage is not always easy to determine if the time course of the patient’s illness is unknown (2). Adrenal hemorrhage during pregnancy was previously reported (3,4). Massive CRH production by placenta results in ACTH-mediated increased vascularity and hypertrophy of the adrenal gland, and hence a predisposition for hemorrhage (5,6). Spontaneous recovery from adrenal insufficiency following adrenal hemorrhage is possible since HPA axis up-regulation results in increased ACTH production, leading to physiologic changes that could potentially mount a normal adrenal response.
Cerebellar Hemangioblastoma and Recurrent Pheochromocytoma Presenting in the 8th Decade in a Patient with Von Hippel Lindau Syndrome

Pooja Sherchan, MD; Yousef Altowaireb, MD; Kamal Shoukri, MD

OBJECTIVE: To describe a case of VHL syndrome with an unusual course, presenting with hemangioblastoma and recurrent pheochromocytoma 53 years following bilateral adrenalectomy.

CASE: A 72 years old gentleman presented to our hospital with sudden onset of dizzy spells and unsteady gait in 2009. Given this presentation, MRI of the brain was obtained which showed a mass in his left cerebellum. The mass was resected and the histology revealed hemangioblastoma. He had a previous history of bilateral adrenalectomy for pheochromocytoma in 1957. He required steroid replacement for a few years following which he was successfully weaned off them. CT of the abdomen obtained at some point for abdominal pain following the surgery showed recurrent left adrenal mass. Biochemical testing for pheochromocytoma was not revealing, although he continued to have difficult to control hypertension following his initial adrenal surgery. MIBG scan showed an increased uptake in the left adrenal gland. In 2010, he had laparoscopic surgery of his left adrenal mass, the histology of which revealed pheochromocytoma. Following the surgery, his blood pressure improved by an average of 50 points reduction in the systolic and 20 points reduction in the diastolic value. Genetic testing was obtained and revealed a mutation in VHL tumor suppressor gene.

DISCUSSION: Hemangioblastomas are the most common lesions associated with VHL disease, affecting 60 to 84 percent of patients. Patients with VHL-associated hemangioblastomas tend to be younger than those with sporadic hemangioblastomas with a mean age at diagnosis in one series of 29 years. Because hemangioblastomas often first develop in the second decade, routine screening with magnetic resonance imaging (MRI) of the brain and spinal cord for hemangioblastoma is recommended in patients with VHL disease, starting after the age of ten.

CONCLUSION: This case emphasizes the importance of genetic screening in patients with bilateral pheochromocytomas. Testing for VHL and radiological screening in our patient earlier in his life may have allowed us to detect his hemangioblastoma before it became symptomatic. This case also reminds us of the indolent course of pheochromocytomas that can occur in the setting of VHL syndrome.

Poster Presentation:
Endocrine Society, Boston, June 2011.
Mitochondrial therapy for Valproate-induced Hyperammonemic Encephalopathy
Ashish Arora, MD; Geetika Sachdeva, MD; Jaime Hernandez-Montfort, MD

CASE REPORT: 40 year old gentleman with history of chronic alcoholism and bipolar disorder presented to our emergency department with a 48 hr history of “unwellness and confusion” per caregiver. His chronic home medications were haloperidol (2 mg/d), benztropine (1mg/d), valproic acid (VPA) (2 gr/d) and quetiapine (800 mg/d). Vital signs showed: 99 F, HR 150, RR 30, 190/100 mm Hg and GCS of 10 prompted rapid sequence intubation and sedation with propofol. No liver disease stigmata, pupillary abnormalities or focal neurological deficits were noticed on exam. CT scan of the head and urine toxicology were unremarkable. Serum ethanol was undetectable. Laboratory studies were relevant for a VPA level of 117, serum ammonia levels of 187 and a lactate of 10.5 with a high anion gap of 20. Complete blood count, hepatic liver enzymes, bilirrubin, INR and albumin were normal. Renal function was preserved. VPA was held as the patient was started on L-cartinine infusion (100 mg/kg IV in 24 hrs) resulting in successful extubation without further neurologic deficits, normalization of ammonia and lactate within 24 hours of admission to our ICU.

Hyperammonemia in the ICU is not uncommon, however valproate-induced hyperammonemic encephalopathy (VHE) is a rare and potentially life-threatening disease that results from underlying mechanisms independent from hepatic dysfunction in the setting of acute/chronic overdose or chronic therapy. VHE has been mainly related to preexisting or VPA related carnitine and/or urea cycle enzyme deficiencies leading to hyperammonemia. Other factors contributing to VHE not related to hyperammonemia per se include VPA metabolites and hyperlactemia. Administration of exogenous carnitine decreases plasma ammonia levels by enhancing the mitochondrial B-oxidation process and production of acetyl-CoA with subsequent decrease in the inhibition of urea synthesis, and although the clinical benefits in VHE have been reported and shared in our patient, further research needs to define an standarized therapeutic approach.

Poster Presentation: Society of Critical Care Medicine, San Diego, CA, January 2011.

A Rational Approach to Post Renal Artery Stent Management: the Need for Standardization
Frank Boatang, MD; Daniel Landry, DO; Barbara Greco, MD

INTRODUCTION: The number of renal artery stent (PTRS) interventions for the treatment of renal artery stenosis (RAS) has risen over the past decade despite controversy regarding clinical benefits. In-stent stenosis (ISS) occurs commonly and follow-up care of these patients is not standardized. The purpose of this research was to assess the practice pattern among local physicians involved in the care of patients undergoing PTRS, review available literature on this topic and to suggest a rational approach to post-PTRS management.

METHOD: A survey was distributed electronically to physicians who care for patients with RAS at Baystate Medical Center. Questions were designed to query practices and opinions regarding PTRS outcomes and management. A comprehensive review of the literature regarding post-PTRS ISS was undertaken using OVID Medline and Pubmed.

RESULTS:
1. Survey: 44.5% of 101 surveyed physicians responded, representing nephrology, internal medicine, vascular surgery, cardiology and interventional radiology. There was significant variability among responders regarding the responsible party for the consent process and clinical follow-up, use of post-PTRS anti-platelet therapy and statins, ISS screening indications, intervals, and modality. 83% supported the need for a standardized consent process providing evidence based data regarding likelihood of clinical response and risk. Only 69% percent identified DUS as the modality of choice for ISS screening and 71% favored clinically-driven screening (worsening hypertension and renal function) as opposed to routine surveillance.

2. Literature Review: The literature demonstrates significant risk of ISS which exists even years post-PTRS and defined risk factors for the development of ISS. The standards for clinically important ISS remain controversial. CONCLUSION: This research supports the need for standardization of care for patients undergoing PTRS. Based on literature review and perceived need, we propose the use of a standardized consent form and a post-PTRS care algorithm which includes a time-table for ISS screening based on defined risk assessment.

Cough and Fever in a 28 year-old IV Drug User
MONIQUE CARRENO MD; CURTIS ANDREWS, DO

CASE HISTORY: 28 year-old male IV drug user with 3 day history of body aches, sweats, nausea, vomiting, productive cough and pleuritic chest pain. PE: V/S-T: 100.7, P:95, BP:98/64, O2:95% on RA. Ill appearing, diaphoretic with piloerection. RESP: LLL consolidative findings. CV: Tachycardic, no murmur, normal pulses. Skin: Track marks on forearms bilaterally. Abnormal Labs/Imaging: WBC13, Hgb11.5%. Urine: (+)opiates. CXR: LLL opacification.

COURSE: Patient started on azithromycin and ceftriaxone for CAP. He showed improvement in cough and dyspnea until Day 5 when fever spiked to 101 with worse dyspnea and WBC of 16,000. CXR showed persistent LLL opacification. Vancomycin was started for possible MRSA pneumonia. CT chest showed multiple cavitary lesions. CT guided aspiration of LLL grew Enterobacter cloacae. Antibiotics changed to meropenem based on culture sensitivities.

Repeat exam on Day 8 revealed systolic murmur. Echocardiogram confirmed tricuspid regurgitation and 8mm mobile vegetation consistent with septic pulmonary emboli. Fever resolved and patient was discharged home on Day 22 on oral levofloxacin due to active IV drug use.

DISCUSSION: Enterobacter endocarditis has been described more commonly in the setting of prosthetic heart valves, as well as IV drug users(1). Acute endocarditis classically presents with fever, heart murmur, vascular and embolic phenomenon as well as positive blood cultures(2). Our patient presented with fever and pulmonary findings consistent with pneumonia. Follow-up imaging consistent with septic pulmonary emboli prompted an echocardiogram that verified acute endocarditis.

We believe the patients clinical deterioration on day 5 was most likely due to Enterobacter beta-lactamase induction; a topic increasingly described in the literature as a cause of cephalosporin as well as carbapenem compromise(3).

CONCLUSION:
• This case of Gram negative endocarditis demonstrates the need for a high index of suspicion when suggestive history is present without classic PE findings.
• Our case further demonstrates the phenomenon of Enterobacter spp. beta-lactamase induction and resulting susceptibility of third generation cephalosporins.

Poster Presentation:

Twiddler’s Syndrome: An Uncommon Spin
Ranjit Dhelaria, MD; Geetika Sachdeva, MD; Mathias Stoinescu, MD

INTRODUCTION: Twiddler’s syndrome was first described by Byliss et al in 1968, which referred to permanent malfunction of the pacemaker due to manipulation of the generator by the patient. The leads of the pacemaker are displaced due to deliberate or subconscious spinning of the pacemaker by the patient.

CASE: 44-year-old woman with a history of hypertension and CHF, NYHA class III, secondary to a non-ischemic cardiomyopathy (ejection fraction of 30-35%), presented with left arm pain and twitching, starting two days prior. In the ER, patient was found to have rhythmic twitching of her left arm. Three months before, she had undergone implantation of a dual chamber ICD without complications. The patient gave a history of using her left arm to carry heavy shopping bags recently but denied any manipulation of the ICD pocket site. Her admission chest X-Ray showed the atrial pacing lead with the tip in the pocket, wrapped repeatedly around the pulse generator. The device header was oriented with the lead ports pointing laterally. The next day, she underwent atrial lead revision and repositioning.

DISCUSSION: There are many complications that can result in pacemaker failure which includes lead fracture, myocardial perforation or lead displacement. Twiddler’s syndrome is relatively infrequent cause of pacemaker malfunction due to lead displacement. This is often seen in older adults and obese patients due to lax subcutaneous tissue. The displaced lead wraps around the generator and results in stimulation of structures depending upon their new position. Often the leads can stimulate the phrenic nerve leading to diaphragmatic pulsation or the nerves in the brachial plexus that can cause arm twitching. Physicians need to be aware of these complications as its early diagnosis will guide appropriate therapeutic intervention.

Treatment requires revision of the pacemaker/ICD leads and suturing the generator to the surrounding soft tissue (fascia and muscle).

Poster Presentation:
ACP Annual Regional Meeting 2010.
CASE: A 43 y/o healthy woman presented to our ED with acute neck pain, unsteady gait, slurred speech and visual loss. She suddenly lost consciousness and developed decerebrate posturing. Emergent non-contrast CT head was normal. Her husband described a few days of dull neck pain, occipital headache and lethargy. Three days PTA, she had been to Six Flags amusement park and ridden on high speed roller coasters. Vital signs were normal and the neurologic exam was limited due to sedation and intubation but revealed periodic extension of all 4 limbs. She had disconjugate extraocular movements with right eye drifting upwards and left drifting downwards. MRI of her brain showed multifocal acute infarcts involving the bilateral cerebellar hemispheres, the right thalamus and the right parieto-occipital region. An MRA of her head and neck showed left vertebral artery dissection and thrombus in the basilar artery. Over the next few days, she rapidly deteriorated. Given the extremely poor prognosis, the family made the decision to withdraw care.

DISCUSSION: Approximately four deaths per year in the United States are associated with roller coasters. Most fatalities are related to external causes. Neurologic complications after roller coaster rides may include intracranial hemorrhage, cervicoencephalic arterial dissections, CSF leak and internal carotid artery occlusion and or dissection. The sudden hyperextension, hyperflexion, or rotation of the neck during coaster rides has the potential to cause injury to the carotid or vertebral arteries. The most frequent clinical manifestations of vertebral artery dissection are posterior headache or neck pain accompanied or followed by posterior circulation TIA or stroke. The diagnosis is usually made through MR angiography or conventional angiography.

CONCLUSION: Clinicians should be aware of this rare phenomenon so patients may receive prompt intervention, particularly at the stage when pain is the only sign.

Poster Presentation:
ACP Annual Regional Meeting 2010.

CASE: An 84 yo lady was admitted with 3 days of shoulder twitching & 6 wks of mild confusion, feeling “not herself”. She had a remote hx of breast & bladder Ca, consumed alcohol, & smoked heavily. Her only med was a multivit. There was rhythmic twitching of the R shoulder. Ionized Ca was slightly elevated. EEG showed no correlation to the movements. CT chest/abd/pelvis showed a R infrahilar node vs lung mass, biapical scarring & 2 small apical nodules. Brain MRI was nl. Phenytoin, clonazepam, clonidine, propranolol & levetiracetam were tried without improvement. She became more disoriented & disagreeable with a fluctuating level of consciousness. The twitching worsened & she developed a facial droop. LP was delayed as the pt. was confused, agitated & refused testing, but was done after family & ethics meetings, revealing mildly elevated protein & WBC count of 6 K/ lymphocytic predominance. She grew obtunded, experienced respiratory difficulties & on day 24 died. Final LP report was positive for anti-Hu antibody (Ab) & 14-3-3 CJD prion protein indeterminate. The final dx was PNE.

Discussion: Paraneoplastic neurologic syndromes are mediated by immune responses to tumors expressing neuronal proteins or by immune disturbances caused by the tumor. They represent nonmetastatic systemic effects of malignant disease. Pts with anti-Hu Abs may develop extensive encephalomyelitis, which may begin as an initially focal syndrome. Neurological sx may precede the dx of Ca. Paraneoplastic encephalitis involving the cerebral cortex, limbic system, or both. The clinical course is unpredictable. Tx is directed towards the underlying Ca & immunotherapy.

CONCLUSION: Geriatricians evaluate delirium resulting from many different causes. It is necessary to consider PNE when evaluating a confused pt with focal neurological sx to prevent further morbidity & future mortality. As in our pt, dx may be delayed due to worsening delirium, which can be confounded by meds used to relieve neurological & behavioral sx.

Poster Presentation:
ACP Annual Regional Meeting 2010.
Dead But Still Our Patient

Mohammed Elarabi, MD; Jennifer Norton, RN; Maura Brennan, MD

INTRODUCTION: Geriatricians often care for hospice patients; the mean age of hospice patients is rising. Geriatric fellows must master the fundamentals of palliative care and learn to navigate the “system” of end of life care. Socially isolated patients present unique ethical and logistic challenges. We report a case in which it proved difficult to get one such “loner” buried after death.

CASE: An isolated, O2-dependent 69 year old man with lung cancer and COPD enrolled in hospice. The geriatric fellow made a home visit to meet him with the hospice RN and the Medical Director. The patient was in respiratory distress but responded to opiates, bronchodilators, oxygen and corticosteroids. He was inattentive but understood his prognosis and declined rehospitalization and intubation; goals of care were clarified. Three days later he died. His sister was his next of kin but he’d refused to have her called; her number was incorrect. Irregularities in VA documentation led to a denial of burial benefits and the funeral home would not remove the body. The landlord called the police who contacted EMS; the latter refused transfer since the patient was clearly dead and the medical examiner declined the case. The hospice leadership and senior hospital administrators got the body to the inpatient morgue after it sat in the patient’s kitchen for hours by lobbying leaders in the Pathology Department and paying transport expenses. The hospice RN had to identify the body since there were no relatives. Three days later the estranged sister was found; the VA located his records, agreed to cover funeral expenses and he was finally buried.

DISCUSSION/CONCLUSIONS: This case highlights logistic, communication and ethical challenges. Justice requires that patients lacking caregivers have access to end-of-life care and that their wishes be honored. However, socially isolated patients must plan for their deaths or provide accurate contact information despite the awkwardness of difficult conversations. If patients will not do so it may be necessary to decline to enroll them. Additional “system” challenges resulted from the involvement of both VA and hospice teams, faulty record keeping and cumbersome bureaucracies. Geriatrics fellows can learn about systems-level barriers to care and that professional responsibilities may survive patients by attending to the needs of hospice patients both before and after their deaths.

Poster Presentation:

Unusual Course of Recurrent Myeloid Sarcoma in an Elderly patient with AML

Mohammed Elarabi, MD; Chandravathi Loke, MD; Sandra Bellantonio, MD

INTRODUCTION: AML is a disease of the elderly with median age of 67 yrs at presentation & with 30% of pts >75 yrs old. Myeloid Sarcoma is an extra-medullary tumor of immature myeloid cells that may occur with AML, or be the initial manifestation of relapse in a pt with previously diagnosed AML regardless of blood or bone marrow findings.

CASE: An 88 yr old lady with history of dementia & AML that was treated with chemotherapy in 1990 with complete remission. In 1994 she relapsed with Myeloid Sarcoma on the left forearm that was resected followed by radiation. Systemic therapy was not offered at the time. In 2004 she presented with left axillary adenopathy & biopsy was again consistent with Myeloid Sarcoma which was treated with radiation & she did well until her admission in Oct, 2010 with 2 months of abdominal pain, nausea, loss of appetite & 20 lb weight loss. Geriatrics was consulted for the anorexia & weight loss. CT abdomen showed 12 cm soft tissue abdominal mass involving the retroperitoneal space & encasing the abdominal aorta, that was suspicious of Lymphoma. AML relapse was not suspected. CT guided biopsy of the mass confirmed the diagnosis of Myeloid Sarcoma but these results were available after she decompensated with hemorrhagic shock, acute DIC & passed away.

DISCUSSION: While AML is a common condition in the younger elderly, our patient had an atypical presentation. A solid tumor, especially Lymphoma, was suspected rather than a hematologic malignancy. Clinically the incidence of Myeloid sarcoma in AML is 3-5 %. It represents a systemic relapse & thus needs to be treated with systemic chemotherapy. Though prospective non-randomized studies show improved survival with chemotherapy vs. best supportive care in fit elderly, it may not hold true for the pts 80 yrs or older.

CONCLUSION: Despite treated conservatively for appropriate reasons; our pt remained relapse free for ten yrs after her first Myeloid Sarcoma presentation and six yrs after the second before succumbing to her third relapse. To our knowledge, there are no case reports to date that show Myeloid Sarcoma to recur twice after diagnosis of AML & sustain remission for a period of ten years with only conservative therapy.


Poster Presentation:
All That Itches is Scabies
Mohammed Elarabi, MD; Udaya Jagadeesan, MD; Sandra Bellantonio, MD

INTRODUCTION: Scabies is a common & substantial source of morbidity among frail elder adults especially those in LTC. Scabies typically presents as a highly contagious, pruritic, burrowing skin rash caused by sarcopotes scabiei mites. However, it could have inconspicuous, atypical features in frail elderly pts. Norwegian scabies is a particularly contagious, florid variant characterized by tens of thousands of mites.

CASE: A 71 yo NH resident with schizoaffective & bipolar disorders, anxiety, PTSD & fibromyalgia was transferred from another LTC facility. Medications; aripiprazole, citalopram, divalproex & lorazepam. An extremely pruritic, generalized erythematosquamous maculopapular excoriated rash on her breasts, axillae, back, arms, legs & buttocks had been present for a few months & tx with diphenhydramine at the prior facility. The staff spent significant time addressing psychosocial issues & her rash, believed to be neurodermatitis secondary to a behavioral disorder or possible chronic atopic dermatitis, was tx with increasing doses of hydroxyzine. Eventually the severe itching caused skin breakdown & with her crusted lesions a dx of Norwegian scabies was made. The patient had started on ivermectin tablets and permethrin cream applied from chin to toes. Her roommate had already developed a pruritic rash & was dx with scabies.

DISCUSSION: Norwegian scabies is particularly important to consider in psychogeriatrics & cognitively & functionally impaired older adults. It is difficult to dx clinically & can be easily mistaken for eczema, psoriasis, impetigo or neurodermatitis even by experienced dermatologists because of the atypical, nonspecific, generalized, erythematosquamous rash & crusts. The presence of associated psychiatric morbidity may further confound the presentation & emphasize the dx of a psychiatry driven dermatological process & hence delay scabies tx.

CONCLUSION: A heightened level of suspicion for scabies should be sustained in geriatric pts with generalized skin rash of uncertain dx that does not improve with empiric tx. Intensive infection control measures should be implemented until dx of scabies is confirmed. Fortunately the delayed dx in this case had not lead to a large scale outbreak.


An Uncommon Cause for GI Bleeding: Varix in the Transverse Colon Secondary to SMV Thrombosis
Shiv Khosla, MD; David Desilets, MD; Melissa Hull, MD; Raquel Belforti, DO

OBJECTIVES:
1. Recognize and diagnose colonic varices as an uncommon etiology for gastrointestinal bleeding

CASE PRESENTATION: A 71 year old male with a past history significant for multiple gastrointestinal bleeds, polycythemia rubra vera and factor V leiden deficiency with multiple thromboembolic events presents to the ED with the acute onset of bright red blood per rectum. Laboratory values were significant for a decrease in hematocrit from 48% to 33% requiring transfusion of PRBCs and intravenous fluids. Endoscopy completed in the past for a GI bleed was significant for a large non-bleeding varix in the transverse colon with an overlying ulcer. This was the source of bleeding at the time, however no surgical intervention was undertaken. He was investigated with a CT angiogram and direct visceral angiography demonstrating superior mesenteric vein thrombosis, splenic vein thrombosis, a normal portal pressure of 2mmHg, and multiple venous collaterals. Colonoscopy on this admission demonstrated a large bleeding colonic varix 10 – 20 cm distal to the hepatic flexure. Sclerotherapy with ethanolamine was successful in arresting the bleeding as a temporary measure. The patient underwent an extended right hemicolectomy and end ileostomy with no post-operative complications.

DISCUSSION: SMV thrombosis is seen in patients with hypercoagulable states. In the case described above, the chronic nature of SMV thrombosis led to an increase in the pressure of the venous collateral system, causing colonic variceal formation and gastrointestinal bleeds. Portal hypertension from any cause accounts for 75% of colonic varices. There have been case reports of patients with large variceal bleeds secondary to cirrhosis whose bleeding was arrested after TIPS placement. This patient was evaluated for TIPS, but did not qualify because his portal pressure was only 2mmHg.

Poster Presentation:
Society of General Internal Medicine, New England, March 2011.
Paraneoplastic Pemphigus in a Patient with Small Lymphocytic Lymphoma on Rituximab Therapy

Chandravathi Loke, MD; Syed Ali, MD; Armen Asik, MD; Jean Henneberry, MD

INTRODUCTION: Paraneoplastic Pemphigus (PNP) was first described by Anhalt et al (1) as a severe autoimmune mucocutaneous reaction associated with neoplasms, mostly of lymphoid origin. The most characteristic feature of PNP is severe mucocutaneous involvement with erosions and ulceration of the oropharynx and polymorphous skin lesions. The conjunctiva, upper digestive tract, tracheobronchial tree, genitalia and skin may also be involved.

CASE REPORT: A 61 year old man was initially diagnosed with SLL in 2002. Eighteen months later, he developed progressive lymphadenopathy and was treated with four cycles of fludarabine and rituximab (FR). Patient attained partial remission that lasted for three years and then relapsed again with progressive adenopathy. Patient was retreated with another 4 cycles of FR with achieving partial remission once again. This time remission lasted for two years. In 2009 he became symptomatic again with weight loss and fatigue. Imaging studies revealed progressive adenopathy and received treatment with bendamustine, rituximab (BR) for 6 cycles and completed therapy in October ’09. Subsequent Imaging showed remission once again.

Maintenance rituximab was initiated for 4 doses weekly every 6 months after completion of BR. Three weeks after his last dose of the first cycle of maintenance rituximab, the patient experienced severe mouth pain and ulceration. The symptoms progressed with swollen lips along with extreme difficulty in opening his mouth. He also had flaky erythematous macular rash mostly present on the chest and upper back.

Initial treatment involved broad spectrum antibiotics, anti-fungals and acyclovir without any improvement. He continued to have blistering, erosive lesions of buccal mucosa, lips and conjunctiva. Quantitative immunoglobulin levels were normal. Skin biopsy was performed which on immunofluorescence studies showed intercellular epidermal staining identified with IgG and to a lesser extent, C3 and IgA (faint), focal basement staining with C3. Diagnosis of paraneoplastic pemphigus (PNP) was established. He was treated with high dose solumderol. Skin lesions responded first with slow resolution of oral lesions. He was discharged on slow taper of oral prednisone.

DISCUSSION: PNP presents with severe, progressive mucocutaneous disease with a high mortality rate, because of drug induced complications such as infections, gastrointestinal bleeding and respiratory complications. Treatment involves treating the underlying malignancy, treatment of the autoimmune process and suppression of immune system. PNP when associated with malignancy may be very resistant to various therapeutic modalities which lead to disease progression with a fatal outcome. Etiology of PNP is not completely understood. Both humoral and cellular autoimmunity seem to play a role by generating a mechanism of anti-tumor response.

High dose corticosteroids are the cornerstone of therapy. Other treatment options include azathioprine, IVIG, plasma exchange in combination with corticosteroids, cyclophosphamide or azathioprine. In some case reports, Rituximab has been shown to be a valuable therapy for patients with low grade NHL and refractory PNP (2).

Our patient manifested with symptoms of PNP soon after receiving rituximab which raises questions regarding the role of other mechanisms such as CD20 negative plasma cells in antibody production or involvement of auto reactive T-cells in the pathogenesis of the disease (3). Cytokine dysregulation in the disease process may also play a role in the development of PNP.

REFERENCES:

Poster Presentation:
Lymphoma & Myeloma, NewYork, October 2010.
Meta-analysis of Catheter Ablation as an Adjunct to Medical Therapy for Treatment of Ventricular Tachycardia in Patients with Structural Heart Disease

Jaya Mallidi, MD, MHS; Girish Nadkarni, MD, MPH; Ronald Berger, MD, PhD, FHRS; Hugh Calkins, MD, FHRS; Saman Nazarian, MD

OBJECTIVE: To define the relative risk of VT recurrence in patients undergoing catheter ablation as an adjunct to medical therapy versus medical therapy alone in a pooled analysis of controlled studies.

BACKGROUND: Most studies of catheter ablation for the treatment of VT are relatively small observational trials.

METHODS: Randomized and nonrandomized controlled trials of patients who underwent adjunctive catheter ablation of VT versus medical therapy alone were sought. MEDLINE, EMBASE, the Cochrane central register of controlled trials (CENTRAL), and Web of Science were searched from 1965 to July 2010. Supplemental searches included Internet resources, reference lists, and reports of arrhythmia experts. Three authors independently reviewed and extracted the data regarding baseline characteristics, ablation methodology, medical therapy, complications, VT recurrences, mortality, and study quality.

RESULTS: Five studies (2 published randomized controlled trials, 2 randomized controlled trials published as abstracts, and one non randomized study with a control group) were included totaling 457 participants with structural heart disease. Catheter ablation was performed in 266 (58%) participants whereas 191 (42%) received medical therapy for ventricular tachycardia. Complications of catheter ablation included death (1%), stroke (1%), cardiac perforation (1%), and complete heart block (1.6%). Ventricular tachycardia recurrences occurred in 93 (35%) patients who underwent catheter ablation versus 105 (55%) patients who received medical therapy. During follow-up, death occurred in 20 (11.5%) patients allocated to catheter ablation compared to 19 (13.6%) patients on medical therapy. Using a random effects model, a statistically significant 35% reduction in ventricular tachycardia recurrences was noted among patients with catheter ablation (relative risk 0.65; 95% confidence interval: 0.54 — 0.79, P < 0.001). There was no statistically significant difference in mortality.

CONCLUSION: Catheter ablation as an adjunct to medical therapy reduces VT recurrences in patients with structural heart disease and has no impact on mortality.

Oral Presentation:

Multiple System Atrophy (MSA)—A Rare Cause of Falls and Syncope in an Elder

Geetika Sachdeva, MD; Maura Brennan, MD

INTRODUCTION: Older patients are prone to orthostasis which may result in injuries, hospitalizations and poor quality of life. The authors report a case of Multiple System Atrophy (MSA) causing recurrent syncope.

CASE: An 84 year old man presented to geriatric evaluation clinic with years of unexplained orthostasis, falls and syncope. Whenever he sat up quickly or stood to walk he felt weak and often fainted with dramatic changes in BP. His gait and balance had worsened with slow movements, stooping and shortened steps in the past year. He wore compression stockings and took both midodrine and fludrocortisone with only partial relief. There was no cognitive decline. On physical exam he had marked orthostasis with a drop in BP from 137/72 mm to 94/69 mm and no alteration in heart rate. Neurological examination was normal except for festinating gait, absent arm swing, diminished step height and stride length and en-bloc turning. Mood and speech were normal but his voice was quiet and slow. We diagnosed MSA.

DISCUSSION: MSA with orthostasis was once known as Shy-Drager Syndrome. It is a rare, sporadic, degenerative disorder of the central and autonomic nervous systems characterized by orthostasis, Parkinsonism, cerebellar ataxia and extrapyramidal signs. It usually begins in the early fifties resulting in progressing disability; the mean survival is 9 years. Orthostatic hypotension is near universal. Unfortunately, there is no effective drug treatment for MSA.

CONCLUSION: MSA is under recognized and should be suspected in elders with orthostasis and Parkinsonism. Geriatricians often evaluate patients for syncope and falls and need a high index of suspicion for MSA in the right clinical circumstances. Although there is no cure, diagnosis allows targeted management of symptoms and advance care planning. Collaborative research among geriatricians, neurologists and cardiologists may help define whether the presentation, prognosis and response to treatment differ for older patients with MSA.

Poster Presentations:
2011 Annual Scientific Meeting of the American Geriatrics Society; General Poster Session and AGS Residents Poster Session.
INTRODUCTION: Inhalation of chlorine gas can occur in several settings and may result in significant injury to the respiratory tract. We present a case of acute chloramine toxicity due to household bleach inhalation successfully treated with nebulised sodium bicarbonate.

CASE: A 54-year-old female with no significant PMH presented to the emergency room with complaint of cough and shortness of breath after being exposed to the mixture of ammonia and bleach while mopping the floor at home. In 2-3 hrs patient developed cough, nausea, sore throat, worsening shortness of breath and pleuritic chest pain. In the ER she appeared in mild respiratory distress, HR 76 bpm, BP 150/76 mm of hg, RR 20 bpm and oxygen saturation of 97% on room air. Respiratory examination revealed wheezing. Rest of the systemic examination was unremarkable. Initial laboratory data and chest x-ray were insignificant. She was started on nebulised albuterol and 3.5% nebulised sodium bicarbonate. Pt responded well to treatment with resolution of symptoms and was discharged home the next day.

DISCUSSION: Chlorine is a yellow green coloured irritating gas. Possible sources of exposure include industrial sources, transport mishaps, swimming pool preparations, bleach and acid. In the airway, chlorine combines with water to form hydrochloric acid and hypochlorous acid, the latter decomposes into HCl and oxygen free radicals which causes damage to the tissues by disrupting the cellular proteins. Toxicity may occur with in seconds to minutes. The nonspecific symptoms are nausea, vomiting, headache, cough, rhinorrhea and lacrimation. Upper and lower airway symptoms include irritation of eyes, nose, throat, swelling of airway leading to obstruction, stridor, shortness of breath, chest pain and wheezing. Pneumonitis, pulmonary edema, respiratory compromise and death may occur after significant exposure. Treatment is mainly supportive with removal of patient from the source, humidified oxygen, bronchodilators and respiratory support. Corticosteroids have been used with unclear role and efficacy. Nebulised sodium bicarbonate neutralises the acid formed during chlorine metabolism. Although the data regarding its efficacy is limited to case series and case reports, this therapy appears to be safe and potentially beneficial.

Presentation:
Massachusetts Medical Society's (MMS) Fifth Annual Research Poster Symposium for Residents, Fellows, and Medical Students.

A Case of Long-standing Painful Skin Rash and Depression
Pooja Sherchan, MD; Carlos Prieto-Granada, MD; David Gang, MD; Yousef Alturaiweb, MD; Sabyasachi Sen, MD, PhD

CASE: A 42 YO female presented with depression, 40 lb weight loss, diarrhea and progressively worsening maculopapular, migratory, desquamative, painful rash involving the extremities, trunk, and perineum for over 6 months, resistant to standard therapy. Biopsy showed spongiform dermatitis with focal keratinocytes vacuolization and parakeratosis, features consistent with necrolytic migratory erythema (NME). Subsequently drawn serum Glucagon level was 627 (40-130 pg/ml). She remained euglycemic with mean fasting blood glucose of 80 mg% and concomitant fasting insulin level of 17 µU/ml. HbA1C was 5.2%. CT demonstrated a 3.4x2.7x2.5 cm mass in the tail of pancreas. MRI and octreotide scan confirmed the lesion with no evidence of metastatic disease. A diagnosis of glucagonoma associated with characteristic necrolytic migratory erythema (NME) rash was made. She underwent distal pancreatectomy which revealed a well differentiated pancreatic neuroendocrine tumor with (+) immunohistochemical staining for glucagon. Within 1 day of tumor resection, there was resolution of NME rash and near complete resolution in 2 weeks. Postoperatively, her glucagon level decreased to 37 pg/ml and insulin level was 4.1 µU/ml with synchronous fasting blood glucose of 181. Of note, her blood glucose levels remained satisfactory pre-operatively inspite of high glucagon levels and began to rise only after partial pancreatectomy with subsequent stabilization at impaired glucose tolerance level.

DISCUSSION: Reports of diabetes in glucagonoma vary from 38 to 94% but we did not find hyperglycemia in our case. We entertained the possibility of a compensatory mechanism of beta cell hyperplasia that was counteracting the high glucagon levels. After detailed pathological evaluation of pancreatic tissue from normal, insulinoma and glucagonoma (our case) patients, we found no evidence of the same by immuno-histochemical staining. The characteristic skin lesion of NME, has been described in upto 70% of patients with glucagonoma. In our patient, rapid post-operative resolution of both the rash and depression are indicative of significant paracrine properties of glucagon in skin and CNS.

CONCLUSIONS: The strength of manifestation of hyperglucagonemia seems widely variable depending on the organ system involved. The skin manifestation seemed out of proportion to the level of hyperglucagonemia whereas no effect on carbohydrate metabolism and compensatory beta cell hyperplasia were noted.

Poster Presentation:
Endocrine Society, Boston, June 2011.
Sarcoidosis Masquerading as Painless Thyroiditis
Pooja Sherchan, MD; Kamal Shoukri, MD; Frida Rosenblum, MD; Katya Ford, MD; Burritt Haag, MD

OBJECTIVE: To report a case of sarcoidosis involving the thyroid after a bout of painless thyroiditis.

CASE: 44 year old female presenting with "lump in her throat" and 3 months complaint of dry cough, night sweats and 5 lbs of weight loss. O/E The thyroid gland was 1.11 times normal size, non-tender with a firm, 2 cm X 1 cm nodule at isthmus. TSH was <0.02 mIU/L and FT4 was 1.59 ng/dL suggesting subclinical hyperthyroidism. TPOAb and TRAb were negative. 24 hr Thyroid uptake was <0.5% suggesting thyroiditis. Thyroid US showed heterogeneous echogenicity with multiple ill-defined hypoechoic areas and a 2 cm X 0.9 cm hypoechoic nodule at the junction of the isthmus and the right thyroid lobe. FNA biopsy of the nodule showed granulomatous change with epithelioid histiocytes forming sheets, giant cells, nodular aggregates and morphologically benign follicular cells. Chest X ray showed diffuse infiltrative disease. CT chest revealed diffuse centrilobular nodular opacities. Transbronchial biopsy revealed non-necrotizing interstitial granulomatous inflammation consistent with sarcoidosis. ACE level was 134 U/L (12-68). She was started on Prednisone 30 mg a day. A month later, her TSH was 26 mIU/L and FT4, 0.5 ng/dL. Levothyroxine was started. Repeat US 2 months after initiation of prednisone showed resolution of the isthmus nodule and near-normalization of the gland. She was tapered off prednisone and levothyroxine over a year, remained euthyroid for 6 months, and then became hypothyroid again. No relapse of sarcoidosis has occurred in 4 years of follow-up.

DISCUSSION: Prevalence of thyroid gland involvement in systemic sarcoidosis is reported to be approximately 4%. Conditions associated with sarcoidosis include Hashimoto’s thyroiditis, Grave’s disease, cold nodules, de Quervain’s thyroiditis, thyroid cancer and increased prevalence of thyroid antibodies. Our case presented with painless thyroiditis, initially with subclinical hyperthyroidism with low uptake followed by hypothyroidism, euthyroidism and eventually hypothyroidism. FNA biopsy revealed non-caseating granulomas, differential being tubercular/fungal infections, de Quervain’s thyroiditis, palpation thyroiditis and sarcoidosis. The absence of pain makes de Quervain’s thyroiditis highly unlikely. Acid fast and methenamine silver stains were negative for microorganisms. The pathology on transbronchial biopsy corroborated the diagnosis of systemic sarcoidosis.

CONCLUSION: This case illustrates that sarcoidosis should be considered in the differential diagnosis of painless thyroiditis.

Presentation:
American Association of Clinical Endocrine San Diego, CA, April 2011.
Effectiveness of Chantix® (Varenicline) for Smoking Cessation in an Inner City Medicaid Population

Ranjit Dhelaria, MD; Kelly McMenimen, MD; Ella Gupta, DO; Jennifer Friderici, MS; Michael Rothberg, MD

BACKGROUND: Cigarette smoking is common among low socioeconomic groups, who already suffer a disproportionate burden of heart and lung disease. Most who try to quit smoking are unsuccessful, but smoking cessation aids have been shown to improve long term quit rates. One of these, varenicline, has been demonstrated to be more effective than other smoking cessation therapies, with long term quit rates as high as 23%.

However, it is not known whether such results can be achieved in clinical practice at an inner city clinic. Because motivation may be lower, behavioral counseling not routine, and patients may have additional life stresses, we hypothesized that success rates in our population would be lower than those in published trials.

METHODS: We conducted a retrospective cohort study of all patients ≥18 yrs of age who received a prescription for varenicline or nicotine replacement at two large inner city academic health centers between June 2008 and May 2009. Subjects were identified from prescribing records and electronic clinic notes were reviewed and the following data extracted: demographics (age, gender, and race), language spoken, employment status, substance abuse, co-morbid conditions and smoking history. Our primary outcome was smoking status at pre-set intervals (8, 14, 26 and 52 weeks) following prescription of smoking cessation therapy. Secondary outcomes included frequency of follow up, and whether behavior counseling was performed. Poisson regression with robust standard errors was used to adjust incidence rate ratios for covariates. Final models yielded post-estimation proportions for therapy classes at mean values of covariates.

RESULTS: A total of 364 patients were enrolled in the study (mean age 43.1 ±12.5 years, 58% female, 45 % white, 28% African American and 12% Hispanic). The average patient reported smoking 16 cigarettes/day for 22 years. Many patients also had a history of mental illness (43%), alcohol abuse (8%) or drug abuse (19%). Overall, 145 patients (40%) received varenicline, 168 (46%) received nicotine replacement (NRT), and 51(14%) received both. In a multivariable model, a prescription of varenicline versus NRT was positively associated with age between 40-60 yrs (vs. younger or older, P=0.03), higher cigarette consumption (≥10/day vs. ≤10 OR=1.77, 95% CI 1.05-2.99), and COPD (OR=5.44, 95% CI 2.05-14.06) and negatively associated with history of mental illness (OR=0.34, 95% CI 0.16-0.70) and drug abuse (OR=0.34, 95% CI 0.16-0.70).

Within one year, 245 (67%) had at least one follow-up visit. At week 52, 23 (10.8%) were abstinent. Adjusted quit rates did not differ significantly between varenicline and NRT (10.3% v. 9.9%, p=0.95). Only 69 of 362 (19.1%) received behavioral counseling. Patients who received counseling were significantly more likely than those who did not to be abstinent at week 52 (14.1% vs. 7.8%, p=0.01). The proportion of patients reporting side effects was 13.7% among patients prescribed both nicotine and varenicline; 4.8% among those receiving varenicline only, and 1.2% among those receiving nicotine only (P<0.0001).

CONCLUSION: In an inner city clinic, smoking cessation rates were lower than those reported in clinical trials and did not differ between varenicline and NRT.

Oral Presentation:
SGIM Regional Meeting, March 2011.
Oral Anticoagulants for Secondary Prophylaxis of Stroke in Coronary Artery Disease and Cerebrovascular Accident

Gaurav Alreja, MD; Thomas Trikalinos, MD, PhD; Deepa Chandrasekharan, MD; Michael Rothberg, MD, MPH

BACKGROUND: Secondary prophylaxis of stroke without atrial fibrillation or artificial heart valves remains challenging. Multiple randomized control trials evaluating warfarin with or without aspirin after the first incidence of coronary artery disease (CAD) or cerebrovascular disease (CVD) have yielded mixed results.

METHODS: Meta-analysis of the literature (MEDLINE-1980 to August 2010) to determine pooled estimates of benefits (reduced incidence of stroke) and risks (mortality, intracranial bleeds, major and minor bleeds) of warfarin (with and without aspirin) in patients with CAD and CVD. 24 trials (32827 patients) were stratified based on the intensity of the therapeutic international normalized ratio (INR): low (INR<2), intermediate (INR 2-3) and high (INR>3.0).

RESULTS: In patients with CAD, intermediate intensity warfarin with aspirin when compared to aspirin alone, significantly reduced risk of secondary strokes [relative risk (RR) 0.48, confidence interval (CI) 95% 0.29-0.80], increased the risk of intracranial (RR 3.03 CI 95% 0.48-19.20) and major bleed (RR 2.54, CI 95% 1.70-3.79) and did not reduce mortality (RR 1.00, CI 95% 0.80-1.25). Intermediate intensity warfarin without aspirin did not reduce stroke compared to aspirin alone (RR 1.16, CI 95% 0.46-2.93). In patients with CVD, intermediate intensity warfarin without aspirin although did reduce stroke, but did not reach statistical significance (RR 0.82, CI 95% 0.59-1.14) and modestly increased the risk of intracranial (RR 1.86, CI 95% 0.91-3.79) and major (RR 2.27, CI 95% 1.52-3.37) bleed. There are no studies of intermediate intensity warfarin plus aspirin in this population. Low intensity warfarin did not confer any additional benefit with previous CVD. High intensity warfarin increased intracranial (RR 8.68, CI 95% 1.99-37.87) bleed substantially.

CONCLUSION: In CAD patients, use of intermediate intensity warfarin with aspirin reduces the risk of stroke at the price of increased bleeding. In CVD patients, intermediate intensity warfarin without aspirin also reduced stroke. Intermediate intensity warfarin plus aspirin might be particularly effective for secondary prevention in CVD patients.
Impact of "off hours" and Interventional cardiologist distance from hospital on door to balloon time.

Gaurav Alreja, MD; Amir Lotfi, MD

BACKGROUND: Strategies focused on reducing door to balloon (DTB) time for primary percutaneous coronary intervention (PCI) during off hours have advocated on site 24 hours ST segment elevation myocardial infarction (STEMI) team which is fraught with excessive costs and resources. Questions have been raised about possible prolonged engagement time of the STEMI team/ interventional cardiologist to arrive to the hospital as a responsible factor for longer DTB times during off hours.

METHODS: Retrospective study of DTB time in patients presenting with acute STEMI undergoing Primary PCI from October 2007 to July 2009. The DTB time was compared during “on hours” - weekdays 7AM to 5:30PM and “off hours” - weekdays 5:31 PM to 6:59 AM and weekends. We collected data regarding the interventional cardiologist’s home distance from the hospital, time taken by the interventional cardiologist to reach the hospital and its role in DTB time and patient morbidity and mortality outcomes.

RESULTS: Mean DTB was 19 minutes greater during “off hours” (79 minutes) compared to “on hours” (58 minutes). Factors affecting DTB time included history of prior MI (p = 0.001), prior PCI (p=0.021), prior CABG (p<0.001), and history of diabetes mellitus (p=0.004) explaining 24% of the variance in DTB time. After controlling for these factors in multiple regression analysis, the difference was 22 minutes (p < 0.001). Notably, after controlling the time spent by the patient in the emergency department, the distance of physician from the hospital was not associated with DTB on univariate (p= 0.24) or multivariate analysis (p=0.20) either individually or in interaction with the off hours designation. Body mass index (BMI) was also associated with door-to-balloon time, but its significance was accounted for by its high correlation with diabetes mellitus. Incidence of major adverse cardiac events (MACE) or postoperative bleeding or acute renal failure for patients seen during off and on hours was not found to be statistically significant.

CONCLUSION: Although door to balloon time is significantly longer during off hours, the distance of interventional cardiologist’s home from the hospital is not associated with DTB or with MACE, post operative bleeding and acute renal failure. This would indicate a well-organized STEMI program can provide DTB of less than 90 minutes for on and off hours safely and effectively.

Presentations:
2. Impact of “off hours” and Interventional cardiologist distance from hospital on door to balloon time; Society of Cardiovascular Angiography and Intervention, May 2011.
3. Rhabdomyolysis caused by unusual interaction between Simvastatin and Azithromycin; National Kidney Foundation Spring 2011 meeting, April 2011.
4. Effect of remote ischemic preconditioning on myocardial and renal injury; Society of Cardiovascular Angiography and Intervention, May 2011.

Publication:

Previous Awards:
Rhabdomyolysis caused by unusual interaction between Simvastatin and Azithromycin

Gaurav Alreja, MD; Saqib Inayatullah, MD; Gregory Braden, MD

Rhabdomyolysis (rhabdo) is an uncommon but life-threatening adverse effect of statin therapy. We report a rare case of rhabdo caused by potential drug interaction between simvastatin and azithromycin.

A 73 yr Caucasian male with history of chronic kidney disease stage 3 due to idiopathic interstitial nephritis (baseline Cr 1.7 mg/dl), diabetes mellitus, hypertension, hyperlipidemia presented with weakness of lower extremities for 1 week. His medications included allopurinol prednisone, labetalol, bumetanide and simvastatin 80 mg/d (for 2 yrs). He received Azithromycin (AZI) 500 mg followed by 250 mg daily for next 4 days, 1 wk ago for acute bronchitis. He was found to have rhabdo with CPK of 11,240 U/L and Cr of 3.8 mg/dl. Discontinuation of simvastatin with IV hydration and bicarbonate resulted in resolution of rhabdo. Simvastatin was reintroduced at 40 mg/d after 2 months and later increased to 80 mg/d without any subsequent recurrence of myalgia or weakness.

Rhabdo related deaths have been reported with all statins except fluvastatin. Important variables affecting its occurrence include statin dose, patient characteristics and concurrent use of other medications that may alter the pharmacokinetics of the statins. Simvastatin and lovastatin are metabolized by CYP3A4, AZI by both CYP3A3 & 3A4 and fluvastatin by CYC2C9 enzyme system. Macrolides inhibit CYP3A4, thus elevating the statin levels. However, AZI (an azalide, subclass of macrolide) interferes poorly with CYP3A4 & after hepatic metabolism gets excreted in the bile. Although, rhabdo with AZI & lovastatin has been previously reported, this is a rare reported case of rhabdo caused by co-administration of AZI and simvastatin.

Polymorphism of CYP3A4 might explain such rare cases despite insignificant inhibition by AZI in studies. Interference in biliary excretion of statins by AZI (through P-glycoprotein and multi drug resistance protein) might be another mechanism. His advanced age, underlying CKD and high dose of simvastatin might also have contributed to this rare complication. In conclusion, AZI might be co-administered with statins, with caution as there is risk of rhabdo.
OBJECTIVES: The purpose of this study was to assess the effectiveness of RIPC to provide myocardial and renal protection in patients undergoing cardiovascular interventions as measured by biomarkers. Clinical data was pooled to evaluate the usefulness of RIPC to benefit clinical outcomes.

BACKGROUND: Debate exists regarding the merit of using RIPC for patients undergoing cardiovascular interventions.

METHODS: Systematic review and meta-analysis of prospective randomized clinical trials of patients undergoing cardiovascular interventions who received RIPC versus control was performed. 2 independent reviewers selected articles from MEDLINE, EMBASE, SCOPUS, Cochrane, ISI Web of Science, BIREME and through hand search of relevant reviews and meeting abstracts upon agreement. Surrogate markers of myocardial (Troponin T or I and CK-MB) and renal (serum creatinine) injury for primary outcomes were abstracted.

RESULTS: Final pooled analysis from 18 clinical trials showed significant heterogeneity of results and no relevant publication bias. Patients receiving RIPC had lower levels of markers of myocardial injury in the first few days after surgery (SMD – 0.54, CI 95% -1.01 to -0.08, p=0.01) with highly heterogeneous results (I² = 93%). A lower incidence of perioperative myocardial infarction (7.9 % RIPC vs. 13.9% placebo RR 0.56, CI 95% 0.37-0.84, p=0.005, I²=0%) was also noted. In patients with AAA repair, RIPC when compared to control also decreased renal injury (SMD – 0.28, CI95% -0.49 to -0.08, p=0.007, I²= 51%).

CONCLUSIONS: RIPC reduces cardiac and renal biomarkers and perioperative myocardial infarction following cardiovascular interventions/cardiac surgery. Large trials should be conducted to establish the effect of remote conditioning on clinical outcomes.

Presentations:
2. Impact of “off hours” and Interventional cardiologist distance from hospital on door to balloon time; Society of Cardiovascular Angiography and Intervention, May 2011.
3. Rhabdomyolysis caused by unusual interaction between Simvastatin and Azithromycin; Meeting: National Kidney Foundation Spring 2011 meeting, April 2011.
4. Effect of remote ischemic preconditioning on myocardial and renal injury; Society of Cardiovascular Angiography and Intervention, May 2011.

Publication:

Previous Awards:
Knowledge of Prior Treatments and Appreciation of Future Health Concerns in Breast Cancer Survivors

Chandravathi Loke, MD; Grace Makari-Judson, MD; Wilson Mertens, MD; Deborah Katz, MD; Ruth Barham, MPH

BACKGROUND: Uncertainty over the knowledge base of breast cancer survivors has led a call for increased survivorship research and for the use of survivorship care plans (1, 2). As greater efforts are directed toward breast cancer survivorship issues, much can be learned from patients’ perception of survivorship experience. To accurately assess these needs, it is imperative to gauge patient’s understanding of their treatment and knowledge of future health risks and factors that impact these issues to gain insight into unmet specific survivorship needs.

METHODS: In this study, eligible patients with stage I-III breast cancer patients diagnosed from 1997-2007 were approached to participate. The first three hundred patients who agreed to participate were administered a questionnaire to assess knowledge of their diagnosis, past treatments and impressions of recurrence risk as well as impressions of risk (lower, same, higher) for other diseases, with verification performed by chart review. Actual estimates of breast cancer risk were obtained from Adjuvant! Online (a computerized, validated, decision making tool to make prognostic estimates in patients with early breast cancer) and literature review. Descriptive analyses of recall accuracy as well as comparisons with patient demographic data were undertaken. Stepwise logistic multivariable regression analyses were conducted to evaluate univariate associations.

RESULTS: Tumor stage was correctly recalled by 53.1% of patients. Younger age (p<.0001), pre-menopausal status (p=.019), white race (p=.024), higher income (p=.0003) and education level (p=.0017) were univariate associations; multivariate analysis retained age, income and education as independent variables. The majority (98.2%) recalled receiving chemotherapy but 40% could not accurately identify the regimen. Inaccuracy was associated with older age (p<.0001), non-white race (p=.0004), lower income (p=.008) and education (p=.025) as univariate variables; multivariate analysis retained age and non white race (both p<.0001) as significant. Most (74%) accurately recalled hormone receptor status with older patients and those with less education and income having less accuracy. Patients treated with Tamoxifen exhibited accurate recall (95.7%) compared with those receiving anastrazole (84%) or no hormonal therapy (76%). Patients overestimated both local and distant recurrence risks: higher rates of distant recurrence than matched Adjuvant! Online estimates were reported (p=.0001). No associations with race, annual income or education status were noted with recurrence perceptions. Patients with higher annual incomes and educational attainment consistently reported higher risk impressions for second cancers, but not for benign ailments (diabetes, obesity, arthritis, etc.). Chemotherapy recipients perceived higher risks for osteoporosis (p=.011), ovarian cancer (p=.055), and heart failure (p=.060). Hormonal agent recipients felt more at risk for osteoporosis (p<.0001); of those, tamoxifen recipients felt greater risk from endometrial (p=.16) and ovarian cancer (p=.029); anastrozole-treated patients anticipated increased risk for hypertension (p=.0009), hypercholesterolemia (p=.0056), heart failure (p=.028) and arthritis (p=.065).

CONCLUSIONS: Patients seemed to recall the general treatment plan but finer details often were recalled imprecisely; generally, increased age, non-white race, and lower education and income levels were associated with inaccuracies. All survivors tend to magnify their breast cancer relapse risk, both local and distant. Those with higher incomes and education report higher second cancer risk but not non cancer disorders compared to others. Since knowledge of past treatment and accurate perception of recurrence risk may impact on compliance with surveillance and life style choices, different strategies to overcome these disparities need to be addressed in the care of breast cancer patients and survivorship programs.

REFERENCES:
Effect of Web-based Education and Nurse Champions on Employee Influenza Vaccination in an Integrated Health Care System

Justine Miranda, MD; Sarah Haessler, MD; Paul Medrek, MD, MPH; Mary Ellen Scales, RN; Jennifer Friderici, MS; Michael Rothberg, MD, MPH; Paul Visintainer, PhD; Amy Rist; Melisha Cumberland, MD

BACKGROUND: Nurse coordinators and online educational programs can increase influenza vaccination rates for healthcare workers in outpatient settings, but their effect in tertiary care systems is unknown. We hypothesized that implementation of these strategies in a large integrated health care system would increase vaccination rates.

METHODS: In 2006, an online educational tool on influenza vaccination, including a survey of comprehension and reasons for decline, was implemented in our tertiary health care system. From 2007-2009, a revised educational tool and unit-based nurse champions were employed at the intervention site, while control sites received education only. We collected influenza vaccination status, survey answers, reasons for decline, age, gender, job description, and job location for all employees in 2007-2009. Trends in vaccination rates were analyzed using logistic regression and descriptive statistics were used to describe vaccination rates by employee demographics.

RESULTS: We studied 10,400 employees (89% at intervention site and 11% at 2 control sites). Employees at control sites were older (mean age 46.3±12.7 vs. 42.8±12.5 years, p<0.0001) and less likely to be physicians (0.9% vs. 8.6%, p<0.0001). Across 2 influenza seasons, vaccination rate increased at the intervention site (37% vs. 41%), but not in the control site (41% vs. 41%) (test of parallel slopes p=0.01). Vaccination rates varied by nursing unit from 11% to 60% and were highest in labor and delivery (60%) and intensive care (58-59%). In multivariable modeling, vaccination was most strongly associated with age >40 years (OR 1.32, 95% CI 1.28-1.38) and previous vaccination (OR 4.4, 95% CI 4.1-4.7). The top reasons for declination were the same across job types: “healthy” (27%), “the vaccine does not work” (16%) and “had a past reaction” (14.6%).

CONCLUSION: In a tertiary care health system, nurse champions had a positive impact on influenza vaccination, but rates remained low and misconceptions about vaccination persisted.

A Standardized Physician Discharge Encounter for Patients with Heart Failure to Increase Patients’ Readiness for Discharge and Decrease Readmission Rate

Adrienne Seiler, MD; Wei Boon Ooi, MD; Amit Bhargava, MD; Jaime Montfort-Hernandez, MD; Jackey Jacob, MD; Mark Jankowske, MD; Anju Bhagavan, MD; Ashley Nelson, MD; Jaya Mallidi, MD; Jan Fitzgerald, RN, MS; Peter St. Marie; Reva Kleppel; Kevin Hinchey, MD; Paul Visintainer, PhD; Mihaela Stefan, MD

BACKGROUND: Comprehensive discharge planning may reduce readmission rates for patients with congestive heart failure (CHF) but executing quality care transition is challenging.

OBJECTIVE: to evaluate if an intervention designed to standardize physician discharge encounter can increase patients’ preparation for discharge and reduce rehospitalization rate.

METHODS: Quasirandomized design including community-dwelling adults hospitalized with CHF exacerbation. Physicians in the intervention group received a structured checklist to be used in patients when discharging patients with CHF. The tool incorporated essential elements promoting patient understanding of their hospitalization and transition to home. It included discussion of their diagnosis, primary-care follow-up, medication, daily weights, symptoms of worsening CHF and how to respond and problems with transportation and costs. The intervention was a part of an integrated package of care that was implemented in the hospital for patients with CHF.

MEASUREMENTS: Post-discharge survey (PDSA) evaluating their understanding of the discharge knowledge that the structured checklist provides, rates of all-cause readmission rates at 30 days, time to readmission and physicians reported usage of the checklist.

RESULTS: Participants in the intervention group (n=40) performed slightly better in the key discharge knowledge tested than those from the usual care group (n=71) but the score was not significantly better. We found that 74% of the intervention group and 70% in the control group knew their discharge diagnosis (p=0.82), 98% versus 86% (p=0.09) knew why they were taking medications and 61% versus 51% in the control (p=0.57) knew their follow-up appointment.

There was no difference between the 2 groups’ 30-day readmission rate (21.8% versus 20%) and time to readmission. The overall decrease in readmission rate for all CHF patients during the 6 months study period was 20%.

The survey assessing the degree of implementation of the intervention showed that 48% of the physicians in the intervention group did not use the checklist consistently.

CONCLUSION: A standardized checklist used by physician on the day of discharge was not associated with any benefit on the patients reported understanding of their disease and on the readmission rates. Multiple concurrent interventions by different healthcare providers to reduce readmission could explain the lack of observed benefit.

Poster and Oral Conference Presentation:
Alliance of Academic Independent Medical Centers National Initiative: Improving Patient Care Through Graduate Medical Education, March 2009.
Correlation of Stromal Expression of YKL-40 with Recurrence of Colorectal Cancer

Hannah Swayze-Quinn, MD; Michael Kuperman, MD; Christopher Chapman, MD; Frida Rosenblum, MD; Jane Garb, MS; Brooke Bentley; Qing Jackie Cao, MD, PhD; Rong Shao, PhD; Richard Arenas, MD

OBJECTIVE: To determine if tumor specific expression of YKL-40 in patients with colorectal cancer correlates with recurrence or survival.

BACKGROUND: Advances in colorectal cancer treatment has generated a need to discover novel predictive biomarkers. YKL-40, a serum secreted glycoprotein, has been detected in patients with cancer. Unfortunately, serum expression is highly variable and often elevated in inflammatory conditions. We investigated whether tumor specific expression of YKL-40 in colorectal cancer correlated with recurrence and survival.

METHODS: Using clinical and tumor registry data we identified 281 patients with stage 2-4 colorectal cancer. Patients had a minimum of 2-year follow up. Immunohistochemistry was performed on archival tissue using a YKL-40 antibody. Expression was scored (0-6) based upon intensity (0-3) and percentage (0-3) of cells stained within the epithelium and stroma. Cox regression analysis assessed the significance of stromal and epithelial expression in disease-free survival, controlling for stage and lymphatic invasion. Stromal and epithelial scores were analyzed separately; low expressing tumors (0-2) served as the reference group. Adjusted hazard ratios indicate the risk of recurrence controlling for each variable.

RESULTS: As expected, stage and lymphatic invasion correlated with disease-free survival (p = 0.036 and 0.001 respectively). High expression of YKL-40 within the tumor stroma (total score ≥ 4) was an independent predictor of disease-free survival (p = 0.036). Adjusting for stage and lymphatic invasion, patients with stromal scores ≥ 4 were over twice as likely to recur (hazard ratio = 2.4) as those with scores 0-2. Epithelial expression was not predictive of prognosis in our analysis.

CONCLUSIONS: Our results demonstrate a direct correlation between stromal expression of YKL-40 and colorectal cancer recurrence. Tissue expression of YKL-40 may be applied as a predictive biomarker for colorectal cancer to design novel treatment strategies.

Poster Presentations:
American Society of Clinical Oncology, October, 2010.
International Digestive Disease Week, May 2009.
Research Week – Baystate Medical Center, May 2010.

Oral Presentations:
International Pediatric Endosurgery Group; 18th Annual Congress for Endosurgery in Children, April 2009.

Publications:

Previous Awards:
Incubator Grant for research project: Expression of Angiogenic Factors, YKL-40 and Acheron, in Colon Cancer 2008.
Publications


Intentionality and Hatha Yoga: An Exploration of the Theory of Intentionality, the Matrix of Healing, Using Narrative Analysis to Test Theory

Lauri Deary, RN; Joan Roche, RN, PhD; Karen Plotkin, RN, PhD; Rothlyn Zahourek, RN, PhD

INTRODUCTION & BACKGROUND: Hatha Yoga is a healing process to increase self awareness and well-being (Khalsa, 2004) and increase muscle tone and flexibility (Dibenedetto et al., 2005). A single case study participant reported improved physical symptoms and an overall improved sense of well-being following a yoga routine. The case subject attributed his personal changes to the focus on intentionality in the yoga practice. Zahourek (2004) described a theory of intentionality in healing as a matrix (Intentionality: The Matrix of Healing).

The purpose of this study was to explore elements of intentionality in the narratives of adult participants in a Hatha Yoga class over a one year lifestyle modification program.

OBJECTIVES:
1. Describe a method to test a theory with a new population, using narrative analysis
2. Discuss the findings of a study to explore the Theory of Intentionality with adults in a lifestyle modification program

METHODS: The design of this study was narrative analysis. The researchers used guiding questions to elicit participant’s feelings before and after each yoga session in written journals. Sixteen participants completed the study. The participants described their personal life experiences during the course of a one year Hatha Yoga class. The journal entries were analyzed using narrative analysis to identify themes and clusters.

FINDINGS & CONCLUSIONS: The results supported the theory, Intentionality the Matrix of Healing, (IMH) (Zahourek, 2005) and provided new insights into the nature and the process of intentionality in healing. The new insights included four states of an experience of transformative awakening within participants’ intentionality.

KEY WORDS: Intentionality, Hatha Yoga, Healing

Effect of Soy Supplementation on Endogenous Hormones in Postmenopausal Women: Racial Differences

Folasade Ajayi, MD, MPH; Cynthia Sites, MD; Alex Knee, MS

OBJECTIVE: We sought to determine the effect of soy supplementation on endogenous hormones in postmenopausal women.

METHODS: Thirty-nine postmenopausal women, 16 African Americans and 17 Caucasians, median age 54 years, with BMI 32.8 kg/m2, were randomized to daily soy shakes or casein placebo for 3 months. Serum was drawn at baseline and follow up for estradiol, estrone, testosterone, free testosterone, sex hormone binding globulin, LH, FSH and TSH. Change from baseline to follow up was calculated and differences were evaluated using the Wilcoxon rank-sum test. Statistical significance was set at p≤0.05.

RESULTS: Soy and placebo groups were similar at baseline with the exception of SHBG which was higher in the placebo group (p=0.0367). Soy supplementation decreased serum estradiol and testosterone versus placebo (p=0.0265 and p=0.0286 respectively). When stratified by race, soy supplementation decreased testosterone significantly in Caucasians (p=0.0200) but not in African Americans (p=0.3699). In addition, soy supplementation decreased estrone in African Americans (p=0.0487) but not in Caucasians (p=0.8096). There was no effect of soy supplementation on changes in FSH and LH.

CONCLUSION: Soy supplementation decreases serum estradiol and testosterone in postmenopausal women. The decrease in testosterone was observed primarily in Caucasians. African Americans had a decrease in estrone with the supplement. The decrease in serum estradiol and testosterone did not appear to be mediated by a decrease in FSH or LH. A decrease in serum estradiol and testosterone could be beneficial for some postmenopausal women with regards to risk of breast cancer.

Presentation:
Resting Energy Expenditure and Body Composition: 
Racial Differences in Postmenopausal Women
Jayme Bosler, MD; Cynthia Sites, MD; Alex Knee, MS

OBJECTIVE: We sought to determine differences between Caucasian and African American women in the relationship between resting energy expenditure and body composition.

METHODS: Thirty-nine postmenopausal women (20 Caucasians and 19 African Americans), median age of 55 years with BMI 32.5 kg/m2, underwent dual x-ray absorptiometry scans to measure regional fat and lean mass. CT scans at the L4/L5 disk space were performed to measure total, subcutaneous, and visceral abdominal fat. Resting energy expenditure was measured by indirect calorimetry. Results: Groups were similar, with the exception of visceral abdominal fat, which was lower in African American women compared to Caucasians (p=0.002), and lean arm and bone mineral mass, which were higher in African American women vs. Caucasians (p=0.01 and p=0.03, respectively). Resting energy expenditure was positively related to body weight and to total and regional fat and lean mass in Caucasians (p<0.02 for all), but only to body weight and total and regional lean mass, and to arm fat in African Americans (p>0.03 for all). Total, subcutaneous and visceral abdominal fat as measured by CT scan were not related to resting energy expenditure in Caucasian or in African women.

CONCLUSIONS: There are racial differences in the relationship between resting energy expenditure and body composition in postmenopausal women. As energy expenditure declines with aging, and lean mass is primarily responsible for resting energy expenditure, both Caucasian and African American postmenopausal women should be encouraged to maintain lean mass to sustain a healthy body weight.

Presentation: 

Effect of Soy Supplementation on Dietary Macronutrients and Trace Elements in Postmenopausal Women
Oscar Martinez, DO; Betty Darnell, MS; Alex Knee, MS; Cynthia Sites, MD

OBJECTIVE: To investigate the effect of a daily soy supplement versus a casein placebo on change in dietary macronutrients and trace elements in POSTMENOPAUSAL WOMEN.

DESIGN: Randomized, double-blinded, placebo-controlled trial.

MATERIALS AND METHODS: Thirty-nine postmenopausal women were randomized for 3 months to a supplement containing either soy protein plus isoflavones (20 g protein plus 120 mg isoflavones) versus a casein placebo without isoflavones as part of a weight-maintenance diet. At baseline and at follow up, a 4-day food record was collected for each subject and analyzed using the Nutrition Data System for Research software. Medians and interquartile ranges were determined for values at baseline and follow up, and the changes between soy and placebo groups over time were calculated for total dietary fat, carbohydrate, and protein; 18 amino acids; percent calories from saturated, monounsaturated, and polyunsaturated fatty acids; total, soluble, and insoluble dietary fiber; and 9 trace metals. We evaluated the significance of the change in these measures between soy and placebo groups using the Wilcoxon rank sum test or t-tests as appropriate, with statistical significance set at p<0.05.

RESULTS: Groups were similar at baseline. Soy supplementation did not affect changes in total dietary fat, carbohydrate or protein, or in any amino acid, dietary fiber, or trace mineral compared to placebo. However, the soy supplement reduced the percent calories from saturated fatty acids compared to placebo (p=0.0324), with a trend toward increasing the percent calories from polyunsaturated fatty acids (p=0.0804). Specifically, caprylic acid, a saturated fatty acid, was reduced by the supplement compared to placebo (p=0.0288).

CONCLUSIONS: As part of a weight maintenance diet for postmenopausal women, soy supplementation may promote cardiovascular health by reducing calories from saturated fatty acids.

Presentations: 
American Society of Reproductive Medicine, Denver, CO, October 23-27, 2010.
Is Antibiotic Prophylaxis Necessary for Midurethral Sling Procedures? A Case Series
Eun Hong, MD; Rachel Rubin; Keisha Jones, MD; Alex Knee, MS; Oz Harmanli, MD

OBJECTIVE: Surgical site infection remains the most common surgical complication. Antibiotic prophylaxis has been routinely used in the studies evaluating the effectiveness of midurethral sling placement despite the lack of evidence. The goal of this study was to evaluate the rate of postoperative infection in women undergoing midurethral sling procedures without antibiotic prophylaxis.

MATERIAL AND METHODS: Following IRB approval, the medical records of all women who underwent midurethral sling procedures without prophylactic antibiotics from Oct. 2004 to Jan. 2010 were reviewed. Subjects were excluded if there was concomitant surgery such as hysterectomy, anterior and posterior colporrhaphy, or other prolapse procedures. Baseline demographics including age, parity, race, body mass index, and coexisting medical conditions were recorded. Postoperative wound infection, mesh exposure, wound separation, and urinary tract infection rates were recorded.

RESULTS: A total of 106 subjects underwent a midurethral sling without antibiotic prophylaxis during the study period. The average age of participants enrolled was 52 ± 12 years, average parity was 2, 6.6% of subjects were diabetic, and 15.1% were smokers. The average length of follow-up was 6 months. There were no wound infections recorded. 5.6% of subjects developed a urinary tract infection. There was a 1.8% mesh erosion rate.

CONCLUSION: Increased risk of surgical site infection when a midurethral sling is performed without antibiotic prophylaxis. Risk of urinary tract infection was similar to previous studies utilizing antibiotic prophylaxis. Antibiotic prophylaxis is likely unnecessary when performing a midurethral sling.

Presentation:

Do patients with a negative fetal fibronectin screen have different pregnancy characteristics compared to those that have positive fibronectin results?
Amol Malshe, MD; Elisabeth Belisle; Prasad Gawade, MBBS; Alex Knee, MS; Andrew Healy, MD; Michael Plevyak, MD; Fadi Bsat, MD; Glenn Markenson, MD

OBJECTIVE: A comparison of spontaneous preterm birth characteristics between fetal fibronectin (fFN) positive and negative patients that delivered within 14 days of testing.

STUDY DESIGN: After Institutional Review Board approval, all singleton pregnancies that delivered within 14 days of a fetal fibronectin test were enrolled. Inclusion criteria included patients with a preterm birth either due to preterm labor or premature rupture of membranes. We excluded all but final test results if multiple tests were performed. The clinical impression for the preterm birth was categorized into the following: idiopathic preterm labor, premature rupture of membranes, or abruption. Placental pathology reports were reviewed and divided into the following categories: normal, ischemic changes, inflammatory changes and chronic villitis. Comparison between groups was conducted using Wilcoxon rank sum test and Fisher’s exact test.

RESULTS: A total of 1976 patients had fetal fibronectin testing at our institution. Of these, 63 had a preterm birth within 14 days of fetal fibronectin testing. The sensitivity, specificity, positive and negative predictive values for this test were 65.1, 90.2, 23.2 and 98.3, respectively. The patients that were fetal fibronectin negative (n=19) were then compared to the fetal fibronectin positive group (n=44). Those who tested negative had a longer duration between the test and time of delivery (7.7 ± 4.5 days vs. 5.1 ± 3.7 days, p=0.049). The table lists a comparison of the clinical cause for preterm birth and the placental pathology results.

Presentation:
Society for Maternal Fetal Medicine, San Francisco, CA, February 7-12, 2011.
The Effect of Concomitant Oophorectomy on the Perioperative Outcomes of Laparoscopic Hysterectomy

Keisha Jones, MD; Oz Harmanli, MD; Alex Knee, MS; Cara Robinson, MD

OBJECTIVES: To evaluate whether concomitant bilateral oophorectomy influences perioperative hysterectomy outcomes.

STUDY DESIGN: A retrospective cohort, including all total and supracervical hysterectomies performed for benign conditions between November 1999 and August 2008. In this ancillary analysis, we evaluated baseline characteristics of women undergoing concomitant adnexal removal and those who did not. Multiple factors were compared between groups including operating time, serious complications, and conversion to laparotomy.

RESULTS: Of the 1015 laparoscopic hysterectomies, 522 cases (51.4%) included concomitant oophorectomy. Hysterectomy only group was younger and less likely to be postmenopausal. Conversion to laparotomy (5.9 versus 3.7%, adjusted odds ratio [AOR] 2.11, 95% confidence interval [CI], 1.09-4.08)), and hospital stay longer than 1 day (23.6 versus 14.2%, AOR 1.77, 95% CI, 1.23-2.53) were significantly increased for women undergoing adnexal surgery.

CONCLUSION: Concomitant oophorectomy at the time of laparoscopic hysterectomy doubles the risk of conversion to laparotomy, and may prolong hospitalization.

Presentation:
Society of Gynecologic Surgeons, April 11-13, 2011, San Antonio, TX.

Stromal Expression of YKL-40 Correlates with Disease Free Survival in Colorectal Cancer

Christopher Chapman, MD; Hannah Swayze-Quinn, MD; Michael Kuperman, MD; Frida Rosenblum, MD; Richard Arenas, MD; Rong Shao, PhD; Q. Jackie Cao, MD, PhD

BACKGROUND: Advances in colorectal cancer (CRC) treatment has generated a need to discover predictive biomarkers. Increased serum levels of YKL-40, a secreted glycoprotein, has been inversely correlated with clinical outcome in many cancers, including CRC. To date, limited work has addressed if there is correlation between tissue expression of YKL-40 in CRC and clinical outcomes, such as disease free survival (DFS) and total survival (TS).

DESIGN: Using clinical and tumor registry data we identified 281 patients with Stage 2-4 CRC with a minimum of 2-year follow-up. Immunohistochemistry was performed on archival tissue using a polyclonal YKL-40 antibody. Scores for percent of cells staining and staining intensity were combined for each specimen separately for epithelium and stroma to derive a total score which ranged from 0 to 6. Specimens with a total score 4 were classified as positive (+) and those <4 classified as negative (-). Cox regression was performed to assess the significance of stromal and epithelial expression in CRC in relationship to DFS and TS, controlling for stage and lymphatic invasion. Adjusted Hazard ratios indicate the risk of recurrence controlling for each variable.

RESULT: DFS for patient with (-) stromal score was superior to that for patient (+) score. Controlling for other variables in the Cox regression, (+) stromal score was an independent predictor of decreased DFS, (p<0.05). As expected, stage was also significantly related to DFS (p<0.001). Epithelial score and lymphatic invasion were not significant. Controlling for other variables, patients with (+) stromal scores were over twice as likely to recur (Hazard Ration = 2.1) as those with (-) scores. Stromal and epithelial scores showed no association with tumor stage. Tumor stage was the only predictor of TS by Cox regression.

CONCLUSION: Our results show a direct correlation between stromal expression of YKL-40 and DFS in CRC. Lack of a significant association between stage and stromal score suggest that the latter is not merely a surrogate for the former. Our data suggests that stromal expression of YKL-40 predicts recurrence in CRC.

Presentation:
United States and Canadian Academy of Pathology (USCAP); 2011, San Antonio, TX.
Neutrophilic Maturation Arrest: a Mimicker of Acute Promyelocytic Leukemia

Rebecca Levy, MD; Vandita Johari, MD; Jonathan Freeman, MD

OBJECTIVES: Neutrophil maturation arrest at the promyelocytic stage of hematopoiesis can be a characteristic feature of congenital or acquired neutropenia. However, it is also a possible mimicker of Acute Promyelocytic Leukemia (APML). This is an interesting case of an 84 year old female with pancytopenia which addresses the differential diagnosis of neutrophilic arrest and APML. It highlights the importance of medication history as a possible cause of neutrophilic maturation arrest.

METHODS: This case was evaluated as a suspected APML, a diagnosis which must be ruled out before other possible etiologies can be considered. This process included a bone marrow biopsy with aspirate, morphology, cytogenetic testing, and special stains.

RESULTS: A bone marrow biopsy displayed no marrow infiltrative process; the marrow was normocellular with promyelocytic maturation arrest and decreased megakaryocyte numbers. The bone marrow aspirate differential displayed 4% blasts and 27% promyelocytes. Peripheral blood showed an absolute neutropenia, normocytic normochromic anemia, and thrombocytopenia. Cytogenetic studies demonstrated a normal female karyotype 46, XX.

CONCLUSION: Although the percentage of blasts and promyelocytes raised the possibility of APML, a careful review of findings in this case was not sufficient for a diagnosis due to the lack of t(15;17) and promyelocytic nuclear abnormalities. The clinical team revisited the patient’s history which revealed a new cardiovascular medication, Cilostazol, which has been associated with neutrophil maturation arrest and is the presumed etiology in this case. This case highlights the importance of considering all possible causes of neutrophilic maturation arrest when evaluating a case of marked promyelocytic increase on aspirate differential.

Poster Presentations:

“In Use of an EMR for Transfusion and Apheresis Medicine Services.” Advancing Practice, Instruction, and Innovation through Informatics (APIII) – 2009; Pittsburgh, PA.

“LPS Induction of Inflammatory Markers: Effects of Oral versus Subdermal Administration of Estrogen.” Texas A&M University Health Science Center Summer Research Poster Presentation – 2004; College Station, TX

Publications:


Previous Awards:
9/19/2010 College of American Pathologists Travel Grant. Awarded a travel grant for attendance of Pathology Informatics Annual Conference 2010; Boston, MA.


6/13/2009 Baystate Medical Center, Department of Pathology Residency Program - Commencement 2009: Core Competency Award for System Based Practices.

Extramedullary Hematopoiesis in Lymph Nodes Following Neoadjuvant Therapy for Breast Carcinoma
Carlos Prieto-Granada, MD; Namrata Setia, MD; Christopher Otis, MD; Liron Pantanowitz, MD

INTRODUCTION: Extramedullary hematopoiesis (EMH) usually occurs as a compensatory mechanism associated with hematologic disturbance, and may arise in association with chemotherapy. We report the findings in misleading cases of EMH arising in axillary lymph nodes following neoadjuvant therapy for breast carcinoma.

METHODS: The clinicopathologic features of cases demonstrating nodal EMH following neoadjuvant therapy for breast carcinoma were evaluated. Factor VIII and myeloperoxidase (MPO) immunohistochemical stains were performed.

RESULTS: Three cases were identified with EMH involving axillary lymph nodes in females ranging in age from 41-47 years. They had unilateral breast masses measuring 0.6-4.0 cm in greatest dimension. Infiltrating ductal carcinoma, grade III, was diagnosed in all cases by core needle biopsy. All patients subsequently received neoadjuvant therapy (pegfilgrastim, doxorubicin, cyclophosphamide, paclitaxel). No residual carcinoma was identified in post-chemotherapy resection specimens. One patient had metastatic carcinoma in her lymph nodes. Foci of EMH consisting of myeloid, erythroid and megakaryocytic precursors were present within the nodal parenchyma and/or subcapsular sinuses of all three cases. Megakaryocytes were immunoreactive with factor VIII and myeloid precursors with MPO.

CONCLUSION: With increasing use of neoadjuvant therapy for breast carcinoma, EMH within lymph nodes is more likely to be encountered. Hematopoietic precursors present in lymph nodes may potentially be misdiagnosed as metastatic tumor cells. Therefore, caution should be exercised when evaluating axillary lymph nodes in the clinical setting of neoadjuvant therapy for breast carcinoma.

Poster Presentation:

Fatal Paraneoplastic Pemphigus Associated with Small Cell Lymphocytic Lymphoma
Carlos Prieto-Granada, MD; Namrata Setia, MD; Chandravathi Loke, MD; Jean Henneberry, MD

INTRODUCTION: Paraneoplastic pemphigus (PNP) is an autoimmune blistering and erosive mucocutaneous disease associated with an underlying neoplasia, usually lymphoproliferative disorders. It has recently proposed that PNP should be included within the paraneoplastic autoimmune multiorgan syndrome (PAMS). We report a fatal case of PNP on a patient with small lymphocytic leukemia/lymphocytic lymphoma (CLL/SLL)

METHODS: The clinicopathologic and laboratory features of the case demonstrating PNP were evaluated.

RESULTS: The patient was a 61 year-old male with 8 year history of CLL/SLL treated with fludarabine and rituximab who presented with a polymorphous macular eruption, oral ulcers and respiratory failure. Biopsies from back and tongue lesions demonstrated intraepidermal suprabasilar acantholysis along with intercellular IgG deposition on direct immunofluorescence. High serum Anti-desmoglein 3 antibody titers were obtained. Despite aggressive treatment with immunosuppressives, IVIG and plasmapheresis, the patient succumbed to pulmonary complications 4 months after the diagnosis of PNP.

CONCLUSION: We present a case of fatal mucocutaneous PNP associated with CLL/SLL. Awareness of PNP/PAMS is important due to the high mortality associated with this process.

Poster Presentation:
14th Joint Meeting of The International Society of Dermatopathology (ISDP) February 2-3, 2011, New Orleans, LA.
Solid variant of Angiomatoid Fibrous Histiocytoma: A Case Report
Namrata Setia, MD; Jean Henneberry, MD; Wayne Duke, MD

Angiomatoid Fibrous Histiocytoma is an uncommon soft tissue tumor of intermediate malignant potential and uncertain histogenesis. These tumors are more commonly seen in deep dermis and subcutaneous tissue of extremities of children and young adults. Even though prominent pseudovascular spaces and hemosiderin-laden macrophages are a characteristic feature, their absence does not rule out the diagnosis. We present a unique case of the solid variant of Angiomatoid fibrous histiocytoma. A 6-year-old male presented with a soft, painless right shoulder nodule measuring 1 cm in diameter of uncertain duration. Gross examination revealed a white-pink, rubbery nodule measuring 1.1 x 1.0 x 0.6 cm. Microscopically, the lesion was composed of pleomorphic spindle cells surrounded by a pseudocapsule and exhibited prominent lymphoplasmacytic infiltrate, however, hemorrhagic spaces were not present. Positive immunostain for EMA, desmin and CD99, and morphological features helped establish a diagnosis of solid variant of Angiomatoid fibrous histiocytoma. This case highlights the morphologic variations of this rare entity with discussion of the differential diagnosis of its solid variant.

Platform Presentations:
Utilization of an Electronic Alerting System for Corrected Laboratory Results. Presented at: Academy of Clinical Laboratory Physicians and Scientists 2009; Redondo Beach, CA.


Poster Presentations:


Setia N, Donnell P, Henneberry J. Gastric Linitis Plastica Occurring in Muir-Torre Syndrome: A Rare Association—. Poster presented at: American Society of Dermatopathology 2009; Chicago, IL.


Sharma P, Nigam S, Singh T, Setia N, Saroeha V. Role of Bone Marrow Tribhine Biopsy in Diagnosing Metabolic Bone Diseases. Poster presented at: Delhi Society of Hematology September 2007; New Delhi, India.


Setia N, Nigam S. Darier’s Disease in an intraderal pigmented nevus. Poster presented at: Indian Association of Pathologists and Microbiologist (Delhi Chapter); December 2005. New Delhi, India.


Singhal N, Setia N, Jain S. Charcot Leyden Crystals in FNAC of subcutaneous swellings. Poster presented at: Indian Association of Pathologists and Microbiologist (Delhi Chapter) April 2005; New Delhi, India.


Book Chapters:

Publications:


Accepted for publication:

Biswa A, Setia N, Bhawan J. Cutaneous neoplasms with prominent Verocay body like structures: the so called “rippled pattern”- Accepted for publication in American Journal of Dermatopathology.

Previous Awards:

2010-2011 American Society of Dermatopathology “Mentorship Award” for studying the expression of ATP Transporters in melanoma (Mentor: Meera Mahalingam).

2009-2010 Core Competency Award for “System-Based Learning”, Department of Pathology Residency Program, Baystate Medical Center/Tufts University School of Medicine, MA.

2008-2009 Core Competency Award for “System-Based Learning”, Department of Pathology Residency Program, Baystate Medical Center/Tufts University School of Medicine, MA.

2007 Dr. R.P. Mathur Memorial Award (Gold Medal) for Best 3rd year outgoing resident in Pathology, Maulana Azad Medical College, New Delhi, India.


2005 Best Poster Award for “Granulomatous Lesions in Bone Marrow Biopsy: An Analysis of 47 cases” in XVI Annual Conference of Delhi Society of Hematology at New Delhi on September 3, 2005.

Teaching Pediatric Code Leadership Skills: Integrated vs. Stand Alone Curriculum

Ian Goodman, MD; Gerard Lanlois, PA; Blake Spirko, MD; Howard Smithline, MD; Fidela Blank, RN; Gladys Fernandez, MD

PURPOSE: Simulation can be used to accurately educate, measure, and discriminate residency competencies in the medical management of pediatric urgent and emergent events. Previous studies have demonstrated that education of procedural skills and medical decision making is enhanced through a simulation program. This study was conducted to answer the question of whether a dedicated curriculum of leadership training, simulation sessions and teaching targeted at these topics; is superior to our traditional integrated approach, trying to teach these skills at the same time as medical care.

METHOD: First year residents were educated using the integrated simulation curriculum and evaluated during their regularly scheduled simulation center times using the Ottawa Crisis Management Global Rating Scale (OCMGRS). A subset of these residents was then given an experimental educational session: a simulation session and debriefing with a focus on communication, leadership, and problem solving around a medical problem that was not within their scope of practice. At a subsequent scheduled simulation session they were again evaluated using the OCMGRS.

RESULTS: Of the 29 first year residents in the three training programs, 18 were evaluated in 2 or more traditional simulation sessions. Within this group the first score was compared to the last score using a Wilcoxon signed-rank test for paired data. For the first score the median is 23 with an interquartile range (IQR) of 21 to 26. For the last score the median is 23 with an IQR of 20 to 26. p=0.13. A nonparametric test for trend across ordered groups where the groups are the time points revealed a p value of 0.81. 6 residents received the experimental educational session. For this group the pre intervention data and the post intervention data were compared using a Wilcoxon signed-rank test for paired data. The median score before intervention was 19.5 with an IQR of 16 to 26. The median score after intervention was 33 with an IQR of 26 to 33 with a p=0.03.

CONCLUSION: The traditional curriculum of an integrated education of leadership skills and medical decision making is enhanced through a simulation program. This study was conducted to answer the question of whether a dedicated curriculum of leadership training, simulation sessions and teaching targeted at these topics; is superior to our traditional integrated approach, trying to teach these skills at the same time as medical care.

Poster Presentations:

Eastern Society of Pediatric Research and Pediatric Academic Societies

Oral Presentation:

Regional and National Society for Academic Emergency Medicine.
Status Asthmaticus Complicated by Rhabdomyolysis and Profound Myopathy that Lead to Tracheostomy, G-tube, and Hemodialysis in a 21 year old Male
Christine McKiernan, MD; Kathryn Rooth, DO

Acute rhabdomyolysis with profound myopathy is a rare complication in status asthmaticus.
A 21 yr old male with poorly controlled asthma presented to the ED short of breath after ice-skating. He was intubated in the ED and over the next 48 hours he received intravenous steroids, continuous high dose albuterol, atrovent, magnesium infusions, theophylline, ketamine, sedation, neuromuscular blockade and eventually general anesthesia when he failed to respond to conventional therapy. While undergoing general anesthesia, he developed severe subcutaneous emphysema. His hospital course was complicated by developing acute kidney injury primarily from rhabdomyolysis. His creatinine kinase level rose to over 400,000 units/L leading to hyperkalemia and subsequently requiring hemodialysis. Prior to his peak CK, the patient suffered a 15 minute cardiac arrest following which he underwent therapeutic hypothermia. Upon rewarming and weaning off sedation he was found to have severe quadriplegia, requiring tracheostomy and G-tube placement for support.

Acute rhabdomyolysis has been described in patients with status asthmaticus. This patient received 3 mg/kg/day of prednisolone, had a supratherapeutic theophylline level of 35 mg/L, received neuromuscular blockade and general anesthesia, all of which can contribute to cause critical illness myopathy. It is unclear what role the diffuse subcutaneous emphysema played in direct muscle injury and in the development of his rhabdomyolysis. We found no case reports describing this as a mechanism, or of any patient with of creatinine kinase over 400,000 units/L associated with status asthmaticus. One year later, the patient has had a complete recovery of his muscle function. His renal function has returned to normal. His tracheostomy and G-tube have been removed and he is currently working full time and has returned to ice-skating.

Adult Primary Care Physicians’ Willingness to Accept Transition of Young Adults with Chronic Conditions
Suzanne Elizabeth McLaughlin. MD; Jason Machan, MD; Philip Fournier, MD; Tamara Chang, MD; Katelyn Even, MD; Matthew Sadof, MD

OBJECTIVE: To identify barriers and supports affecting willingness of adult primary care physicians to transition young adults with special health care needs (YASHCN) into their practice.

METHODS: A random sample of Massachusetts internists and family practitioners providing adult primary care services was identified. A mailed survey provided a clinical vignette with systematically varied diagnoses and transition support mechanisms, and assessed willingness to accept transition of the described YASHCN. Additional information on provider and practice characteristics was collected. A four-way ANOVA test was used to compare willingness across physician gender, specialty, diagnosis and support.

RESULTS: 404 responses were received from 601 surveys (response rate 67%). Mean self-rated willingness to accept a YASHCN was 3.3 on a scale of 1 (“would not accept patient”) to 5 (“would enthusiastically accept patient”). Provider and practice characteristics significantly associated with willingness to accept included female gender, years in practice, presence of YASHCN in current practice and whether the practice was accepting new patients. Patient condition and transition supports significantly affected willingness to accept. Training in internal medicine versus family practice did not. Supports associated with higher willingness ratings varied based on the specified condition and provider gender.

CONCLUSIONS: Adult-care providers expressed limited willingness to accept YASHCN into their primary care practices. Provider, practice and patient characteristics affected willingness to accept. Although willingness to accept was affected by offered transition supports, preference varied across physician gender and patient diagnosis. Findings have implications for patients and pediatricians preparing for transition and policy-planners.
Vitamin D Deficiency is Associated with Cardiovascular Disease Risk Factors But Not Obesity in Pediatric Type 1 Diabetes

Chelsea Gordner, DO; Chrystal Wittcopp, MD; Nancy Dunbar, MD; Hagan Elsina, BS; Holley Allen, MD; Paul Visintainer, PhD; Edward Reiter, MD

BACKGROUND: There is little data assessing the relationship between 25-OHD and CV markers in children and even less in those with type 1 diabetes (T1D).

OBJECTIVE: To relate 25-OHD and CV risk factors in a cohort of patients with T1D.

METHODS: Retrospective chart review of 136 children with T1D followed in Pediatric Endocrinology Clinic. Children ages 2-21 with T1DM and a 25-OHD level measured during the study period were included. Patients with malabsorption, parathyroid disease or non-essential HTN were excluded. Our primary analysis was the relationship between 25-OHD and CV risk factors: HbA1C, BMI, hyperlipidemia, and urine microalbumin.

RESULTS: Mean age was 14.8±3.5 (SD) yrs (47.8% female, 52.2% male). Median BMI percentile was 78.5% (25th-75th% range, 48.8-90.5%); 35% of patients were overweight/obese. Three patients were on vitamin D supplementation. Ethnicity was 72% Caucasian, 16% Hispanic, 7% African American and 5% other. The prevalence of vitamin D insufficiency (25-OHD<30 ng/mL) was 67%. As expected, mean 25-OHD levels were significantly higher in the summer (31.2±12.2 ng/mL) compared to the winter (21.2±8.5, p=0.001). When adjusted for season, BMI and age, there was a significant inverse correlation between 25-OHD and HbA1C (r=-0.28, p=0.001) and mean HbA1C was significantly higher (p<0.001) when 25-OHD was < 20 ng/mL (9.7%; 95% C.I. (9.2-10.3%)) compared to 25-OHD levels of 20-30 (8.2% (7.8-8.6)) and >30 (8.0% (7.6-8.5)). Total cholesterol (r=-0.29; p=0.002) and LDL (r=-0.31, p=.028) were also inversely correlated with 25-OHD. There was no association found between 25-OHD and BMI, age, HDL, triglycerides or microalbuminuria.

CONCLUSIONS: In our study of 136 children with T1DM, 25-OHD was inversely associated with HbA1C, total cholesterol and LDL. In contrast to non-diabetic adolescents, there was no association between 25-OHD and obesity. It is unclear whether normalization of the 25-OHD levels could result in improved glycemic control, healthier lipid profile and reduced CV risk.

Presentations:
Submitted to Pediatric Academic Society for 2011 Meeting

Thyroid Hormone Regulates Pituitary Development in the Zebrafish Embryo

Ksenia Tonyushkina, MD; Rolf Karlstrom, PhD

Thyroid hormone (TH) acts as a potent morphogen in frogs and fish, regulating cell proliferation and differentiation. Similar roles for TH during embryonic development have recently been suggested in mammals, but how and where TH acts in the embryo is poorly understood. The zebrafish provides a powerful system for the study, as TH levels can be easily manipulated in the absence of a blood-placental barrier. Since essential components of the thyroid axis have largely been conserved across vertebrates, studies in zebrafish promise to shed light on basic mechanisms of TH action in the embryo that may also be involved in human congenital diseases.

Regulation of TH signaling in target tissues is likely to occur via expression of Diodinase 2 (Dio2). We found that Dio2 is expressed in a small subset of cells in the developing pituitary gland starting at 24-32 hours post fertilization (hpf), a time when endocrine cells are differentiating. This population of Dio2 expressing cells in the placode approximately triples by 70-76 hpf. This regional expression suggests a role for TH signaling in very early pituitary differentiation and/or function. To begin to test this we treated embryos with L-thyroxin (T4). We found a dose dependent decrease in the expression of Thyroid Stimulating Hormone (TSH) in thyrotropes with increasing levels of T4. Dio2 expression was also reduced, consistent with the known negative regulation of this gene by TH.

Our results indicate that T4 acts a negative regulator of TSH expression prior to the onset of TH production in the thyroid in zebrafish. This is the earliest report of negative feedback regulation in the pituitary-thyroid axis. Since functional immaturity of the thyroid axis is a common problem in human infants, these data promise to shed light on the mechanisms of negative feedback system maturation within the developing thyroid axis.
Autonomy and Parental Support Associated With Better A1Cs for Teens

Thomas Wadzinski, MD; Adam Kasper, MS II; Jane Garb, MS; Paul Visintainer, PhD; Holley Allen, MD

OBJECTIVE: Type 1 diabetes mellitus (T1DM) is a chronic disease that affects adolescents. It is notable that adolescents have poorer diabetic control particularly those aged 14-15. This study looks at the influence of adolescent autonomy and parental support on diabetic control. We hypothesize that teens with better support, less conflict, and more autonomy have better glucose control.

STUDY DESIGN: Cross-sectional study done at a Pediatric Diabetes Care Center. Inclusion criteria: age 12-17, T1DM for >24 months, and routine T1DM visit. Exclusion criteria: pregnancy, developmental delay, or state custody. Teen and parent were consented and surveyed to assess for depression, parental control and support, teen autonomy, dispensation and responsibility of care, conflict severity and frequency. A1C and insulin regimen were noted.

Factors in glycemic control (HbA1c <=9, >9) were tested using multiple logistic regression. A forward stepwise procedure was used. A maximum likelihood procedure was used to calculate the regression coefficients. The likelihood ratio criterion was used to determine the significance of individual factors in the regression model.

RESULTS: 128 T1DM teen-parent pairs enrolled. Of the teens: 58% female, mean age of 15.4 yrs. Those with better control (A1C<9) were more likely to have parental support (p=0.007) and autonomy in diabetes care (p=0.021). They were less likely to have difficulty with diabetes care (p=0.015 teen report, p=0.002 parental report) and a controlling parental environment (p=0.013).

The 13-15 year age group (n=58, 60% female) had higher average A1Cs (8.4-8.9) than the other age groups (8.0-8.1).

CONCLUSIONS: Our study reinforces that we need to focus on the 13-15yr age group as at risk for poor glucose control. Our results show a correlation between teen autonomy within a supportive environment and better glucose control during these at risk years. Prospective studies using an intervention based on autonomy and support could benefit teenage T1DM care.

Poster Presentation:
PAS May 1st 2011.

Is There a Different Relationship Between Vitamin D 25-OH and Parathyroid Hormone in Children with Type 1 Diabetes (T1D)?

Emily Frydman, MD; Chrystal Whittcopp, MD; Holley Allen, MD; Edward Reiter, MD; Nancy Dunbar, MD; Paul Visintatiner, PhD; Chelsea Gordner, DO

OBJECTIVE: Evaluate the relationship between 25-OH and PTH in children and adolescents with T1D. Previous studies have shown that vitamin D deficiency is common in the adolescent population. T1D and Vitamin D deficiency have negative effects on bone mineral health. Several studies have reported that PTH levels are inversely associated with 25-OH and begin to plateau in adults who have blood levels of 25-OH between 30 –40 ng/ml .

STUDY DESIGN: This is a cross-sectional study with data obtained from patients aged 2 through 21 years with T1D seen in our Pediatric Endocrinology program. Laboratory measurements included 25-OH, PTH, and HbA1C. Data collected included gender, ethnicity, weight, height, and BMI. Patients with a known malabsorptive disorder or parathyroid disease were excluded.

RESULTS: Of 135 T1D patients, 121 had PTH and 25-OH levels. Of these 51% were female and 49% male. The mean age was 14.8 yrs ± 3.6 (SD) yrs. The mean 25-OH level was 27.0 ± 10.3 ng/ml; 23% had 25-OH <20 ng/ml, 45% between 20 to 30 ng/ml and 32% > 30 ng/ml. The mean PTH was 34.5 ±14.4 pg/ml. Overall, PTH and 25-OH were inversely associated, adjusting for age, season of sampling, and BMI z-score. PTH declined 0.45 pg/ml with each 1 ng/ml increase in 25-OH (p = 0.001). However, a threshold effect of 25-OH at 21 ng/ml was observed. Below 21 ng/ml, PTH increased 1.67 pg/ml with each 1 ng/ml decline in 25-OH (p = 0.009), while above 21 ng/ml the association was negligible (-0.18 ng/ml per 1 ng/ml increase in 25-OH, p = 0.30).

CONCLUSION: The correlation between PTH and 25-OH previously seen in adolescent populations was also demonstrated in our pediatric T1D cohort. Our data suggest that children and adolescents with T1D experience a normalization of PTH at a lower level of 25-OH than adults.

Presentations:
Poster presentation: Pediatric Academic Society May 2011.
Validation of a Statistical Model to Predict Vancomycin-induced Nephrotoxicity in Adult Non-intensive Care Unit Patients

Safia Kuriakose, PharmD; Erica Tenholder, PharmD; Evan Horton, PharmD; Daniel Skiest, MD; Seth Housman, MD; Jane Garb, MS

Current IDSA guidelines recommend vancomycin concentrations greater than 10 mg/L to avoid the emergence of drug resistance and to ensure efficacy. In complicated infections, trough concentrations of 15 to 20 mg/L are recommended to optimize drug penetration.

Efficacy must be balanced with the risk for vancomycin-induced nephrotoxicity (VIN). Research conducted at BMC identified risk factors for VIN in adult non-ICU patients. Initial trough concentrations $\geq 20$ mg/L, vancomycin therapy $> 5$ days, decubitus ulcers, malignancy, and concomitant use of $\geq 2$ nephrotoxic drugs were shown to be independent risk factors for VIN, which led to the development of a logistic regression model to calculate the predicted risk of VIN.

The current study is a retrospective, observational, single center study. The primary objective is to validate the model. Chart review will be conducted on patients treated with vancomycin to identify 100 patients with nephrotoxicity and 100 patients without nephrotoxicity. The model will then be applied to these cases to determine sensitivity, specificity, and predictive values.

Secondary objectives include a comparison of overall length of stay, antimicrobial management, and the model’s ability to accurately assess gradations of risk.

Inclusion criteria are patients $\geq 18$ years of age, receiving IV vancomycin therapy $> 48$ hours, and baseline serum creatinine $< 2$ mg/dL. Exclusion criteria include residence in the ICU within 48 hours of first vancomycin administration, cystic fibrosis, actively receiving chemotherapy, IV contrast dye within 7 days of starting vancomycin therapy through treatment duration, hemodialysis, and vasopressor therapy within 48 hours of and during vancomycin administration.

If the model demonstrates high predictive value, it would allow for the recognition of patients at greater risk for VIN. Subsequently, it could help providers decide how to manage vancomycin therapy in higher risk patients, such as less aggressive therapy or more frequent monitoring. Data collection is being conducted.

Presentation:
Kuriakose SS, Tenholder E, Horton ER, Housman ST, Garb J, Skiest DJ.
Validation of a statistical model to predict vancomycin-induced nephrotoxicity in adult non-intensive care unit patients. United Health System Consortium. 2010 Midyear Clinical Meeting. Anaheim, CA.

Iatrogenic Abnormalities of the Extraperitoneal Spaces
Jeffrey Alvis, MD; Tara Catanzano, MD

The purpose of this exhibit is to review iatrogenic pathology of the extraperitoneal spaces. A review of the anatomic boundaries of the retroperitoneum and extraperitoneal spaces will be provided.

Content Organization:
1. Review of the anatomic boundaries of the extra- and retroperitoneal spaces
2. Iatrogenic renal pathology including radiation nephritis, “lithium kidney,” and subcapsular hematoma status post lithotripsy.
3. Iatrogenic bladder pathology including chemotherapy induced hemorrhagic cystitis and bladder perforation
4. Iatrogenic pancreatic pathology including ERCP complications and drug induced pancreatitis
5. Iatrogenic abnormalities of the colon including complications of colonoscopy, antibiotic related colitis and chemotherapy related typhlitis

The major teaching points of this exhibit are:
1. To become familiar with the fascial planes and anatomic boundaries of the extraperitoneal spaces
2. To be able to recognize the appearance of iatrogenic pathology of the structures of the extraperitoneal spaces.

Poster Presentation:
Thyroid Nodule Imaging—Making it Look Easy: A Multimodality Review
Jonathan Cogley, MD; Tara Catanzano, MD; Peter Ghobrial, MD

PURPOSE/AIM: To familiarize the reader with key concepts in imaging of thyroid nodules and to provide a practical algorithm for appropriate diagnostic workup of thyroid nodules. Emphasis on US with findings across other modalities including scintigraphy, CT, and PET/CT.

CONTENT ORGANIZATION:
1. Clinical importance of thyroid nodule detection and workup.
2. Role of US in thyroid nodule characterization, with sample cases illustrating features that suggest malignancy or favor benignity.
3. Review of the oft-neglected role of scintigraphy.
4. Review of current literature regarding incidentally detected nodules on CT and PET/CT with sample cases.
5. Review criteria for appropriate selection of nodules for FNA biopsy.

SUMMARY: Thyroid nodules are extremely common and frequently incidentally discovered. Upon viewing this presentation, the reader will become familiar with key findings of thyroid nodules suggesting malignancy on US, scintigraphy, and PET/CT and be aware of current guidelines for appropriate workup.

Poster Presentation:

Emergent Pediatric Sonography—What Every Radiologist Should Know
Jonathan Cogley, MD; Khaldoon Al Dulaimy, MD; Roozbeh Houshyar, MD; Stephen O’Connor, MD

PURPOSE/AIM: To review the common indications for emergent US assessment in the pediatric patient and describe sonographic technique, findings, and diagnostic criteria for each to maximize the radiologist’s ability to detect or exclude pathology.

CONTENT ORGANIZATION:
- Sonographic technique and anatomy with helpful tips for the novice.
- Characteristic US findings and diagnostic criteria of appendicitis, intussusception, and pyloric stenosis illustrated by sample cases.
- Findings that may affect management: What the pediatric surgeon wants to know.
- Potential pitfalls or mimics and how to avoid them.
- Importance of maintaining US as the initial study of choice in the pediatric patient.

SUMMARY: With its lack of ionizing radiation and relative low cost, US is widely used to assess the pediatric patient. Upon viewing this exhibit, the radiologist will become familiar with proper sonographic technique, normal anatomy, and pathologic findings with a goal to be able to comfortably diagnosis or exclude the most commonly requested emergent US indications in the pediatric patient.

Presentations:

Publication:
Solicited for publication in Radiographics.

Previous Awards:
Imaging Characteristics of Central Pontine Myelinolysis and Extrapontine Myelinolysis
Cheri Nguyen, MD; Shan Li, MD

PURPOSE: To review presentations, clinical features and imaging characteristics of the central pontine myelinolysis (CPM); To review the additional findings in the brain beyond the pons to help identify extrapontine myelinolysis (EPM) so as to delineate the underline etiology and provide prompt treatment.

MATERIALS AND METHODS: CPM/EPM were diagnosed in chronic alcoholic patients with progressive lethargy and confusion after rapid correction of hyponatremia. CT and MR imaging of the brain were obtained in these patients. Locations of the abnormalities and their imaging features were analyzed and characterized.

RESULTS: Central pontine myelinolysis is a clinical challenging diagnosis because of its nonspecific presentations. CT showed a typical diamond shaped hypodense lesion in the central pons. On the MR, the affected areas involved transverse pontine fibers with relative sparing of descending corticospinal tracts. They were hypointense on T1 and hyperintense on T2 weighted images. On the diffusion-weighted images, they could be hyperintense in the acute state (4) but reverted to normal in the chronic state. In addition, many patients showed involvement in other areas of the brain including subcortical white matters, basal ganglia, thalami, internal capsules, the cerebellum, etc. This is called extrapontine myelinolysis. Characteristic imaging findings in the brain combined with the patients’ clinical history will help radiologists make the correct diagnosis.

CONCLUSION: Central pontine myelinolysis is an osmotic demyelinating process mainly involving the pons, but also associated with demyelination of other areas of the brain (EPM) (1). There are three subtypes: CPM, CPEPM, and EPM without CPM; it is caused by a sudden change of osmolarity in the blood. The most common cause is rapid correction of hyponatremia in an alcoholic patient. Other underline disease processes include diabetes, cirrhosis, renal insufficiency, etc. Clinical presentation varies, such as lethargy, seizures or coma, etc. MR is the most sensitive way to diagnose CPM or EPM. Typical abnormalities in the central pons on imaging studies, combined with the patients’ clinical history and presentations make diagnosis of CPM rather straightforward; Extrapontine sites of involvement may first confuse the diagnosis, but correct recognition of EPM findings will help to identify its etiology so as to facilitate the prompt treatment of the disease and promote a better outcome.

Operative Stabilization for Flail Chest in the Elderly – Case Report
Elena Ziarnik, MD; Andrew Doben, MD

Blunt trauma to the chest wall represents a constellation of challenging injuries, including rib fractures and pulmonary contusion. Flail chest, two or more ribs are fractured in two or more locations, is an extreme of blunt thoracic injuries and presents a management conundrum. Ventilation is weakened from loss of integrity of the chest wall and underlying lung contusion. Pain is a major factor and pain regimens perpetuate poor respiratory function commonly necessitating mechanical ventilation.

Diagnosis is made by x-ray, and CT scan can provide further details, especially 3-dimensional reconstructions.

Management goals include pain control and adequate ventilation, lack of these leads to pneumonia which is associated with a 40% mortality in patients >55 years old. Pain control strategies include IV, oral, epidural and para-vertebral narcotic and anesthetic agents. The addition of NSAIDs is also common practice.

In patients with flail chest early reports of open reduction and internal fixation can contribute to better analgesia, shortened time in need of the ventilator, decreased hospital length of stay, and earlier return to baseline pulmonary function.

This case report describes a 79-year-old man who fell sustaining fractures of left 7, 8, 9, 10 and 11 ribs. On exam he had subcutaneous emphysema and apical pneumothorax on the left. He remained hemodynamically stable throughout his evaluation. An epidural and a left-sided chest tube were placed. Given the severity of his rib fractures operative fixation was scheduled. His pre-operative CT scan demonstrated flail chest with multiple fractures of all five injured ribs. He underwent open-reduction and internal-fixation of ribs 7-11 through a lateral thoracotomy incision. A subcutaneous infusion catheter of marcaine was placed intra-operatively. He remained mechanically ventilated into post-operative day #1 for alveolar recruitment. By post-operative day #3 the patient was ready for discharge home without the need of narcotics for pain control.
Geographic Distribution of Community-Acquired MRSA Soft Tissue Infections

Connie Rossini, MD; Kevin Moriarty, MD; David Tashjian, MD; Jane Garb, MD; Richard Wait, MD

PURPOSE: The goal of this study is to look at the geographic growth patterns of community-acquired methicillin-resistant Staphylococcus aureus (MRSA) infections in our local region and to determine if specific geographic areas are at increased risk.

METHODS: After IRB approval (#132603-3), a retrospective chart review was conducted of 614 patients who underwent incision and drainage of an abscess by a single pediatric surgical practice from January 2004 to December 2008. Additionally, previously published data from 195 patients from January 2000 to December 2003 were reviewed. The patient’s addresses were geo-coded and assigned specific longitude and latitude coordinates. Geographic information system (GIS) analysis was performed to map the geographic distribution of MRSA infections in western Massachusetts over time from 2000 to 2008, using the Tracking Analyst extension of ArcMap™ from ESRI (Environmental Services Research Institute 2008).

RESULTS: The most commonly cultured organism found in the pediatric population undergoing incision and drainage was Staphylococcus aureus (n=388), of which 258 (66%) were methicillin-resistant. This is a 21% increase from the rate of MRSA cultures identified from 2000 to 2003. GIS space-time analysis showed that a cluster of 14 MRSA cases were located within a 1.44 km radius between 2000 and 2003, and 5 separate clusters of more than 20 MRSA infection cases each were identified in 3 separate cities over the 8 year time span using GIS spatial analysis (p-value = 0.001).

CONCLUSION: MRSA has now become the most prevalent organism isolated from cultures of community-acquired abscesses requiring incision and drainage in the pediatric population in western Massachusetts. Significant clustering of MRSA infections has appeared in several different cities within this geographic region and geographic information systems mapping to identify clusters of antibiotic resistant infections within the region may help to locally tailor antibiotic treatment for community-acquired abscesses.

Presentations:

Publication:

BOOT CAMP: Educational Outcomes After Four Successive Years of Preparatory Simulation-based Training at Onset of Internship

Gladys L. Fernandez, MD; David W. Page, MD; Nicholas P. Coe, MD; Patrick C. Lee, MD; Lisa A. Patterson, MD; Marisa H. Amaral, MD; Richard B. Wait, MD, PhD; Neal E. Seymour, MD

PURPOSE: Four years after initiation of an intensive preparatory training curriculum for post-graduate year (PGY) 1 residents at Baystate Medical Center, results were analyzed to determine if performance evidenced at onset of training was predictive of educational outcomes.

METHODS: Beginning July 2007, all PGY1s (n=30) starting surgical residency underwent specific weekly preparatory didactic and skills training (BOOT CAMP) over a 9-week period, representing a 4-fold increase of time in lab training compared to the remainder of the year. Training occurred in 8 procedural skills areas (instrument use, knot-tying, suturing, laparoscopic skills, airway management, central venous catheter and chest tube insertion) and in simulated patient care (shock, respiratory, cardiac, and trauma management). Both baseline and post-BOOT CAMP cognitive skills were assessed with written tests on basic patient management. Technical skills were assessed using a variety of task-specific instruments, and expressed as a mean score for all activities for each resident. Cognitive and technical performance in BOOT CAMP was compared to subsequent curriculum evaluations including weekly core curriculum quiz scores, annual ABSITE scores, program in-training evaluations (New-Innovations™, Uniontown, OH), and operative assessment instrument scores (OP-Rate™, Baystate Medical Center, Springfield, MA).

Results: Performance improved between pre-test and final test scores (81±11 vs. 89 ± 7, p < 0.001 paired t-test). There was significant positive correlation between BOOT CAMP final cognitive test results and ABSITE scores (p = 0.01, n=22). Significant positive correlation was also noted between BOOT CAMP mean overall skills and New-Innovations™ technical skills assessments (p = 0.002, n=25) and OP-Rate™ assessments (p = 0.01, n=12).

CONCLUSIONS: Individual simulation-based BOOT CAMP performance scores for cognitive and procedural skills assessments in PGY1 residents correlate with curriculum evaluations. This correlation with traditional informatics methods used to express competency in our residency program supports the use of BOOT CAMP performance measures as needs assessment tools.

Oral Presentation:
Association of Program Director’s in Surgery, Massachusetts, March 2011.
BACKGROUND: Most residents spend at least twenty percent of their time teaching junior learners, yet they often vary in their preparation to fulfill this role. Residents often follow traditional pedagogical approaches learned from higher education settings that do not translate well with adult learners in academic medical centers. Teaching adults requires a new set of skills, abilities, and relationships yet the extent to which residents are prepared to become educators of adults is questionable.

OBJECTIVE: The purpose of this paper is to review and synthesize literature on resident teachers from the perspective of adult learning, which will provide insight for improving medical education infrastructure.

METHODS: An integrative review of the literature was conducted by synthesizing articles on Residents as Teachers. The search term “resident as teacher” was used alone and in conjunction with the phrase “adult learning” to comb literature published between 1990 and 2010 across eight databases.

RESULTS: Results identified 32 citations. Abstracts from all citations were reviewed for relevance. After excluding articles which did not identify specific resident teaching skills, 17 articles remained for the final analysis. Characteristics and skills were synthesized for content and mapped onto the tenets of adult learning.

CONCLUSION: This study is significant because it draws a clear and specific connection between adult learning theory and medical education. We advance that teaching skills should be more clearly conceptualized for faculty and residents and incorporated into their respective curricula. It is also important for residents to explore their own assumptions about teaching and learning that affect their teaching roles. Suggestions for future research include investigating how well-prepared residents feel to act in their role as teachers, understanding the potentially conflicting roles of residents as both learners and teachers, and an examination of core values and assumptions about teaching in medical education.

Presentations:

Peer Pressure, Role modeling, and the Social Dynamics of Medical Training: What Unconscious Factors Influence the Hand Hygiene Behavior of Medicine Teams?

Anju Bhagavan, MD; Sarah Haessler, MD; Kevin Hinchey, MD; Reva Kleppel, MSW; Paul Visintainer, PhD

BACKGROUND: Residents and medical students are educated about the importance of hand hygiene (HH) but compliance remains low. The impact of attending physicians in role modeling appropriate professional behaviors including HH is incompletely understood.

METHODS: Research assistant, embedded into medicine teams at a 750 bed academic hospital under a different pretense, was recruited to secretly observe HH compliance during rounds. Teams included 1 attending physician, 1 senior resident, 2 interns, 1 medical and 1 pharmacy student. Subjects were unaware that HH was observed. Multiple different teams were observed daily over 2 months. Observer covertly noted the order each team member entered and left the patient encounter and whether they performed HH.

RESULTS: 103 patient encounters, resulting in 437 HH opportunities prior to contact and 489 after contact were observed. Overall compliance was 47% prior to and 68% after contact. Compliance by training level ranged from 30-70% prior to and 48-93% after contact (p<0.001) and was highest among medical and pharmacy students. The order in which team members entered a room did not affect likelihood of HH (p=0.184). However, if the first person entering the room performed HH, then 72% of others also performed HH, whereas first person failure of HH resulted in only 38% of others performing HH (p=0.001). If the attending performed HH entering, then 65% of others did, but attending failure resulted in only 35% of others performing HH (p=0.006). Performance of HH by first person exiting the room had no impact on likelihood of others performing HH (70% vs. 61%, p=0.28). However, if attending performed HH upon exiting then 70% of others also did, vs. 43% if attending failed HH upon exiting (p=0.006).

CONCLUSIONS: There was strong follower effect entering patient encounters, but not leaving them. If the first person entering a room (regardless of their training level) performs HH, then others are more likely to perform it too. This implies peer pressure playing a role in HH compliance. Similarly, there was a strong attending effect both entering and exiting rooms, regardless of whether the attending went in first. If the attending performs HH, then others are more likely to do so too, implying that role modeling by attending physicians impacts the unconscious behavior of learners. HH compliance was greater exiting patient encounters than entering them, implying that self protection may be a stronger driver of behavior than patient protection. These results may be helpful in designing HH programs targeting physicians.

Poster Presentation:
Society of Healthcare Epidemiology of America 2011, April 1-4 2011, Dallas, TX.
Surgical Resident Learning Curve for a Simulated Single Port Laparoscopic Surgical Task

Nathan Conway, MD; Neal Seymour, MD; Ron Bush, BS; John Romanelli, MD

OBJECTIVES: Single port laparoscopic surgery (SPLS)-experienced surgeons perform better than inexperienced surgeons on simulated SPLS. To define a learning curve for surgical residents, a simulated single port task was performed repetitively and performance compared to SPLS-experienced surgeons.

STUDY DESIGN: Six PGY 2-4 surgical residents performed 10 iterations of the FLS Precision Cutting task on the ProMIS™ trainer using articulating instruments placed via a SILS™ Port. Measurements included time, path length, smoothness, and accuracy. Values from attempts were divided into five equal quantiles, each representing the average of two iterations. Differences between consecutive attempts were analyzed using Friedman test. Differences between groups were analyzed by Mann-Whitney U-test. Proficiency was defined as performance within one standard deviation of SPLS-experienced surgeons.

RESULTS: Resident performance improved with successive iterations for time (p = 0.005) and smoothness (p = 0.045), but not for path length and accuracy. A stable level of performance occurred at iterations 5-6 for time, but could not be characterized by post-test for smoothness. SPLS-experienced surgeons outperformed the resident group for the first quantile for time (179 ± 35 vs 407 ± 102, p = 0.01), path length (2306 ± 911 vs 4998 ± 2178, p = 0.038) and smoothness (977 ± 343 vs 2053 ± 554, p = 0.01).

The percentage that performed more than one standard deviation above the SPLS surgeon mean was: Time 100%, 100%, 67%, 50%, 50%; Path Length 83%, 50%, 50%, 67%, 50%; Smoothness 100%, 67%, 33%, 67%, 50%, for each successive quantile. All residents performed within one standard deviation for accuracy.

CONCLUSION: Repetitive practice of simulated SPLS significantly improves performance. A learning curve for this task was best demonstrated for the metric of time. Differences between resident and attending performance were abolished with only modest practice, but several residents required more than 10 attempts to achieve proficiency.

Presentations:

Fetal MR Imaging from Nothing: One Institution’s Experience in a Watershed Area Between Major Academic Referral Centers

Peter Ghobrial, MD; Stephen O’Connor, MD; Jonathan Cogley, MD

PURPOSE/AIM: We will describe the development of the fetal MRI program at our institution and the potential far-ranging benefits to a teaching hospital and its patients. Previously, patients were referred to other centers, up to 100 miles away, for further evaluation and follow-up. Now, we reap the multifaceted benefit of retaining these patients in our care.

CONTENT ORGANIZATION:
1. The evolution of our fetal MRI program is described; where once we outsourced an entire area of diagnosis, we now retain a valuable educational experience which is shared across multiple different residencies at our institution.
2. The clinical context of our referrals and benefits to the patients of this community are reviewed.
3. Ultrasound and fetal MRI findings are correlated and presented with associated pathology for several of our most interesting cases.

SUMMARY: The viewer will have a better appreciation of the benefit of a fetal MRI program not only to the patients of this community, but to the medical education of students, residents, and faculty in radiology, obstetrics, neonatology, pediatrics, surgery, anesthesiology, and pathology. Case presentations will serve to exemplify the breadth of the unique educational experiences retained, which were previously sent forth to other centers.

Presentations:
Radiologic Society of North America (RSNA) National Meeting, December 2010, Chicago, IL.
Radiographic Case of the Day: 52 YO M with DKA
Roozbeh Houshyar, MD; Tara Catanzano, MD

52 year old male presents to the emergency department with hyperglycemia and a painful malodorous rash in the right groin and thigh. Lab values demonstrate anion gap metabolic acidosis and positive ketones. Radiological findings are presented with case discussion.

Poster Presentation:
Society of Emergency Radiology, August 2010.

Spoon Full of Barium: A Pictorial Review of Modified Barium Swallow aka Cine Esophagram with Speech Therapist
Roozbeh Houshyar, MD; Jonathan Cogley, MD; Tara Catanzano, MD; Jeanne Abels; Paul Markarian, MD

Modified barium swallow (MBS) is a commonly ordered study to evaluate dysphagia. In this presentation, we will review dysphagia, relevant anatomy and physiology of swallowing, and MBS technique. We will also discuss areas of interest for the speech therapist and radiologist. Several interesting and conventional cases will also be shown. Finally, there will be a discussion of the future of dysphagia evaluation with fiberoptic endoscopic evaluation of swallowing (FEES).

Electronic Presentations:
Exploring the Risks, Trends, and Opportunities for Improvement Regarding Security for Hospitalized Children at Baystate Children’s Hospital

Jackcy Jacobs, MD; Nancy Miller, MD; Karine Issa-El-Khoury, MD; Jennifer Friderici, MS; Linda George, MD

BACKGROUND: Children’s Hospitals (CH) must provide a secure and safe environment. Nationally CHs have reported significant threats to the security of hospitalized children. There is neither a national standard nor best practice for security in CHs.

OBJECTIVE: To identify the nature and extent of security risks reported via incident reports at a CH.

DESIGN/METHODS: A retrospective review and analysis of security incident reports during 2007 in all non-Nursery pediatric units of a CH in Western MA was conducted to identify patterns such as type or date/time of event and to assign a harm score (HS) to each event: 0: No actual event; 1: Event-No Harm; 2: Event-Harm. For events with potential or real harm, diagnosis of the patient was documented when available.

RESULTS: 407 security reports filed over 403,189 patient days (PD) were reviewed. Most (75%) were coded as No actual event (HS=0) and were primarily false baby security alarms. These occurred most frequently between the hours of 1500-1900; on Sundays (P=0.013); and during the months of June or July.

Only 102 of 407 reports were coded as true events (HS=1,2) and were described most frequently as related to Child Protective Services cases (34%) and more likely to occur during 0600-1800 and in December.

Harm events occurred more frequently on the adolescent unit than infant/child unit (2.7 vs. 1.7 events/1000 PD, P=0.03) and occurred between 1200-0600 than all other 6 hour shifts (23% vs. 9%, P=0.001). There was a non-significant trend towards higher rates of temporary harm vs. event-no harm in patients with a psychiatric diagnosis.

CONCLUSIONS: Although most security incidents in a children’s hospital were false alarms, a significant minority pose potential harm to patients, visitors or staff. Further study of the spatial and temporal risk factors for security threats may inform security practices at this and similar institutions.

Poster Presentation:

Using Videography To Assess Agenda Setting In Primary Care Resident Encounters As A Means Of Quality Improvement

Ashley Nelson, MD; Brendan Kelly, MD

BACKGROUND: The “door handle comment”, a patient concern that was not addressed early in the visit, is common in primary care and leads to a less efficient and satisfying encounter. Agenda setting can help prevent these frustrations. Past studies show that agenda setting occurs in less than 55% of physician encounters. We hypothesize that it occurs less frequently in an Internal Medicine-Pediatrics (Med-Peds) resident clinic. Additionally, by using videography and direct observation based feedback agenda, setting will increase.

OBJECTIVE: We performed a pilot study using videography to evaluate (1) agenda setting in a Med-Peds resident primary care clinic; (2) if videography is a feasible means of assessing agenda setting; (3) if there is concordance among investigators in determining if an agenda is set; (4) if videography can be used as a means of quality improvement to increase agenda setting.

METHODS: We recorded the first 5 minutes in a convenience sample of 9 resident/patient encounters. Two independent investigators reviewed the videotape to determine if an agenda was set. Residents viewed their encounter and received direct feedback about agenda setting.

RESULTS: None of the residents set an agenda during the encounters. There was complete concordance among investigators. Several challenges arose. The equipment required audiovisual training. Patients frequently refused to participate. As there was only one room equipped with videography, coordination with the medical team was necessary to select eligible patients and facilitate work flow. As a result, the data gathering period increased from a projected time of 3 days, to 1 month.

CONCLUSIONS: The study demonstrates a need for agenda setting education in this resident sample. While concordance among investigators was high, the use of videography presented challenges that will need to be considered for its future use in quality improvement.

Poster Presentation:
Pediatric Academic Society, April 2011, Colorado.
**Breast Lesions in Pregnancy and Lactation: A Pictorial Review with Pathologic Correlation and Emphasis on Diagnostic Work-up and Management**

Cheri Nguyen, MD; Tara Catanzano, MD; Jennifer Hadro, MD; Caleb Scott, MD

**PURPOSE/AIM:** The aim of this exhibit is to review imaging findings of breast disease associated with pregnancy and lactation on mammography, sonography and MRI with pathologic correlation and discuss the current diagnostic work-up for palpable mass detected during pregnancy and postpartum period.

**CONTENT ORGANIZATION:**
1. Discussion of the physiologic changes in the breasts during pregnancy and lactation that contribute to the diagnostic challenges encountered by radiologists.
2. Approach to diagnostic work-up of a palpable mass in a pregnant or lactating woman.
3. Discussion of pregnancy-associated breast cancer with emphasis on management.
4. Sample cases of breast lesions unique to pregnancy and lactation and of pregnancy-associated breast cancer on US, mammography, and MRI with pathologic correlation.

**SUMMARY:** At the end of the presentation, the viewer will:
1. Become familiar with imaging findings of benign lesions unique to pregnancy and lactation as well as that of pregnancy-associated breast cancer as to avoid mischaracterizing benign lesions as malignancy.
2. Become familiar with the diagnostic work-up and management of a palpable breast mass in a pregnant or lactating woman.

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**Congenital CNS Malformations and Their Association with Pediatric Epilepsy: A Pictorial Review with Emphasis on Pathophysiology and Epidemiology**

Cheri Nguyen, MD; Richard Hicks, MD; Wayne Squier, MD; Stanley Polansky, MD; Chih-Hsiang Yu

Epilepsy is a disorder of the central nervous system characterized by recurrent seizures secondary to abnormal neuronal activity. According to the World Health Organization, approximately 50 million people are being affected by epilepsy worldwide. The cause of epilepsy generally varies according to the patient's age of seizure onset with idiopathic epilepsy being the most common diagnosis. There are many causes of epilepsy in the pediatric population ranging from infections, perinatal brain injury, metabolic derangements, congenital central nervous system malformations, and brain neoplasms. In this presentation, we will discuss the current literature review on the pathophysiology and epidemiology of congenital CNS malformations and their association with epilepsy in childhood. We will present the imaging findings of three pediatric patients with epilepsy secondary to congenital CNS malformations. The entities that will be presented include corpus callosal dysgenesis, Dandy-Walker malformation, heterotopias, pachygyria, polymicrogyria, and focal cortical dysplasia.
From the Classroom to the Clinic: A Review of the Literature Investigating Experiences of Medical Students with Learning Disabilities during their Clinical Years

Rebecca Blanchard, PhD; Michael Willers, MD; Elisabeth Bennett, PhD

OBJECTIVE: The objective of this study is to review literature on medical students with learning disabilities (LDs) with specific attention to the clinical years when students learn experientially in a fast-paced environment.

THEORETICAL FRAMEWORK: Experiential learning theory frames this study because students must build meaning and new knowledge from clinical experiences through the transformation of concrete experience and experimentation through reflection and abstract processing.

METHOD: Eleven databases were searched using the key words “medical students” and “learning disabilities.” Retrieved references were combed to find 38 potential articles. Of these, twenty articles, published between 1987 and 2010, focused on LD medical students and were analyzed for themes. The articles were: conceptual papers (10), literature reviews (2), and empirical studies (8).

RESULTS: Three primary findings resulted from analysis. First, little data has been collected directly from LD medical students regarding their experiences (n=1). Second, most (n=5) empirical studies surveyed medical school administrators regarding accommodations for LD students; yet findings highlight services most applicable to the pre-clinical years (e.g. note-taking, extra testing time). Support for LD students in clinical setting remains unclear in the literature. Third, conceptual papers addressed the social context for LD students such as a stigma that may prevent disclosure of LDs.

CONCLUSION: Learning in clinical settings differs from pre-clinical higher education settings, but research on this difference is lacking in the literature. Undiagnosed LDs may surface in the clinical years, as the volume and pace of material increases, and evidence indicates undiagnosed LDs are also problematic during residency. LDs that interfere with knowledge-building through experiences, such as bedside teaching, may remain undisclosed and students mis-identified as difficult learners. Our findings suggest that a review of institutional supports and faculty development to recognize potential LDs, as well as future research, are needed to ensure students have the best resources for success.

Poster Presentation:

Gender Differences in New Residents’ Perceptions of their Preparation to Teach

Elisabeth Bennett, PhD; Rebecca Blanchard, PhD; Brendan Kelly, MD

BACKGROUND: Most residents spend at least twenty percent of their time teaching junior learners (Hatem, 2003), yet they often vary in their preparation to fulfill this role. Pajares (2002) indicated that levels of confidence and self-efficacy, factors instrumental in teaching preparedness, may systematically differ across gender.

OBJECTIVE: This study investigated differences between male and female residents in teaching preparedness and in the areas of teaching ability they identified as needing improvement.

METHODS: This mixed methods study analyzed data collected over two consecutive years during incoming residents’ orientation at an academic medical center. 97% (n=183) of incoming residents responded to a one-page instrument of quantitative and qualitative items. Linear regression evaluated the difference between men and women on the scale of teaching preparedness. Qualitative data were coded and analyzed using the constant comparative method.

RESULTS: After controlling for postgraduate year, regression results demonstrated that female residents rated themselves significantly lower (p=.001) than males on teaching preparedness. This finding was supported by qualitative results demonstrating gender differences across three distinct areas of residents’ perceptions of ways to improve their teaching abilities. First, males (n=31) were more than twice as likely as females (n=15) to identify the need for teaching opportunities. Second, females (n=19) were substantially more likely than males (n=5) to want to improve knowledge leadership, or the confidence to trust what they know and share their knowledge with learners. Third, females (n=23) were more than twice as likely as males (n=9) to identify the need for established teaching techniques.

CONCLUSION: Results suggest that female residents may need more mentoring from good clinical teachers early in residency to increase confidence in their knowledge-base and share effective teaching techniques; whereas, males may need to begin with a more experiential approach, using the experience of teaching as a basis for learning teaching techniques.

Poster Presentation:
Are Employees Ready for Simulation?
The Development of a Readiness for Simulation Scale
Rebecca Blanchard, PhD; Whitney Wiltshire, PhD; John Darby, MD; Robert Bing-You, MD; Cindy Tack, LCSW

OBJECTIVE: The goal of this paper was to develop a Readiness for Simulation Scale (RSS) to measure the readiness of academic medical center (AMC) employees to the practice of simulation in medical education prior to the opening of a new simulation center.

THEORETICAL FRAMEWORK: RSS item development was based on the Readiness of Healthcare Students for Interprofessional Learning Scale (Reid, Bruce, Allstaff & McLernon, 2006) and on a social-ecological model (Bronfenbrenner, 1979) which identifies the multiple effects and interrelatedness of social elements in an environment. These elements may be affected by the introduction of simulation. They include; intrapersonal, interpersonal, institutional, community, and policy.

METHODS: Thirty items and five demographic questions were asked on an electronic survey distributed to groups of Maine Medical Center (MMC) employees (N=711). Employees measured their agreement to each item on a 5-point scale, from Strongly Disagreed (1) to Strongly Agreed (5). 31% of employees responded to the survey (n=222). All 30 items were reduced through exploratory factor analysis, a statistical process which explores how the items correlate to define the concept of readiness.

RESULTS: 19 RSS survey items explained over 58% of the variation in responses with three different factors of readiness. These factors were; 1) Overall Perspective on Simulation Learning, 2) Previous Exposure to Simulation, and 3) Perceptions of the Benefits of Simulation in the Organization. Each factor had high reliability as measured by Cronbach’s alpha (.925, .611, and .732, respectively).

CONCLUSION: As measured by the RSS, the concept of an employee’s readiness for simulation is constructed from three different factors. Future research should include confirmatory factor analysis by distributing the revised survey to employees at another AMC anticipating a simulation center. RSS survey results will inform employee educational programs regarding explicit information on the benefits of simulation for the learner and for the organization.

Paper Presentation:

Pathologic Abnormalities of Uteri Removed by Morcellation.
A Review of 889 Cases.
Frida Rosenblum, MD; Christopher Otis, MD

BACKGROUND: Minimally invasive surgery has become an accepted alternative to traditional open surgical techniques. Pelviscopic hysterectomy by morcellation (with or without adnexa) is now routinely performed at Baystate Health Systems. The purpose of this study was to review such specimens to determine the presence of abnormal findings which would traditionally be approached without morcellation.

DESIGN: A search of the anatomic laboratory information system was performed to identify morcellation procedures on gynecologic specimens from 1-1-01 to 1-1-10. All findings were recorded. Pre and postoperative information was obtained from the electronic medical records when available (IRB# BH-10-077).

RESULT: A total of 889 cases were reviewed (64 had non-morcellated components). The two most common diagnoses were leiomyoma (719 cases, 81%) and adenomyosis (327 cases, 37%). There were 30 (4.1%) atypical smooth muscle tumors, including 2 leiomyosarcomas. 75 cases (8.4%) were considered to have unexpected and significant diagnoses. One case of epithelioid STUMP recurred 6 years after original diagnosis as low grade leiomyosarcoma. Documented preoperative evaluation was limited, and when available did not indicate the presence of neoplastic disease.

CONCLUSION: This review confirms the presence of unexpected significant lesions of the endometrium, uterine stroma and smooth muscle, and ovary. The local recurrence of one smooth muscle tumor 6 years following diagnosis may reflect seeding of the operative field following morcellation. In summary, unexpected neoplastic lesions of the gynecologic tract occur following morcellation, which may adversely affect staging, patient management and potentially patient outcome.

Presentations:
USCAP Annual Meeting 2011; March 1, 2011 San Antonio, TX.
EBV-Positive Nodular Lymphocyte Predominant Hodgkin Lymphoma Presenting as Severe Mixed Autoimmune Hemolytic Anemia
Frida Rosenblum, MD; Peter Saunders, MD; Syed Ali, MD; Vandita Johari, MD

BACKGROUND: Epstein-Barr virus (EBV) is well known for its association with lymphoproliferative disorders. EBV is most commonly associated with Classical Hodgkin's Lymphoma. Nodular Lymphocyte Predominant Hodgkin's Lymphoma (NLPHL) is usually EBV negative.

CASE PRESENTATION: 35 year old male Polish immigrant, previously healthy, presented with shortness of breath and chest pain over one week. Additional complaints included occasional night sweats and weight loss of approximately 8 pounds. Physical examination revealed splenomegaly and bilateral palpable axillary adenopathy.

HISTOPATHOLOGY: Excisional lymph node (LN) biopsy was done. The LN was markedly enlarged, with subtotal effacement of the architecture and a heterogeneous appearance. There were vaguely nodular areas of reactive germinal centers, areas of dense fibrosis infiltrated by atypical lymphocytes, and some atypical-appearing follicles. The large, atypical nodules were composed mostly of small irregular lymphocytes admixed with large cells, including some with lobulated nuclei, vesicular chromatin, and delicate nucleoli consistent with the “LP” cells of NLPHL. Discussion: The patient was treated with prednisone at 1 mg/kg and tapered over three months with a complete response (asymptomatic, resolution of lymphadenopathy, normalization of laboratory parameters). NLPHL is an uncommon variant of Hodgkin Lymphoma (HL) that comprises about 5% of cases. Patients are usually male and most frequently in the 30-50 age range. Most patients present with localized peripheral lymphadenopathy. NLPHL is virtually always EBV negative. This is the first case ever reported of EBV-positive NLPHL.

CONCLUSION: NLPHL is a unique clinical entity characterized by indolent nodal disease. The malignant cells of NLPHL are CD20+ and therefore rituximab may have activity with fewer late effects than standard therapy. There are preliminary data to support rituximab’s efficacy in NLPHL. Two phase II studies have been reported demonstrating a high response rate and remission rate in both untreated and previously treated patients with NLPHL.

Poster Presentation:

Role of Antioxidants in Preventing Adverse Differentiation of Human Mesenchymal Stem Cells (hMSC) in Hyperglycemia
Sabyasachi Sen, MD, MRCP(UK), PhD; Mary Young, MA; Nagendra Yadava, PhD; J. Enrique Silva, MD

BACKGROUND: Pluripotent MSCs are essential for tissue regeneration, and can differentiate into adipocytes, osteocytes or chondrocytes. MSCs survive poorly in high glucose (25mM) compared to normal glucose (5.5mM) during differentiation.

METHODS: On exposure to high glucose (HG) we noted increased adipogenic differentiation (oil red-O stain positive) and reduced osteogenic differentiation of MSCs. We noted that there is up-regulation of mRNAs in HG for markers of white adipose tissue (WAT), such as, Leptin (LEP), Perilipin (PLIN), PPARG while the bone formation markers Alkaline Phosphatase (ALPL) and osteocalcin (BGLAP) mRNA was reduced. There is increased reactive oxygen species accumulation in HG as evidenced by DCF-DA dye analysis by FACS. To reduce ROS accumulation intra-cellularly we up-regulated anti-oxidant enzymes intracellularly, in then exposed cells to HG. We transduced hMSCs with Adenovirus containing eGFP (green fluorescent protein as control ) or Antioxidant genes MnSOD or Catalase (CAT) at 100 MOI.

RESULTS: MSCs on exposure to high glucose for 7 days led to up-regulation of mRNAs such as, LEP-11 fold, PLIN-4 fold, PPARG-25 fold, while ALPL and BGLAP , mRNAs were reduced by 4.5 and 0.4 fold respectively. When MSCs were transduced with adenovirus carrying MnSOD and CAT genes, before HG exposure, Leptin, Perilipin and PPARG expression were significantly reduced and expression of ALPL and BGLAP mRNA were rescued. Therefore, intracellular MnSOD and CAT upregulation prevented adipogenesis and improved osteogenesis. MnSOD up-regulation gives relatively better outcome in preventing adipogenesis, emphasizing the importance of mitochondrial (MnSOD) anti ROS enzyme in preventing adverse differentiation of hMSCs in HG. We are currently looking at possible mitochondrial complex (1-4) dysfunction in HG and if such a dysfunction is reversible.

CONCLUSION: hMSCs undergo adipogenic differentiation in high glucose and exogenous over-expression of both MnSOD and Catalase in MSCs prevent adipogenic differentiation. Our findings emphasize the protective role of mitochondrial anti-oxidants in hMSC differentiation with implications in management of obesity and osteoporosis in diabetes.

Presentations:
Keystone Symposium, January 2011.

Previous Awards:
ENDO Society- Outstanding Abstract Award June 2010.
Regenerative Potential of P53 silenced Human Endothelial Progenitor cells in Diabetes

Sabyasachi Sen, MD, MRCP(UK), PhD; Mary Young, MA; Joseph Jerry, PhD

Literature shows that peripheral blood derived EPCs can be matured to adult EC, however senescence of EPCs in high glucose (HG) is also known to occur, which may reduce the number of EPCs leading to poor wound healing in diabetes. This senescence may be secondary to p53 activation. We cultured hEPCs and exposed them to 5.5 mM (equivalent to 99mg%) and 20mM (equivalent to 360mg%) glucose and assessed cell survival by FACS analysis using propidium iodide (PI) stain. There was significant cell death noted in HG within 48hrs, compared to much less cell death of commercially obtained human umbilical vein endothelial cells (HUVEC), which are mature endothelial cells (EC). As senescence of EPCs in HG has been linked to p53 activation, we obtained mouse peripheral blood derived EPCs from mouse p53 KO and WT animals and observed that p53 KO EPCs are more resistant to death compared to p53 WT in HG. We cultured EPCs from p53KO mouse peripheral blood which evolved into mature mouse EC (MEC) without senescence. MEC retained all endothelial properties such as cobblestone appearance, tube-formation on matrigel and several EC gene expression such as pecam-1 (also known as CD-31), vwf (von-Willebrand’s factor), kdr (also known as vascular endothelial growth factor receptor 2, VEGF-2), e-nos (endothelial nitric oxide synthase) were maintained at similar level to WT EPC. We subsequently used Lenti-shRNA to silence p53 in human EPCs and noted better survival and maturity towards adult human EC with no loss of function compared to HUVEC for over 4wks. These findings illustrate that EPCs are more susceptible to death in HG than mature EC which may explain long-term vascular complications and poor healing in diabetes. EPC from p53KO are resistant to HG injury compared to EPC from p53WT. It is possible to culture stable MEC and human EC lines from EPC of p53KO and p53 silenced hEPCs from mouse and human blood, respectively. These cell lines maintained all usual endothelial cell characters without loss of function for more than 1 month. P53 silencing to prevent EPC senescence in high glucose may help in vital tissue repair and regeneration in diabetes.

Poster Presentation:

Publications:

Awards:
Selected for Young Investigator Poster Award.

A Pictorial Review of Silicosis
Abdullah Shaikh, MD; Tara Catanzano, MD

AIM:
-Understand the various clinical presentations of Silicosis
-Recognize the radiological findings during various stages of Silicosis

CONTENT / ORGANIZATION:
-Pathophysiology of Silicosis
  -Chronic
  -Accelerated
  -Acute
-Review of CXR findings (simple silicosis, progressive massive fibrosis, silicoproteinosis)
-Review of CT Findings
-Review of PET Scan findings
-Review imaging of a case of Chronic Silicosis from asymptomatic to end stage lung disease
-Treatment Options

CONCLUSION / TEACHING POINTS
1. Understanding the pathophysiology, clinical presentation and epidemiology of Silicosis.
2. Imaging findings of various presentations of Silicosis.

Electronic Presentations:
What’s Wrong with This Picture?
Abnormalities of the Cardiopericardial Silhouette: A Self Assessment Quiz
Tara Catanzano, MD; Margaret Yacobozzi, MD

Radiographic abnormalities of the cardiopericardial silhouette are not all due to cardiac pathology. It is imperative to recognize normal cardiac anatomy on radiography in order to differentiate between an abnormality arising from a cardiac chamber or great vessel, the pericardium or an adjacent structure. Cardiovascular abnormalities such as a duplicated SVC, chamber enlargement from valvular disease and abnormalities of the cardiac silhouette from pericardial effusion should be recognized. Additionally, mediastinal masses and masses secondarily involving the heart (e.g. lung cancer with pulmonary vein invasion) should be recognized. Through this self assessment quiz, it is the intent that the viewer will become more familiar with normal radiographic cardiac anatomy and apply that knowledge to interpretation of abnormalities of the cardiopericardial silhouette.

Presentations:

Midwives Training Ob/Gyn Residents: Impact on Maternal and Fetal Outcomes at One Institution
Parul Yadav, MD; Heather Sankey, MD; Brittany Weber, MD; Julie Feinland, CNM, MS, PPH; Alex Knee, MS

OBJECTIVE: To identify the impact of an educational program with certified nurse midwives (CNM) training residents in low-risk obstetrics on maternal and fetal outcomes.

METHODS: In 2003 we created an educational program in which CNM run a low-risk obstetrics team on labor and delivery with PGY1 residents. One CNM covers with the PGY1 from 6am to 7pm each weekday. During this time, there is structured teaching from the CNM on labor management and vaginal delivery technique. The residents continue to manage labor and delivery with senior residents and attendings during the nights and weekends. We conducted a retrospective chart review to evaluate the residents’ ability to perform vaginal deliveries. We used our electronic medical record to collect data on all singleton vaginal deliveries greater than 35 weeks occurring between May of 2001 and May of 2009. Delivering providers were categorized as: attending, CNM, resident with OB Team (OBT) training and resident without OBT training. Primary maternal outcomes included episiotomy and any vaginal laceration. 5-minute Apgar scores less than 7 were used as a measure of fetal outcome. Adjusted risk ratios were calculated for each provider group as compared to attendings.

RESULTS: Data was collected from 22,414 subjects. After adjustment, the highest episiotomy rates were noted for attendings (9.3%). When compared to attendings, the residents who were not OBT trained had a rate of 4.5% (Adjusted Relative Risk (aRR)= 0.50; 95% CI=0.40-0.61). Community CNMs had a rate of 4.0% (aRR=0.44; 95% CI=0.39-0.50), and the OBT-trained residents had the lowest rate of 2.4% (aRR=0.28; 95% CI=0.22-0.35). Regarding laceration rates, attendings also had the highest adjusted rates (46.3%). When compared to attendings, residents not OBT trained had a rate of 38.6% (aRR=0.83; 95%CI=0.76-0.90). Community CNM’s and OBT-trained residents had similar laceration rates of 34.3% and 34.6% respectively (CNM aRR=0.73; 95% CI=0.70-0.77 and OBT aRR=0.74; 95%CI=0.69-0.79). For both episiotomy and laceration rates, there was a difference by parity; however OBT-trained residents continued to have lower rates than residents trained traditionally. The rate of low Apgar scores tended to be higher for residents than other groups (CNM 0.9% and Attending 1.3%) but the OBT-trained residents had lower rates (1.6%) than the non-OBT-trained residents (2.0%).

CONCLUSIONS: Residents trained by CNMs in a structured educational program have lower rates of episiotomy and laceration than other residents in the same residency and lower rates than attendings in practice. Low Apgar scores did not worsen over this time period. This may suggest that OBT training of residents improves maternal outcomes without adversely affecting neonatal outcomes.

Presentations:
Council on Resident Education in Obstetrics and Gynecology / Association of Professor in Obstetrics and Gynecology, San Antonio, TX March 9-12, 2011.
Expert Surgeons’ Skills Decay in Simulated Laparoscopic Surgery: 
The Relevance of Task Difficulty

Ruchi Thanawala, MD; Ron Bush, BS; Neal Seymour, MD

INTRODUCTION: Skills decay in laparoscopic surgery has been demonstrated for students and residents using simulation devices. To determine the effect of a long period without practice of expert attending laparoscopic surgeons who had previously practiced extensively and achieved stable performance, we retested these same surgeons 30 months later.

METHODS: Four expert laparoscopic surgeons (>100 advanced cases) performed 4 iterations of 3 basic laparoscopic tasks of increasing complexity and difficulty (Retract-Dissect = easy; Traverse Tube = intermediate; Dissect Gallbladder = hard), on a virtual-reality simulator (SEP, SimSurgery AS, Oslo, Norway) 30 months after extensive prior practice (minimum 14 iterations) to stable performance levels. Simulator measures included task time (seconds), instrument tip trajectory (cm), and number of errors. Decay of skills was detected by comparison (paired t-Test) of a sample of the final 4 iterations (stable and flat segment) of the past learning curve versus the average of iterations 1-2 and 3-4 (expected rapid improvement segment) of the present learning curve.

RESULTS: Decay of performance was observed for current iterations 1-2 for (a) 2 of 3 simulator measures for Dissect Gallbladder task (time 85 ± 10 vs 121 ± 10 seconds, p = 0.002; errors 8.5 ± 3 vs 4.8 ± 1.2 cm, p = 0.032) and (b) 1 of 3 simulator measures for the Traverse Tube task (time 92 ± 21 vs 100 ± 21 seconds, p = 0.005). These performance decrements persisted for current iterations 3-4. However, no significant decay of performance was observed for the easier Retract-Dissect task. Initial performance (iterations 1-2) was significantly better for current versus past Traverse Tube use (time 100 ± 21 vs 118 ± 20 seconds, p = 0.02; pathlength 250 ± 44 vs 329 ± 38 cm, p = 0.01).

DISCUSSION: Extent of decrement in performance over the lengthy interval without practice was dependent on level of difficulty of the task examined. High task difficulty may be associated with greater potential for skill loss in clinically expert laparoscopic surgeons. Based on skill level measured at the past and current learning curve onset, some retention of remotely acquired skill was evident for the intermediate difficulty task. Time appeared to be the best performance measure to detect loss of skill. Determination of rate of acquisition of prior levels of proficiency will require completed learning curves.

Poster Presentation:
Society of American Gastrointestinal and Endoscopic Surgeons, April 2011.