

CELEBRATING INNOVATION AND DISCOVERY AT BAYSTATE MEDICAL CENTER

10TH ANNUAL

RESEARCH WEEK



Baystate
Medical Center

Western Campus of Tufts University School of Medicine

Tufts
UNIVERSITY

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

BMC's 10th annual Research Week is Tuesday, May 19, 2009 through Friday, May 22, 2009. 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, Room 1 – 12:00-1:00 pm

Tuesday, May 19, 2009

12:00 pm: *Epidemiologic Muckraking:
Measuring Variation in Medical Care*

David C. Goodman, MD, MS

Professor of Pediatrics and of Health Policy at The Dartmouth Institute for Health Policy and Clinical Practice, Director of the Center for Health Policy; and Co-Principal Investigator, Dartmouth Atlas of Health Care

Wednesday, May 20, 2009

12:00 pm: *Leadership and Creativity*

Robert J. Sternberg, PhD

Dean of the School of Arts and Sciences, Professor of Psychology, and Adjunct Professor of Education at Tufts University

Thursday, May 21, 2009

12:00 pm: Research Presentations by Award Recipients

Award for Significance in Research

Award for Innovation in Research

Award for Excellence in Quantitative Clinical Education Research

Award for Excellence in Qualitative Clinical Education Research

RESEARCH WEEK EXHIBIT

Chestnut Conference Center and Health Sciences Library

Tuesday, May 19, 2009 – 7:00 am
through

Friday, May 22, 2009 – 3:00 pm

KEYNOTE SPEAKERS

David C. Goodman, MD, MS

David C. Goodman is Professor of Pediatrics and of Health Policy at The Dartmouth Institute for Health Policy and Clinical Practice, in Hanover, New Hampshire; Director of the Center for Health Policy; and Co-Principal Investigator, Dartmouth Atlas of Health Care. Dr. Goodman's primary research interest is geographic and hospital variation in physician supply and its relation to health outcomes. He is also a "charter" member of the Dartmouth Atlas of Health Care (John Wennberg, editor emeritus) working group. In the past 15 years the Atlas has published over 20 national editions that describe regional and provider variation in health system performance (www.dartmouthatlas.org). Dr. Goodman currently leads Atlas projects examining variation in end of life cancer care, post hospital discharge care, and regional hospital and physician capacity.



Robert J. Sternberg, PhD

Robert J. Sternberg is Dean of the School of Arts and Sciences, Professor of Psychology, and Adjunct Professor of Education at Tufts University. He was previously IBO Professor of Psychology and Education in the Department of Psychology, Professor of Management in the School of Management, and Director of the Center for the Psychology of Abilities, Competencies, and Expertise at Yale. Sternberg was the 2003 President of the American Psychological Association, is President-Elect of the International Association for Cognitive Education and Psychology, and Chair of the Publications Committee of the American Educational Research Association. He is the author of about 1200 journal articles, book chapters, and books, and has received over \$20 million in government and other grants and contracts for his research, conducted in five different continents. The central focus of his research is on intelligence, creativity, and wisdom, and he also has studied love and close relationships as well as hate. Sternberg has been listed in the APE Monitor on Psychology as one of the top 100 psychologists of the 20th century, and is listed by the ISI as one of its most highly cited authors in psychology and psychiatry.



*Resident and Fellow authors are bolded on abstracts.

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Epinephrine Added to Epidural Bupivacaine Following Initiation of Labor Analgesia with Fentanyl

Neil Roy Connelly, MD; **Jorge P. Freiman, MD**; Tanya Lucas, MD; Robert K. Parker, DO; Karthik Raghunathan, MD; Charles Gibson, RN, MA; **Brennan Katz, DO**; **Chad Iwashita, MD**

PURPOSE: The analgesic effects of the addition of epinephrine to a clinically utilized bupivacaine epidural infusion in early labor are not clearly known. The current study was designed to determine whether there was a clinically significant difference in the duration and quality of analgesia, when patients received a standard epidural bupivacaine and fentanyl infusion with or without the addition of epinephrine.

MATERIALS AND METHODS: Sixty laboring nulliparous women received a 3 mL epidural test dose of 1.5% lidocaine with 1:200,000 epinephrine, followed by a fentanyl 100 μ g bolus in 10 mL of diluent volume. Once satisfactory analgesia was achieved, the patients received, in a randomized fashion, one of two continuous epidural infusions of either bupivacaine 0.625 mg/mL at 10 mL/hr or bupivacaine 0.625mg/mLwith epinephrine 5 μ g/mL at 10 mL/hr. Pain scores and side effects were recorded for each patient at regular intervals.

RESULTS: The mean duration of satisfactory analgesia prior to re-dose was 159 ± 62 min for the control group and 221 ± 111 min for the epinephrine group ($P < 0.02$). One patient in the epinephrine group complained of numbness and tingling early on; she subsequently ambulated through the hallway.

CONCLUSION: After the initiation of epidural analgesia in early labor with 100 μ g of epidural fentanyl and a standard lidocaine-epinephrine test dose, the administration of 0.625mg/mL bupivacaine with epinephrine 5 μ g/mL at 10 mL/hr, compared with plain 0.625mg/mL bupivacaine at 10 mL/hr, provided a longer duration of analgesia with no significant difference in pain scores, duration of labor, or side effects.

Poster Presentation

American Society of Anesthesiologists, Annual Meeting, New Orleans, LA, October 17-21, 2009

BIS in Children During Maintenance Anesthesia

Donald Schwartz, MD; **Anne Wu, MD**; David Han, MD;
Charles Gibson, RN, MA; Neil Roy Connelly, MD

INTRODUCTION: BIS offers a quantitative measure and objective analysis of anesthetic depth. We decided to measure BIS levels in children, specifically during the maintenance phase of general anesthesia, when in the anesthesiologist's judgment, the child was well-anesthetized.

METHODS: Following IRB approval, children ages 0-10 years undergoing elective general anesthesia had a pediatric BIS electrode placed. The anesthetic level was at a stable level for at least 5 minutes prior to recording data. A similar protocol was followed in a group of adult patients.

RESULTS: A total of 240 pediatric patients were evaluated: 62 were 12 months of age; the remaining 178 patients were between 1 and 10 years of age. There were 94 patients with a BIS ≥ 60 ; (42%) were infants and (38%) children. This was higher than the adult group (16%) had a BIS ≥ 60 ($p < 0.0009$). There was no significant difference in the use of sevoflurane, N₂O, intubation (vs. LMA use), or dose of intravenous opioid in the children whose BIS number was $<$ or ≥ 60 . The sevoflurane concentration was similar in those children who had an adjuvant caudal/epidural anesthetic. There was no difference in the use of an adjuvant caudal/epidural anesthetic and having a BIS ≥ 60 . One adult (1%), 13 (21%) infants and 18 (10%) children had a BIS level ≥ 70 .

DISCUSSION: Our results demonstrate significant variability and surprisingly high BIS values in a large portion of our pediatric patients. Despite the fact that an experienced pediatric anesthesiologist felt that the patients were adequately anesthetized (based on clinical criteria approximately 42% of infants and children had a BIS > 60). Our data supports other studies which suggest that BIS is not a reliable monitor of anesthetic depth in children. BIS data should be interpreted cautiously, and only in conjunction with other clinical signs.

Poster Presentation

American Society of Anesthesiologists, Annual Meeting, New Orleans, LA, October 17-21, 2009

Dexamethasone Increases Bupivacaine Analgesia Duration In Ultrasound Guided Interscalene Blocks

Peter A. Vieira, MD; Istvan Pulai, MD; **George C. Tsao, DO, MPH**;
Poornachandran Manikantan, MD; Brunella Keller, RN;
Charles Gibson, RN, MA; Neil Roy Connelly, MD

BACKGROUND: Dexamethasone has been shown to prolong the duration of postoperative analgesia when given as an adjunct to peripheral nerve blocks. However, it has not been evaluated when given in conjunction with bupivacaine and clonidine to provide blockade of the brachial plexus at the interscalene level. The purpose of this investigation was to determine whether the addition of dexamethasone to interscalene brachial plexus block would prolong the duration of sensory analgesia in a group of patients undergoing outpatient shoulder arthroscopy.

METHODS: This prospective, randomized, double-blind investigation was performed on 88 subjects undergoing shoulder arthroscopy. Patients received interscalene brachial plexus block using 20 mL of 0.5% bupivacaine with 1:200,000 epinephrine and clonidine 75 mcg. Patients were randomly assigned to receive either dexamethasone 8mg or saline as adjuvant to the mixture. After discharge, patients recorded pain scores and analgesic consumption in a diary, and estimated the time at which they perceived that the sensory block from the interscalene brachial plexus block resolved. Variables measured included demographics, timed pain intensity measurements, postoperative analgesic consumption, duration of analgesia, and patient satisfaction.

RESULTS: The dexamethasone group prolonged sensory (1726 ± 647 min. vs. 942 ± 325 min, $P < 0.0001$). and motor (1346 ± 345 min. vs. 914 ± 307 min, $P < 0.0001$) blockade over the control. At 24 hours, the dexamethasone group had lower VAS scores compared to control. At 48 hours, the two groups had similar pain scores. The 24-hour opioid requirement in oxycodone-equivalency was lower in the dexamethasone group than in the control group amount of opioid medication for pain than control. The opioid requirement between 24-48 hours was similar between the two groups. Patient satisfaction was not significantly different between the two.

CONCLUSION: The addition of dexamethasone to a bupivacaine-epinephrine-clonidine interscalene block prolongs sensory block and reduces opioid use.

Poster Presentation

American Society of Anesthesiologists, Annual Meeting, New Orleans, LA, October 17-21, 2009

A “Back to Basic” Approach to Reduce ED Medication Errors

Fidela Blank, RN; Judith Tobin, RN; Marcia Jaouen, RN;
Sandra Macomber, RN; Myra Dinoia, RN; Paul Visintainer, PhD

INTRODUCTION: Medication error is the most frequently reported error in the emergency department (ED). Nationally, 36% of medication errors occur in the administration phase. The purpose of this study is to reduce medication administration errors in the emergency department by reinforcing basic medication administration procedures.

METHODS: This study examined a 3-month educational intervention using a nonrandomized, single group comparing pre-post outcome variables. The educational intervention, titled “Preventing Medication and IV Administration Errors,” described current medication errors in the emergency department, and recommended practices for reducing medication administration errors. Of 127 nurses, 75% participated. Three measures used pre and post intervention were: a) knowledge of medication administration procedures assessed by tests; b) behaviors reflecting recommended medication practices assessed by surveys; and c) medication administration errors, identified via chart review and voluntary error reports.

RESULTS: In the post-test 91% achieved perfect scores vs. 69% on the pre-test ($p=.0001$). In the post-survey the proportion responding that they follow recommended practice “all” or “most” of the time increased in 8 of the 10 survey questions; but the changes did not reach statistical significance ($p=.98$). Reviews of charts (299 pre- and 295 post-) revealed little change in total medication errors: 25% vs. 24% ($p=.78$). Voluntarily reported medication errors dropped from 1.28 to .99 errors/1000 patients.

CONCLUSIONS: This educational intervention successfully improved knowledge of recommended medication administration practices. However, improved knowledge did not translate to a significant change in practice. More research is needed to identify interventions that can modify.

Many Emergency Health Care Workers Do Not Verify Patient Identity Prior to Performing Common Tasks

Philip Henneman, MD; Elizabeth Henneman, RN, PhD;
Donald Fisher, PhD; Tuan Pham; Megan Campbell

INTRODUCTION: Patient identity (ID) should always be verified before performing any medical intervention to prevent wrong patient errors. Verifying patient ID requires matching 2 identifiers: name, date of birth (DOB), or medical record number (MRN). Objective: To determine the frequency and accuracy of health care workers (HCW) verifying patient ID prior to performing a task.

METHODS: Prospective, simulated patient scenarios with an eye tracking device that showed where the HCW looked. Simulations involved nurses giving an intravenous medication, clerks applying an ID band, and technicians labeling a blood specimen. Participants were asked to perform their assigned task on 3 simulated patients and the third patient for all participants had a different DOB and MRN than the ID information on the artifact label specific to the HCW task. HCW were unaware that the focus of the study was patient ID. Verifying patient ID required confirming an exact match of two patient identifiers.

RESULTS: 61 emergency HCW participated: 28 nurses (RN), 17 clerks (ESA) and 16 technicians (TA) in 183 patient scenarios. 61% of HCW (37/61) caught the ID error and did not perform the assigned task (61% RN, 94% TA, 29% ESA, $p < 0.001$). 39% of HCW (24/61) performed their assigned task on the wrong patient (39% RN, 6% TA, 71% ESA). Eye tracking data were available for 73% of the PS (134/183). 79% of HCW (25/118) failed to verify the patient to their ID band (90% RN, 56% TA, $p < 0.001$). 42% of HCW (80/137) failed to verify the artifact to the patient or their ID band (60% RN, 6% TA, 39% ESA, $p < 0.001$).

CONCLUSION: Wide variation exists among HCW verifying patient identity prior to performing everyday tasks. Education, process changes and technology are needed to improve the frequency and accuracy of HCW verifying patient ID.

Poster Presentation

New England Regional Meeting Society for Academic Emergency Medicine, March 2009

National Meeting Society for Academic Emergency Medicine, May 2009

Publication

Manuscript submitted for publication *Annals of Emergency Medicine*, January 2009

Measurement of Phosphocreatine Recovery Kinetics in Muscle Using Phosphorous Magnetic Resonance Imaging

Howard Smithline, MD; Robert Greenman, PhD

OBJECTIVE: Phosphocreatine (PCr) recovery kinetics reflect mitochondrial oxidative metabolism capacity in skeletal muscle. Standard spectroscopic (MRS) methods lack sufficient spatial localization and resolution to study pathophysiologic processes that preferentially impact specific muscle fiber types. The rapid acquisition with relaxation enhancement (RARE) MRI pulse sequence produces PCr images with greater spatial and temporal resolution than standard localized ^{31}P MRS methods. The purpose of this study was to evaluate this ^{31}P MRI method to measure PCr recovery kinetics in the human forearm.

METHODS: This study was performed using a clinical MRI scanner at 3T. PCr image data were acquired using a double-tuned birdcage RF coil. A single-shot RARE acquisition, modified for PCr imaging, was prescribed to yield a voxel size of $1.5 \times 1.5 \times 2.5$ cm. A finger flexion exercise protocol was performed until fatigued. PCr images were acquired pre and post-exercise at 6-second intervals for 4 minutes. After recovery, the protocol was repeated using standard MRS methods with a surface coil. PCr images were matched to the same region sampled using MRS. PCr recovery curves were fitted to Changing Rate Utilization Resource (CRUR) functions and recovery rates were calculated.

RESULTS: Calculated recovery rates for the MRS data are 72 (τ_1) and 92 (τ_2) seconds; and for RARE image data are 74 (τ_1) and 90 (τ_2) seconds. Spearman correlation for MRS and RARE image recovery data is 0.8, $p < 0.01$.

CONCLUSION: PCr can be measured using a RARE pulse sequence with a temporal resolution of 6 seconds and a voxel size of 5.6 cm^3 . This imaging method allows for measuring PCr recovery kinetics with a spatial resolution superior to currently used MRS methods. Changes in oxidative metabolism, as measured by this technique, can be used to study novel acute therapeutic interventions for conditions such as heart failure, sepsis, and COPD.

Poster Presentation

International Society of Magnetic Resonance and Medicine (ISMRM) Annual Meeting, Honolulu, HI, April 2009

New England regional meeting of the Society of Academic Emergency Medicine (SAEM), Worcester, MA, March 2009

Outcome Measures for Acute Decompensated Heart Failure

Howard Smithline, MD; Robert Donnino, MS; Fidela Blank, RN;
Richard Barus, MS; Thomas Fitzgerald, MS

OBJECTIVE: Acute decompensated heart failure (ADHF) is a frequent diagnosis for hospitalized patients. Despite this, there is no consensus as to an appropriate short-term outcome measure for clinical trials of this illness. The purpose of this study was to compare several outcome measures for acute decompensated heart failure.

METHODS: This was a secondary analysis of a prospective study involving ED patients being hospitalized for ADHF at two urban tertiary referral centers. Consecutive patients in this analysis were enrolled between January and November of 2008. Type-B natriuretic peptide (BNP), dyspnea visual analog scale (DVAS), peak expiratory flow rate (PEFR), and respiratory rate (RR) were measured twice 8 hours apart overnight. Paired t-tests were used to compare the two time points for each variable. The effect size was calculated to allow for a direct comparison between the variables.

RESULTS: 895 patients were screened of which 52 met enrollment criteria and consented.

variable	mean(diff)	SD(diff)	95%CI	p	effect size
DVAS (mm)	9	18	3 to 15	0.00	0.50
BNP (ng/ml)	0.12	0.33	0.01 to 0.23	0.03	0.36
PEFR (L/min)	10	48	-4 to 25	0.16	0.21
RR (resp/min)	-0.4	4.6	-1.8 to 0.9	0.51	-0.09

CONCLUSION: Both BNP and DVAS improved over 8 hours in hospitalized patients with ADHF. The effect size for the change in DVAS was greater than the effect size for the change in BNP suggesting that DVAS may be a better outcome measure.

Poster Presentation

New England regional meeting of the Society of Academic Emergency Medicine (SAEM), Worcester, MA, March 2009

A Rare Case of Octogenarian Pseudosyncope

Emily Baiyee, MD; Maura Brennan, MD

INTRODUCTION: Cardiovascular and neurologic disease is common in elders who are frequently admitted to evaluate causes of syncope. The authors report a case in which an episode of unresponsiveness in an octogenarian proved to be pseudosyncope due to an adjustment disorder. This has been reported rarely in the geriatric literature.

CASE: An 80 y/o man had a history of MI, heart failure, hypertension, syncope, depression and essential tremor. He moved into an assisted living facility, was anxious and slept poorly. The next day he became "unresponsive"; staff called 911. In the ED his eyes were closed. He did not speak but winced when a Foley catheter was placed. Two hours later he was alert, calm and fully oriented. He had no neurological deficits and was admitted to telemetry. EKGs, head imaging, echocardiography, a complete metabolic panel and alcohol level revealed only his known cardiomyopathy and mild anemia. There were no arrhythmias; orthostatic and postprandial bps were normal. Neurology, cardiology, psychiatry and geriatrics consulted. A sleep study and EEG were arranged. Prior to discharge, the patient again became unresponsive. He did not speak and kept his eyes actively closed resisting efforts to open them. He later stated this was his way of "shutting things out," and a diagnosis of adjustment disorder was made. Support was mobilized (VNA, family, SW) to facilitate adaptation in his new home.

DISCUSSION: The potential etiologies for syncope or stupor are legion. Without clear evidence of "pseudosyncope" one must rule out cardiovascular and neurologic pathology. However, there may be clues to a psychiatric component. Adjustment disorder is a stress-related, short-term, non-psychotic disturbance in which patients have a disproportionately intense reaction to a stressor. Coexisting depression and anxiety are common in older adults and can profoundly impact functional status, quality of life and even mortality. It is unclear if cognitive impairment increases the risk of adjustment disorders in vulnerable elders.

CONCLUSIONS: Geriatric consultants are often asked to assess "changes in mental status". A careful psychosocial history and close observation are required or psychiatric factors contributing to decreased responsiveness may be missed. Further research should clarify the prevalence and impact of adjustment disorders in the elderly. This is a fruitful area for collaborative research by hospitalists, psychiatrists and geriatricians.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

A Rare Cause of Endocarditis Presenting as Delirium

**Amit Bhargava, MD; Imran Dosani, MD; Siddharth Wartak, MD;
Ashish Verma, MD; Sarah Haessler, MD; Maura Brennan, MD;
Sandra Bellantonio, MD**

INTRODUCTION: Group G beta hemolytic streptococci (GGS) are a rare cause of endocarditis with less than hundred cases noted in literature. Delirium, a acute confusional state, is prevalent in 14-56% of hospitalized elders. This condition requires a clinical diagnosis and has a multifactorial etiology, which ranges from simple electrolyte imbalances to various infections. We report the case of a 90-year-old male who presented with delirium attributable to GGS endocarditis.

CASE: A 90-year-old Caucasian male, nursing home resident, with a history of hypertension, congestive heart failure, was admitted with an altered mental status. Physical examination was pertinent for disorientation, tachycardia, tachypnea, a grade 2/6 systolic murmur over the precordium and subconjunctival hemorrhages. Labs were pertinent for neutrophilic leucocytosis and pre-renal azotemia. Infective endocarditis was strongly suspected, blood cultures were sent and empirical antibiotic therapy commenced. A trans-thoracic echocardiogram showed a structurally abnormal posterior mitral valve leaflet that had a very irregular contour and dense calcification. This was suggestive of possible vegetations. Left ventricular function was normal (EF 65%). CT Brain showed changes of chronic small vessel ischemia. Blood cultures later grew GGS in two bottles. A diagnosis of GGS endocarditis was made and the patient was treated with IV Penicillin G and Gentamicin. Despite treatment, he continued to deteriorate clinically. This was thought to be due to progressing septicemia and probable septic emboli. His family chose comfort measures only and he died in the second week of hospitalization.

DISCUSSION: GGS endocarditis is an uncommon entity, with a Norwegian study identifying GGS bacteremia as a serious complication. Another 12-year study looking at the incidence of GGS bacteremia alone noted it to be 0.0–0.2 cases/1,000 admissions. The latter point is noteworthy because delirium can be the expression of subtle metabolic abnormalities, gross cerebral insult or an underlying life threatening bacteremia. Frequent misdiagnosis due to confusion with conditions such as dementia or depression leads to a delay in diagnosis and institution of appropriate management, leading of mortality rates of up to 26%. It is therefore imperative that the etiology of an altered mental status presentation is swiftly identified and proper treatment commenced.

CONCLUSION: GGS endocarditis is an elusive illness requiring a high index of suspicion. It is important that in the appropriate clinical setting, endocarditis and possible bacteremia be kept in the differential of altered mental status, as highlighted by the index case.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Ehrlichiosis Presenting as a Fever of Unknown Origin

**Amit Bhargava, MD; Imran Dosani, MD; Sufana Al Khunaizi, MD;
Senthil Sivalingam, MD; Sarah Haessler, MD**

ASSOCIATE LEARNING OBJECTIVES: Human granulocytic anaplasmosis (HGA) is an emerging and potentially fatal disease, with a mortality of 7-10% if treatment is delayed. This case serves to illustrate a presentation of HGA manifesting as a non-specific subacute febrile illness. Lastly, this case report highlights the importance of prompt clinical diagnosis, discusses current diagnostic modalities and provides an overview of the current treatment of HGA. CASE PRESENTATION: Human granulocytic anaplasmosis (HGA), previously called human granulocytic ehrlichiosis (HGE), is caused by *Anaplasma phagocytophilum*. HGA typically presents as an acute infection following a bite from the ixodes scapularis tick. The mean duration of symptoms in untreated patients is 9 days. We report the case of a patient in whom fever of unknown origin developed, resulting in hospitalization one month after onset of initial symptoms. A 56 year-old female, with a past history of congestive cardiac failure (systolic dysfunction), hypertension and morbid obesity, was admitted with a fever of unknown origin. Four weeks prior to presentation, she had multiple vague complaints including myalgia, flu like symptoms, fatigue and malaise. A week prior to presentation, she noticed high grade (102°F) fever, with associated chills, diaphoresis, and shortness of breath. The patient lived in a trailer in coastal Rhode Island and enjoyed hiking in the surrounding fields. No tick or insect bites were noticed. Upon admission, she was fatigued and diaphoretic. Vital signs showed hypotension (BP 80/60), tachycardia (Pulse 102 beats/min), respiratory rate of 20 breaths/min, and pyrexia (104°F). Physical examination revealed bibasilar rales on pulmonary auscultation. No lymphadenopathy, rashes or any other musculoskeletal findings were noted. Pertinent laboratory findings showed a leukocyte count of 4 k/mm³, Hb of 12.2 g/dl, platelet count of 88 k/mm³, normal renal profile, an elevated ALT at 143 units/L and Alk Phos at 192 units/L. Stool, urine and multiple blood cultures showed no growth. Hepatitis A, B and C, HIV, legionella and lyme serologies were negative as were the thin and thick smear for babesiosis and malaria. CT scan of the thorax, abdomen and pelvis were unremarkable. Doxycycline 100mg BID PO was started empirically due to suspicion of a tick borne illness. The patient experienced prompt resolution of fever. A serology for human granulocytic ehrlichiosis (HGE) was positive; the IgG titer was 1:8192 and IgM titer was 1:320. Convalescent titers after a course of doxycycline showed improvement with an IgG titer of 1:2048 and IgM of 1:160.

DISCUSSION: Human ehrlichiosis is a serious disease with significant morbidity, particularly if appropriate antibiotics are delayed. Ehrlichiosis should be considered in the differential diagnosis of patients with subacute febrile illness after known or possible tick exposure, particularly if accompanying thrombocytopenia, abnormal liver profiles or both are present. The therapeutic response to doxycycline is prompt, and complications are uncommon in patients who are treated without delay. The polymerase chain reaction applied to whole blood samples is a promising test for rapid confirmation of the diagnosis within 24 to 48 hours.

Oral Presentation

Oral Society of General and Internal Medicine Regional Meeting, Boston, MA,
March 2009

Quinolone-Induced Hypoglycemia in an Elder with Acute Kidney Injury

Amit Bhargava, MD; Maura Brennan, MD

INTRODUCTION: Adverse drug events are a common cause of morbidity and mortality in elders. Geriatric patients with medical comorbidities, polypharmacy and dementia are at high risk. The authors report the case of a diabetic nonagenarian with acute renal failure who became hypoglycemic due to impaired renal clearance of fluoroquinolones.

CASE: A 91-year-old man with atrial fibrillation, severe dementia and chronic kidney disease (baseline creatinine of 0.9) was admitted post fall with worsening confusion and acute renal failure. He was being treated with ciprofloxacin for a urinary tract infection; this was changed to levofloxacin upon admission. Off note, the patient was on no oral hypoglycemic agents. On presentation, he was hemodynamically stable, alert, oriented to person, and able to follow simple commands. He appeared dehydrated with dry mucosa, had a 2/6 systolic murmur in the aortic area and was neurologically non-focal. Bloodwork was most notable for a BUN of 69 mg/dL and Cr. of 4.9 mg/dL, (creatinine clearance was 9.4.). A head CT showed small vessel ischemia but no acute pathology. He improved gradually with conservative management and intravenous fluids. A geriatrics consult was requested for the delirium and recurrent falls. Simultaneously, the patient became unresponsive and was found to have severe hypoglycemia (24 mg/dL). This responded to glucose administration and the cessation of quinolone antibiotics.

DISCUSSION: Fluoroquinolones are widely used in both inpatient and ambulatory settings. They are wide-spectrum agents and target bacterial DNA gyrase and topoisomerase. Both ciprofloxacin and levofloxacin are renally excreted, with respective serum half-lives of 4 hours and 6-8 hours. The elimination half-life of ciprofloxacin is approximately 20% prolonged in the elderly (>65 years), with renal clearance becoming further impaired in kidney injury. Many patients prescribed these agents have underlying co-morbidities like diabetes or baseline renal dysfunction. Fluoroquinolones are also known to affect glucose homeostasis and insulin production by affecting pancreatic beta-cell ATP-sensitive K(+) channel activity. Thus, they have the potential to cause hypoglycemia and rarely hyperglycemia. Ciprofloxacin, unlike levofloxacin, inhibits the cytochrome P450 [CYP] 3A4 enzyme that metabolizes most oral hypoglycemics.

CONCLUSION: Polypharmacy is prevalent among geriatric patients who suffer from a myriad of ailments. Medication lists must be constantly reviewed to limit adverse drug events and interactions. Diabetes, kidney problems and infections are common in elders. Geriatricians should be aware of the potential danger of using fluoroquinolones in older patients with renal impairment to prevent life-threatening iatrogenic hypoglycemia.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatric Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Epilepsia Partialis Continua in the Elderly
Melisha Cumberland, MD; Ashish Verma, MD;
Sandra Bellantonio, MD; Maura Brennan, MD

INTRODUCTION: Epilepsia partialis continua (EPC), described in 1895, is characterized by continuous rhythmic muscular contractions affecting a limited part of the body, lasting hrs to yrs, Risk factors include age, brain tumors, atherosclerotic CVD, and strokes; 56% of pts with EPC had prior stroke. We present a case of EPC 1 yr post stroke. **CASE:** 75y.o man with hx of CHF,CABG, R CEA and CVA one yr ago with residual LUE weakness, presented to ER after multiple generalized tonic clonic szs beginning with twitching in the L hand, moving towards the trunk and becoming generalized. This was associated with tongue biting but no loss of bowel/bladder. He remained alert throughout each seizure. **MEDS:** antihypertensives and Coumadin. On exam pt was afebrile, hemodynamically stable, moving all extremities, with 4/5 strength in RUE, RLE LLE but 1/5 in LUE. The LUE continued to twitch despite repeated valium doses. **CT brain:** large area of encephalomalacia in distribution of R MCA c/w with prior infarct. **EEG with LUE twitch:** moderate disorganization of background and excessive background slowing, indicators of moderate degree of diffuse cerebral dysfunction. **Ambulatory EEG:** persistent slowing over the R with decreased beta activity c/w subacute or chronic abnormality involving subcortical regions. Pt continued to have twitching in LUE throughout admission despite loading dose and increasing dose of Keppra. Pt. was discharge on HD#9 with myoclonic jerks and weakness in left hand. **DISCUSSION:** The clinical presentation of EPC depends on the underlying cause, often a stroke, which may have resulted in an isolated sz or neurologic deficits prior to EPC. Our pt. had a hx of prior CVA with residual LUE paresis. The myoclonic jerks of EPC have a frequency of 1-2/sec, usually persist through sleep, and affect any muscle group, most commonly the face, upper limbs and trunk. About 60% of pts. will have other types of szs, muscle weakness, sensory loss or stretch reflex changes. EPC involves the motor strip of one hemisphere and has a clinically localized appearance. The absence of EEG abnormalities in some pts led to the hypothesis of a subcortical origin EPC. EPC usually respond poorly to antiepileptics but may resolve with time. **CONCLUSION:** EPC is uncommon but more likely in older pts. given the higher prevalence CVD and stroke. Clinicians should be aware of EPC and recognize this self limiting process and educate pts that the sxs may last hrs to yrs.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatric Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

First Reported Case of Splenic Infarction in a Patient with Hyperhomocysteinemia

Melisha Cumberland, MD; Ashita Talsania, MD; Imran Dosani, MD;
Ashwin Sridharan, MD; Lauren Meade, MD

Background: Mild hyperhomocysteinemia occurs in approximately 5 percent of the population. Hyperhomocysteinemia has been identified as an independent risk factor that contributes to venoocclusive disease. It has been a risk factor for recurrent venous thrombosis in patients between 20 and 70 years of age. Elevated homocysteine levels may result from low levels of folic acid, vitamin B6, or vitamin B12. Several genetic alterations in enzymes involved in homocysteine metabolism have been described. We report a case of young male who presented with arterial and venous thrombus with hyperhomocysteinemia. Case Report: 37-year-old male with no past medical history presented to with acute onset of right flank pain. His flank pain was sharp, constant and progressively worse throughout the day of presentation without relief from over-the-counter medication. Patient denied any family history of disease and smokes 1 pack per day for 10 years. On physical exam patient he was afebrile and hemodynamically stable. His exam was significant for left costovertebral angle tenderness and right upper and lower quadrant tenderness. LABS: hemoglobin 19, hematocrit 59, platelet 145. CT abdomen revealed 8cm Inferior Vena Cava (IVC) thrombosis, splenic and right renal infarct with some right perirenal edema. Thrombus within the IVC was suprarenal inferior to the liver and extending just below renal veins and not adherent to IVC walls. Abdominal ultrasound and Magnetic resonance venous imaging showed stabilization of the clot with Lower extremity dopplers revealed bilateral Deep Vein Thrombosis (DVTs). Hematology workup showed normal levels of protein C and S, antithrombin III, factor V mutation, factor II, Erythropoietin level and Jak II mutation. Homocysteine levels were elevated - 33.9. Patient had IVC filter placed and phlebotomized three times throughout his admission for Hct >42. No fibrinolytic therapy was deemed necessary as there was fear of clot thrash. Patient was initially started on lovenox and later put on coumadin. Patient continued to be asymptomatic throughout stay. Discussion: Renal and splenic infarction due to thrombosis are rare. Renal infarction has only been reported once in the setting of hyperhomocysteinemia and splenic infarction has never been reported. The role of hyperhomocysteinemia in thrombosis remains controversial; however, studies have previously indicated that it may be a risk factor for arterial and venous thrombosis. Heritable deficiencies of three enzymes have been shown to cause hyperhomocysteinemia in pediatric patients; these enzymes require co-enzymes derived from vitamins B6, folate, and B12 to function. Deficiencies of these vitamins can lead to hyperhomocysteinemic states; a number of studies have shown that supplementation can be curative. In a thrombophilic patient with a normal coagulation profile and the absence of other thrombotic risk factors, hyperhomocysteinemia secondary to vitamin deficiency should be considered as a potential cause.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

Infective Endocarditis Presenting from Locally Invasive Adenocarcinoma of Esophagus

Ranjit Dhelaria, MD; Srikanth Penumetsa, MD; David McDougall, MD

Learning Objectives: Infective endocarditis secondary to locally invasive esophageal cancer is uncommon and invariably fatal. The author describes a case of poorly differentiated adenocarcinoma of distal esophagus which invaded the heart and led to this fatal complication. Case Presentation: A 58 yrs old man with a history of adenocarcinoma of the distal esophagus, diagnosed six months ago, presented to the ER with recurrent syncope, diplopia, night sweats and headache. On admission he was found to be tachycardic, tachypnoeic and afebrile. Physical exam revealed no audible murmurs with normal heart sounds, lungs were clear to auscultation and abdomen was benign. Initial labs revealed only anemia (H/H 6.9/21). CXR was unremarkable and CT head showed no evidence of acute intracranial pathology. On HD 3, patient complained of worsening diplopia and an MRI showed multiple acute infarcts in both anterior and posterior circulation territories suggesting an embolic origin. The patient also had spiking temperatures and four blood cultures taken on different occasions grew streptococcus viridans. A diagnosis of infective endocarditis was suspected and patient was commenced on intravenous antibiotics. Transthoracic echocardiogram showed structurally normal valves and a mass attached to the postero-lateral aspect of the left atrium. TEE was declined by the patient. Patient's mental status subsequently deteriorated with development of seizures which were controlled with intravenous phenytoin. A contrast enhanced CT of the chest and abdomen showed a large esophageal mass involving the mid and distal esophagus. There was a filling defect within the left atrium suggesting invasion of the neoplasm into the left atrium. This appearance along with the MRI head suggest local invasion of the esophageal cancer as a source of bacterial endocarditis and multiple septic emboli to the brain. The patient's condition subsequently deteriorated and in view of grave prognosis was decided for compassionate care. He eventually passed away in the hospital. Discussion: Esophageal cancers are relatively uncommon in the United States and most cases of esophageal cancer have advanced disease at the time of presentation because esophagus has a rich lymphovascular supply and lacks a serosal lining. Adenocarcinoma is less locally invasive compared to Squamous cell carcinoma and review of literature showed no similar presentation. The patient also declined treatment at the time of diagnosis and hence received no active treatment for his cancer. Streptococcus viridans are organism of low virulence and transient bacteremia occurs from the oral cavity. Cancerous mass in the left atria served as the nidus for bacterial vegetation in this case. Also, tumor invading into the left atria with friable inflammatory vegetations increased his risk of exsanguinating hemorrhage and indicated a grave prognosis. His clinical course was also complicated with anemia and neurologic symptoms due to septic brain emboli.

Poster Presentation

Poster Society of General and Internal Medicine Regional Meeting, Boston, MA
March 2009

“Primum Non Nocere (First, Do No Harm)”: A Prescription Error Resulting in a Near-Fatal Fall

Ranjit Dhelaria, MD; Maura Brennan, MD

Introduction: Drug-related adverse events threaten the quality of life and even the survival of geriatric patients. The authors present a case illustrating the risks of inappropriate prescribing which nearly resulted in the death of a high-functioning elder. Case: A healthy, cognitively intact 86-year-old man from the community arrived in the emergency room after a fall. He went to the bathroom in the dark, lost his way and fell down a flight of stairs. On presentation, he was delirious and hallucinating. He had no focal neurologic deficits. Imaging revealed a clavicular fracture along with compression fractures of L4, T6, and T11. There was no acute intracranial pathology. Initially, staff attributed the delirium to opiates in the ED. A metabolic panel, CXR and urinalysis were unrevealing. Subsequently, the geriatrics consultation team verified that the patient was confused even prior to opiate use. Two days prior to the fall, the patient was given orphenadrine for back strain in an urgent care clinic. Muscle relaxants were discontinued, and he improved cognitively despite ongoing appropriate analgesia; he was discharged to a skilled nursing facility for further rehabilitation. Discussion: Drug misadventures in older adults contribute to about 1/3 of ER visits and hospital admissions. It is uncertain how many preventable geriatric deaths result from medication errors but the Institute of Medicine estimated that about 44,000-98000 deaths yearly are due to medical errors. This exceeds the number of Americans who die annually in automobile accidents. The current version of the Beer's List* represents expert consensus opinion regarding drugs best avoided in elders. Orphenadrine, along with virtually all muscle relaxants, is included on the list due to a high incidence of delirium. Nonetheless, geriatric patients are often given muscle relaxants by well-intentioned clinicians who are unaware of their risks. In this case, the error resulted in a fall which could well have been catastrophic; the patient was fortunate to survive. Conclusion: Physicians need to be aware that appropriate analgesia may actually decrease the risk of delirium; this will prevent unnecessary suffering in geriatric patients. This case also highlights the benefits of collaboration between trauma and geriatrics teams. Adverse drug events are common and often preventable among ambulatory elders. Translational research should clarify how best to increase outpatient providers' awareness of the Beer's List* and the common categories of drugs to be avoided. Strategies must target both drug prescription and monitoring. Interventions focused on improving patient adherence may be beneficial as well. *Fick DM. Updating the Beers criteria for potentially Inappropriate medication Use in older adults. Arch Intern Med. 2003;163:2716-2724

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

Myasthenia Flare with Pleural Metastasis of Thymoma Developing 6 Years After the Resection of Invasive Thymoma

Imran Dosani, MD; Armen Asik, MD; Rose Ganim, MD

Learning Objective: Thymomas are characterized by an indolent growth with local invasiveness; distant metastases are distinctly uncommon. There is 16% chance of thymoma recurrences in patients with invasive tumors and were often associated with the onset/aggravation of autoimmune diseases. We are reporting a case of Myasthenia Gravis – associated thymoma who presented to us with the flare and later found to have a pleural metastasis. Case Presentation: 50 year old Afro-American female is a known case of Myasthenia Gravis diagnosed in 1999. She was found to have a thymoma and underwent a radical thymectomy in 2000. The tumor was measuring 7x4cm. The left phrenic nerve was involved. There was evidence of focal invasion of the capsule with positive margins. It was a mixed-type thymoma B2/B3. She declined radiotherapy at that time. There was recurrence noticed in the mediastinum after a year. In 2001 2x1 cm mass was again resected. She then received adjuvant radiotherapy. She has done well since after her second surgery. She admitted to our institute in 2007 with two weeks history of dyspnea and dysphagia. She was treated for myasthenia flare with IV immunoglobulin and prednisone. MRI of the chest at that time didn't show any mass in the mediastinum or pleura, but showed multiple round densities in the liver typical of hemangioma. MRI of the abdomen in 1/2008 showed above finding, but also showed 1.2 x 2.6 x 2.5 cm enhancing pleural based mass in left lower hemithorax. In retrospect, this was evident in the prior study, but obscured by the artifact and measuring 0.8 x 2 x 2.4 cm. This lesion was enlarging and highly suspicious for pleural thymoma metastases. She underwent CT guided biopsy of the pleural mass which showed recurrent thymoma type B-2. Left-sided VATS procedure was performed, which showed multiple tumor implants and the case was deemed inoperable. She received systemic chemotherapy which showed excellent response on CT chest with tumor mass down to 1.5 x 0.6cm. MRI of the brain and bone scan didn't show any metastasis. She then underwent left sided thoracotomy with resection of all visible tumors. Discussion: Myasthenia Gravis associated thymoma was predominantly of B type and was invasive in the majority of patients. The presence of myasthenia gravis flare can give us a clue of recurrence of previously resected tumor and repeated scans should be performed to look for local or distant metastasis. As thymoma can recur after a long interval, oncologic surveillance must be prolonged and even lifelong.

Poster Presentation

Poster Society of General and Internal Medicine Regional Meeting, Boston, MA, March 2009

AGS Resident Chapters - First Year's Progress

Tara Du Val, MD; Gina Luciano, MD;

Maura Brennan, MD; Sandra Bellantonio, MD

With the establishment of Resident Chapters in 2007, The American Geriatrics Society is working to increase the visibility of geriatrics and recruitment into the field among Residency Programs. In their first year 4 Resident Chapters have raised awareness of the benefits of a career in geriatrics, provided educational activities and have enhanced community outreach. Baystate Medical Center/ Tufts University School of Medicine in Springfield, MA has 10 members. Monthly meetings have included a guest speaker who discussed nursing home careers and a CV workshop. Members presented geriatric articles at a CME noon conference. Residents have been active in community outreach. Several have spoken to a Mall Walkers group on topics such as immunizations and falls prevention, and one member has developed a falls prevention brochure for PCP offices. The Boston University Medical Center Chapter in Boston, MA has 12 members and meets quarterly. This chapter fosters interest in a geriatric career with their Geriatric Career night dinner in collaboration with Tufts University. Educational programs include geriatric morning report and board review session. The Brody School of Medicine Chapter at East Carolina University in Greenville, NC has 26 members and has met 10 times this past year. Each meeting featured a geriatric presentation from a resident or guest speaker on topics such as dementia and geriatrics as a career. Huron Hospital, a Cleveland Clinic Hospital has 4 members who meet monthly. The group is actively involved in geriatric research, particularly in underprivileged groups. At the 6th Men's Minority Health Center annual Health Fair, they conducted surveys of topics such as end-of-life decisions. Members of all chapters have been active in the AGS yearly meetings with poster presentations, participation in the quiz show, planning meetings of the Resident Section and assisting with the Get Up and Go falls risk assessment program in Washington DC. Barriers to success have included difficulties planning meetings due to resident schedules and insufficient funds to provide meals for all meetings; food encourages participation. Residents desire more resident-focused events at the national AGS meetings such as clinical skills workshops, panels on jobs available to geriatricians and CV workshops. The authors believe that the formation of further resident AGS chapters will enhance recruitment into the field, and increase the visibility of geriatrics in teaching hospitals and their communities.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Unilateral Anteromedial Thalamic Stroke Presenting as Anterograde and Retrograde Amnesia

Tara Du Val, MD; Sandra Bellantonio, MD

Introduction: Geriatricians are often asked to assess confused patients with new memory loss. Often they prove to have gradually progressing dementias. The authors present an unusual case in which a thalamic infarct resulted in a “dementia” which arose abruptly. Case: A 71-year-old diabetic man with hypertension and a distant history of alcohol abuse developed confusion and both retrograde and anterograde amnesia. Relatives denied any prior memory loss. He was alert but could not recall why he was in the hospital, how he had gotten there, the names of his children, where he lived or his past profession. His memory deficits waxed and waned; his MMSE score was 13. He had a disorganized thought process, dysnomia and difficulty with word finding. An MRI revealed an acute 16 x 13 mm infarct in the anteromedial aspect of the left thalamus extending to the genu and the posterior limb of the internal capsule. Discussion: Thalamic strokes may result in both behavioral changes and cognitive deficits. Most commonly, they occur in the anterior, paramedian, inferolateral or posterior areas.¹ However, Carrera et al² reported overlapping regions in 21 of 70 patients with thalamic strokes. Of the 21 cases with “variant” stroke territories, only 9 (13%) had anteromedial infarcts and most were bilateral. Many of Carera’s patients with left sided thalamic lesions had amnesia and 3 had aphasia. However, although anterograde amnesia was common, only 1 case had retrograde amnesia as well. Patients frequently also had a loss of self-activation, a mildly decreased level of consciousness and vertical gaze paresis. Conclusion: Our patient is unique. He had a unilateral infarct in an uncommon vascular territory with both retrograde and anterograde amnesia. He lacked aphasia, abulia, an altered sensorium and cranial nerve deficits. Decreased thalamic reserves from his past ethanol abuse may have contributed to this atypical presentation. Geriatricians are frequently called upon to evaluate patients with acute changes in cognition; thalamic infarcts are a rare but important cause of sudden memory loss.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

**Introduction of Alcohol-Based Surgical Antisepsis Associated
with a Surgical Site Infection Cluster:
The Problem with a Culture of “Cutting Corners”**

Anneta Golubchik, MD; Sarah Haessler, MD

Background: Agents used for surgical hand antisepsis to improve hand- hygiene practices should substantially reduce microorganisms on intact skin, contain a non-irritating antimicrobial preparation, have broad spectrum activity and be fast acting and persistent. One of them- Alcohol-based Product X was trailed in the beginning of September 2005 at our institution. It was approved for use and introduced in all OR in December 2006.

Observation: Quarterly Report at the end of March 2006 showed dramatic increase of SSI in All Surgery up to 3.18% in comparison with average 2.02% for the previous several quarters. The lowest is being in February and December 2006.

Investigation: No connection was identified with a single surgeon or one particular microorganism. No errors were found in any processing or instrumental cleaning techniques. No construction, renovation or modification was underway during this period of time.

The only a new element- hand wash product X- was introduced to OR routine approximately a year prior to significant spike in SSI.

Direct observation of X product usage revealed improper use of product. Most of the surgeons were under impression that “goop and go” technique was just as sufficient as traditional scrub method.

Product was withdrawn from the use at our academic Medical Center in September 2007.

Measures to solve the problem: Reinforcement of hand washing technique started in February 2006. Practices included visuals-“wash-rinse-dry-apply-reapply” posters in the OR, educational materials, PowerPoint Presentations for staff and on-site instructions.

Results: The rate of All Surgery SSI decreased to 1% in December 2007. It did trend back upward to almost average 2.02% (1.85%) in June 2008.

Discussion: We believe that culture of “cutting corners” leads to increase in SSI rate, not the product itself if properly used. Eventually, SSI rate came back to its average number which again support our theory that people hand washing practice matters, not the product.

Poster Presentation

Society for Health Care Epidemiology of America, San Diego, CA, March 19-22

Is It Senile Ptosis? An Uncommon Presentation of Carotid Cavernous Aneurysm

Fei Gu, MD; Senthil Sivalingam, MD; Sudeep Aulakh, MD

Senile ptosis or droopy eyelids is a common finding in the elderly requiring no further evaluation. However, true ptosis is associated with significant pathology and requires imaging for definitive diagnosis. We describe a case of ptosis due to Carotid Cavernous Aneurysm (CCA) where careful physical exam was essential in making the correct diagnosis. Case Presentation A 68yo white female with a PMH of RA, DM2 and HTN presented to her outpatient clinic with worsening left ptosis. Patient's sister noted that the patient's left eyelid had become droopier since her visit 7 months ago. The patient was unaware of it and denied any change in vision, headaches, muscle weakness, cardiopulmonary complaints or weight loss. She had no history of eye surgery. Her physical exam was positive for left upper lid ptosis and anisocoria, with mild mydriasis of the left pupil measuring 4mm compared to a 2mm sized right pupil. Both optic discs margins were sharp. Bilaterally visual acuity and visual fields were normal, the extra ocular movements were full and pupils were reactive to light and accommodation. The remainder of the exam was unremarkable. An MRI of the brain was obtained and was suggestive of a left-sided parasellar aneurysm. A CT angiogram confirmed a 1.4cm diameter aneurysm in the left cavernous carotid with minimal erosion of the undersurface of the anterior clinoid process and no compromise of the optic canal. The patient was referred to neurosurgery for possible intervention. Discussion CCA represents 3-5% of all intracranial aneurysms, seen most often in the elderly female population. The common presentation includes headache (90%), diplopia and photophobia. Isolated CN palsies are relatively uncommon (30%), but when present usually involve the VI cranial nerve (82%). The isolated involvement of III CN as seen in our patient is rare. Positive physical exam findings of true ptosis and mydriasis lead to appropriate imaging and the diagnosis of CCA. CCA is usually associated with low morbidity and mortality. Complications are usually due to compression of neighboring neurovascular bundle or rarely rupture with formation of carotid-cavernous fistula. Treatment options include conservative management or surgical treatment. Recent advances in the endovascular intervention shows promises in the long term outcome of CCAs. Conclusion: Careful physical examination can help differentiate benign senile ptosis from underlying pathologic conditions.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Interpretation of Indeterminate HIV Serologic Test

Michelle Haggar, MD; Beth Carter, MD; Eric Granowitz, MD

Case Presentation: A 27-year-old male with past medical history of intravenous drug use, hepatitis C and left hip osteomyelitis (previously treated with IV vancomycin) presented with fever (>101), malaise, generalized headache, photophobia and lower back pain for three days prior to admission. Laboratory findings showed leukocytopenia 1.5 k/mm^3 , neutropenia 0.6 k/mm^3 and thrombocytopenia 66 k/mm^3 . Initially there was high concern for serious infection such as epidural abscess, recurrence of MRSA osteomyelitis or endocarditis. Empirical treatment with IV vancomycin was started. However after pelvis and thigh CT scans came back normal, blood cultures were negative and the patient remained afebrile, it was determined that bacterial infection was highly unlikely and antibiotics were discontinued after 6 days. During hospitalization, the patient developed myalgia and painful pharyngitis with white patches on his tonsils and soft palate without erythematous or edematous tonsils. Mononucleosis was suspected however serological testing for Epstein Barr virus showed past infection. Pharyngitis resolved with nystatin, and was therefore most likely oral candidiasis. Enzyme linked immunosorbent assay (ELISA) was repeatedly reactive, however confirmatory testing with Western blot was indeterminate with a single band (p24). Discussion: Indeterminate HIV tests usually result from a positive ELISA and a single band on Western blot (usually p24). The frequency of indeterminate results among blood donors is 1 in 5000. The most important step in evaluating an indeterminate HIV serologic test is assessing the patient's risk factors. Low risk patients should be reassured that HIV infection is extremely unlikely. HIV viral load testing could be done to provide assurance that the patient is not in the process of seroconversion and follow up serologic testing can be repeated at three months to provide absolute assurance. High risk patients with indeterminate tests are most likely in the process of seroconversion. Here the viral load test is particularly important, as it will detect those with the acute HIV infection. Standard serology should be repeated in three months, however these patients usually have a positive Western blot within one month.

Poster Presentation

2008 American College of Physicians Regional Meeting,
November 1, 2008

The Costs of Delayed Diagnosis: Pain, Isolation, Functional Decline

Theodore Hartenstein, MD; Maura Brennan, MD

Abstract Body: Over 99 million Americans live with a chronic illness, osteoarthritis (OA) being one of the most common; it can be debilitating. The complexity of the health care system exacerbates the problem. The authors report a case in which poor coordination of care resulted in delayed hip replacement surgery, imposing an enormous burden of suffering on a previously high functioning elder. **Case:** Mr. B is a 70-year-old man who was a high school principal when he developed right hip and buttock pain. Intensification of pain forced him to retire, eventually requiring a walker. He had no PCP, but initially was seen by an orthopedist. Imaging indicated a spinal cord problem and referral to a spine specialist ensued. The spine surgeon, however, was convinced that the problem was hip OA; the patient was referred to a hip specialist. The third physician agreed the patient had hip OA and recommended evaluation at a hip center. He could not make a referral as the patient lacked a PCP. Mr. B had trouble finding a PCP, not understanding the insurance referral system, and continued to decline functionally. After a year of pain he presented to a geriatrician. Exam revealed an antalgic gait, partial flexion of the hip and decreased range of motion and quadriceps strength. Reflexes were intact. Advanced right hip OA was suspected; records from the other providers were requested, arriving only after a house officer personally faxed releases and spoke to all the involved physicians. A fourth orthopedist was consulted (as the third had retired) and an uneventful total joint replacement followed. Mr. B is doing well, now home with improved function, though he sustains a flexion contracture. **Discussion:** This case highlights challenges inherent in our healthcare system, particularly for those with chronic illnesses. Mr. B lived for a year without relief as he had no advocate to coordinate and synthesize the opinions of the different specialists. In addition, the mainstays of OA treatment are education and pharmacologic management, with surgery being the last resort. Earlier diagnosis may have resulted in decreased pain and continued ability to work. **Conclusion:** Geriatricians and primary care doctors have critical roles in providing continuity and comprehensive coordination of care for patients with chronic illnesses. As our population ages, additional research into innovative models of care to improve communication and coordination across sites and specialties will be imperative.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

A Metabolic Hurricane in a Patient with Non-specific Mid-epigastric Pain

Jaime Hernandez-Montfort, MD; Melody Brewer, MD;

Mihaela Stefan, MD

Introduction: An acute physiologic stress like myocardial infarction has been associated with a 2-fold increase in triglyceride levels and as trigger for developing diabetic ketoacidosis.

Case Presentation: 45 year old overweight male recently diagnosed at an annual physical with dyslipidemia, hypertension and glucose intolerance was transferred from another hospital to our cardiac intensive unit for evaluation of a probable ST-segment elevation myocardial infarction with ACS-protocol management, after referring a 3-day history of intermittent and progressive epigastric discomfort. He was afebrile, normotensive in 110/70 mmHg, with a heart rate of 80 bpm, saturating 100% on 2 L of oxygen. His BMI was 28.5. He was not in acute distress and physical examination findings were only relevant for epigastric tenderness to deep palpation. His initial EKG showed anteroseptal ST-elevation and cardiac biomarkers were elevated. Laboratory findings showed a normal lipase level, with elevated triglycerides to 3,632 mg/dL. Our IV nurse referred to the blood as thick consistency of "milk shake". CT of abdomen showed mild hepatomegaly and diffuse steatosis. Patient was, made NPO and treated with intravenous hydration and narcotic analgesia and further cardiac work-up was narrowed to clinical and electrocardiographic changes. 24 hrs since admission, morning hyperglycemia 237 mg/dL, increased anion gap and elevated urine and serum ketones were noted. An arterial blood gas was consistent with metabolic acidosis. He was diagnosed with DKA and intravenous insulin was started. He remained with abdominal discomfort as the only symptom.

Echocardiogram showed an ejection fraction of 30% accompanied by akinesis of the anteroseptal wall. Afterwards, patient underwent successful primary coronary intervention in a total occluded proximal left anterior descendant artery with deployment of a drug-eluting stent. **Diagnosis:** Chylomicronemia syndrome and DKA secondary to AMI.

Discussion: The chylomicronemia syndrome is defined when chylomicronemia (plasma triglycerides > 1000 mg/dL) is accompanied by eruptive xanthoma, lipemia retinalis or abdominal findings: acute pancreatitis, abdominal pain and/or hepatosplenomegaly. The incidence of chylomicronemia has been reported to be less than 0.02%. Triglycerides above 500 mg/dL in the setting of abdominal pain, warrant emergency hospitalization because of the concern of acute pancreatitis. Treatment consists of NPO, intravenous hydration and insulin therapy. MI is the leading coexisting cause of death in ketoacidosis and its presentation may be "silent", leading to diagnostic uncertainty and delayed treatment like in our patient. This case shows the clinical continuum of metabolic syndrome with two severe complications arising from its most deadly outcome, coronary artery disease.

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Poster Presentation

Medical Society 4th Annual Poster Symposium, Waltham, MA, April 2009

Exogenous Lipoid Pneumonia: A Risk of Chronic Oil-Based Laxative Use in the Elderly

Jaime Hernandez-Montfort, MD; Jose Martagon-Villamil, MD;
Ashish Arora, MD; Hehn Boyd, MD

Case Presentation. 72-year-old ex-smoker male referred to the medicine outpatient clinic for evaluation of abnormal chest radiographic findings, initially noted 3 months prior while being hospitalized due to an episode of viral gastroenteritis. He was retired, reported living most of his life in New England, and denied substantial chemical exposures. The patient complained of chronic intermittent cough associated with occasional chest discomfort. He had no fever, expectorating sputum or dyspnea. Appetite was adequate and no weight loss was noted. Past medical history was relevant for dyslipidemia, coronary artery disease, gastroesophageal reflux disease and diverticulosis. His medications included clopidogrel, aspirin, metoprolol, atorvastatin and esomeprazole. Chest auscultation was clear bilaterally from base to apex with good air movement throughout all lung fields. Complete blood count and chemistries were normal. Chest radiograph revealed persistent right middle lobe infiltrate. Computed tomography of chest revealed extensive right middle lobe infiltrate of the lateral segmental bronchus and bilateral pulmonary nodules. Routine blood test were normal. Patient was consulted by the pulmonary service and the diagnosis of exogenous lipid pneumonia was confirmed by bronchoalveolar lavage showing large extracellular vacuoles with a foreign-body giant cell reaction consistent with lipid from an exogenous source. Differential of the bronchoalveolar lavage showed 65% neutrophils, 17% vacuolated macrophages, 10% lymphocytes, 5% monocytes and 2% eosinophils. Stains and cultures for infectious agents were negative. Cytology reported no malignant cells. On further questioning, patient confirmed a chronic use of mineral oil for constipation and was advised to stop it. Discussion. Mineral oil aspiration from non-prescription, oil-based laxatives is the most common causative agent of exogenous lipoid pneumonia in the elderly. Clinical symptoms are usually non-specific, although acute febrile illness and hemoptysis have been reported. Radiographic findings mimic multiple pulmonary diseases, which usually triggers pursuing further work-up. The non-irritative nature of mineral oil on the pharyngeal mucosa and risk factors for aspiration such as gastroesophageal reflux disease are likely explanations for its presentation on the extremes of age. Diagnosis is usually made after lung biopsy and a retrospective use of lipid-based products. Histopathology findings show lipid-laden vacuoles surrounding by inflammatory infiltrates, progressing into giant cells and fibrosis around the lipid masses. Treatment is mainly focused on the recognition and elimination of the offending agent, and corticosteroid, lung lavage are still considered anecdotal. The present case illustrates the importance of targeted history for oil-based chronic laxative use in elderly population with risk factors for aspiration like gastroesophageal reflux disease, swallow dysfunction and mental illness.

Converting oil-based laxatives to prescription agents may be an alternative for primary prevention, as experience on the topic continues to grow.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Neurogenic Stress Cardiomyopathy in a Patient with Adult Chiari Type I Malformation

**Jaime Hernandez-Montfort, MD; Aashish Samat, MD;
Ashish Arora, MD; Patrick Mailloux, DO**

Learning Objectives - Understand Chiari I malformation and its complications. Explain the proposed mechanisms of neurogenic stress cardiomyopathy as a cause of ST-segment elevation Case Presentation. A 46 year old hispanic female presented to our emergency department complaining of a 1 day history of nausea, vomiting, dizziness, and sensations of being “stuck by needles all over my body”. Her past medical history was significant for congenital Chiari I and syringomyelia treated with posterior fossa decompression. No known cardiovascular risk factors existed. Her home medications included acetazolamide, gabapentin, amitriptyline and ferrous sulfate. While awaiting examination in the emergency department, the patient suddenly collapsed and suffered respiratory arrest. The patient was intubated and a 12-lead ECG showed ST elevation in the inferior and lateral leads, with ST depression in the anterior leads. She developed shock and a high dose dopamine infusion was started to maintain adequate perfusion. Her neurologic examination at this time revealed an unresponsive state with dilated pupils. Pulmonary evaluation revealed frothy sputum coming from the endotracheal tube and rales bilaterally. The chest x-ray demonstrated prominent lung markings suggestive of pulmonary edema. The patient was tachycardic with a heart rate of 120 beats/minute and a normal S1 and S2. Initial cardiac biomarkers were negative for myocardial injury (troponin T <0.01). The patient underwent urgent coronary angiography showing an absence of coronary obstruction. At this time a non-contrast head CT scan reported findings consistent with cerebral edema and transtentorial herniation. The patient was transferred to the ICU under mechanical ventilation and vasopressor support, remaining comatose with absent brain stem reflexes. The ICU physicians, in conjunction with neurology, performed the brain death protocol, declaring the patient 10 hours after presentation. As the patient underwent evaluation for organ donation, an ECG revealed resolution of the ST segment abnormalities. Transtentorial herniation was confirmed by autopsy findings. Case Discussion. Chiari type I malformations (Chiari I) are congenital deformities where caudal migration of the cerebellar tonsils through the foramen magnum compresses the cerebellum and cervicomedullary junction formed by the lower brainstem and upper cervical spinal cord. Respiratory failure in adults with Chiari I has been reported in multiple, isolated case reports. Suggested mechanisms include compression of the medulla (a likely explanation in our patient with impending herniation), insensitivity of peripheral chemoreceptors secondary to lower cranial nerve involvement and compromise to the vascular supply of the brain stem.

Ischemic changes in the ECG are known to occur in acute cerebrovascular scenarios like subarachnoid hemorrhage, subdural hematoma and ischemic stroke. This entity, known as neurogenic stress cardiomyopathy, has several proposed mechanisms that include ischemic myocardial stunning due to epicardial coronary spasm, ischemic myocardial stunning due to acute coronary microvascular dysfunction, and catecholamine-mediated direct myocardial injury. This experience teaches us the importance of clinical correlation on the mechanisms leading to ST-segment elevation, rather than the automatic assumption of acute atherosclerotic plaque rupture

Poster Presentation

Oral Society of General and Internal Medicine Regional Meeting, Boston, MA, March 2009

Nutritional and Metabolic Abnormalities in a Patient with Chronic Pain

**Jaime Hernandez-Montfort, MD; Ashita Talsania, MD;
Ilse Levin, DO; Stephen Ryzewicz, MD**

Case Presentation A 57 year old postmenopausal female presented to our emergency department with a 2-week history of pelvic abdominal pain. The patient had a past medical history of narcotic dependence, depression, vertebral fractures, chronic back pain, hypertension and urolithiasis. On admission, she was febrile at 100.8 °F, tachycardic at 101 beats per minute, hypertensive to 142/108 mmHg. Initial laboratory studies were only significant for alkaline phosphatase elevation of 163U/L. The patient's home medications were fentanyl, oxycodone ER, trazodone and diltiazem. General appearance revealed a woman who appeared older than her stated age, pale, restless and anxious, continually requesting increases in her pain medication. Physical examination was relevant only for markedly decreased range of motion of lumbar spine flexion and extension due to pain, as well as surgical scars from two previous spinal instrumentation procedures. A review of the patient's hospital electronic medical records was significant for multiple admissions to the emergency department, constant changes in primary care providers, alternate elevations in serum calcium and a 4-year consistent pattern of elevated alkaline phosphatase. Laboratory studies revealed serum calcium of 11.7 mg/dL, ionized calcium of 1.49 ml/dL, phosphate of 2.4 mg/dL and parathyroid hormone of 123 mg/dL. Calcium levels normalized with intense IV hydration, and blood pressure was controlled with a single oral antihypertensive. A work-up for vitamin D deficiency revealed a 25-OH Vitamin D level of 6.1 ng/mL. A Tc-Sest parathyroid scan revealed a focus of increased activity related to the lower pole left lobe of the thyroid, and endocrinology referral resulted in a surgical consult. Discussion A direct correlation between musculoskeletal pain and vitamin D deficiency has been shown in individuals with inadequate sun exposure, dietary intake or problems with malabsorption. Vitamin D deficiency may present as musculoskeletal pain and should be addressed in its differential diagnosis, especially in populations at risk. In the other hand, primary hyperparathyroidism (PHPT) is a common endocrine disorder seen in postmenopausal women. Although unusual, patients with PHPT may still present with clinical symptoms of hypercalcemia, including the classic presentation of painful bones, kidney stones, abdominal groans, psychic moans and fatigue overtones. Hypertension has been noted in almost one third of the patients with HPT. There is a strong relationship between PHPT and vitamin D deficiency. It has been showed that vitamin D-deficient patients with PHPT have higher levels of PTH and markers of bone turnover, larger parathyroid adenomas and more frequent fractures than vitamin D-repleted patients. Co-existent vitamin D deficiency may cause serum calcium to fall into the normal range. This case shows us the importance of vitamin D deficiency and HPTP in the differential diagnosis of chronic pain, particularly in postmenopausal women.

Poster Presentation

Oral Society of General and Internal Medicine Regional Meeting, Boston, MA, March 2009

Purpura Fulminans and the Paradox of an Unfortunate Outcome

Jaime Hernandez-Montfort, MD; Manmeet Singh, MD;

Sarah Haessler, MD

Introduction: Purpura fulminans secondary to sepsis is a life threatening condition characterized by hemorrhagic infarction of the skin caused by disseminated intravascular coagulation and dermal vascular thrombosis. Case Presentation: 33 year old female presented to our emergency department with a 4 day history of general malaise and fever accompanied by recent onset of vomiting, diarrhea and painful skin discoloration not relieved by acetaminophen. Her medical history was relevant for morbid obesity with BMI of 44 and splenectomy secondary to ITP performed at age 18. Her immunizations, including 23-valent polysaccharide (PS) vaccine, were updated. Patient was transferred to the ICU after being found tachycardic, febrile and hypotensive with a MAP of 70, in acute distress due to generalized pain over a blanching purpuric rash. Laboratory findings were relevant for platelets of 9 k/mm³, BUN 97, creatinine of 2.2, LDH 800 and direct hyperbilirubinemia (direct 2.7, indirect 0.5) with a peripheral blood smear revealing few schistocytes. IgG level was reported low at 535 mg/dL. CT scan of head and CXR did not contribute to confirm a source of infection. At the ICU patient was intubated, requiring intravenous fluids, vasopressors, IVIG and broad spectrum antibiotics which included vancomycin and high dose ceftriaxone. Several days after, blood cultures revealed *Streptococcus pneumoniae* and diffuse skin necrosis over anterior abdominal area, bilateral breasts and buttocks persisted upon discharge. The isolated pneumococcal serotype was 13 and an HIV test was negative. Diagnosis: Septic shock with disseminated intravascular coagulation, multi-organ failure and purpura fulminans secondary to *S. pneumoniae* bacteremia. Discussion: Purpura fulminans can be identified in three clinical conditions: First, neonatal purpura fulminans is associated with a hereditary deficiency of the natural anticoagulants Protein C and Protein S as well as Antithrombin III. Idiopathic purpura fulminans usually follows an initiating febrile illness that manifests with rapidly progressive purpura. The third and most common type of purpura fulminans is acute infectious purpura fulminans. Idiopathic purpura fulminans skin necrosis usually involves the skin of the thighs, the buttocks, and the lower trunk and less commonly the extremities. Pneumococcal purpura fulminans has been increasingly reported in the setting of asplenia. The PS vaccine contains 23 purified capsular polysaccharide antigens (serotype 13 non-vaccine strain!) accounting for 85–90% of pneumococcal diseases. This unusual case shows the importance of history in recognizing the clinical context of purpura fulminans beyond septic shock due to its imminent morbidity that will require further specialized wound care. References: 1. Bogaert D, Hermans PWM, Adrian PV, Rümke HC, de Groot R. Pneumococcal vaccines: an update on current strategies. *Vaccine* 2004; 22:2209-20. 2. Betrosian AP, Berlet T, Agarwal B. Purpura fulminans in sepsis. *Am J Med Sci* 2006; 332(6):339–345. 3. Minhas KM, Bashir S, Sarwari AR, Parker J. Pneumococcal purpura fulminans successfully treated with activated protein C. *SMJ* 2008; 101: 1046-48.

Poster Presentation

Massachusetts Medical Society 4th Annual Poster Symposium, Waltham, MA, April 2009

12x/month Hemoglobin Monitoring with a Computer Algorithm Reduces Hemoglobin Variability (Hv)

Warren R. Ho, MD; Michael J. Germain, MD; Jane Garb, MS;
Cherry Bartlett; Eric Will, MD

Introduction: Hv may be associated with increased death. This prospective study, demonstrates that Hv can be more accurately assessed with Hgb measurement each dialysis treatment (12x/month). Frequent Hgb monitoring allows earlier detection of trends in Hgb slopes. More frequent Hgb values provide early evidence of response to EPO. Hypothesis: It is anticipated that more frequent Hgb data (12x/month) using a computer algorithm (AMIE) will reduce Hv compared with 1x/month. Methods: In 44 unselected patients Critline (Hema Metrics) measured Hgb each dialysis treatment over the course of 15 months.. Hv was measured by calculating SD of the residuals for Critline Hgb. The machines were calibrated against lab Hgb with a +/- 0.5 Hgb value. Each patient served as their own control. Phase 1: Hgb was recorded at each dialysis treatment but no change was made in volume management (staff blinded to Critline). Phase 2: staff followed a strict protocol of fluid management based on results of the blood volume monitor. Phase 3:AMIE EPO management. Results: HV, % in target significantly improved with 12 X month Hgb results using AMIE .

Results of repeated measures comparison of means (Wald s Test) by phase. $p < 0.001$

Conclusion: Use of a computer algorithm to analyze 12x/month Hgb values provides early evidence of HGB trends and allow more appropriate anemia management thereby decreasing HV.

Poster Presentation

American Society Nephrology Renal Week 2008, Philadelphia, PA,
November 4-9, 2008

DRESS Syndrome Induced by Vancomycin

Chunmei Huang, MD; Jose Martagon-Villamil, MD

Background: As the use of vancomycin increases, some uncommon side effects are being seen and reported. DRESS (drug rash with eosinophilia and systemic symptoms) syndrome is characterized by skin rash, eosinophilia, fever and internal organ involvement. We report a case of vancomycin-induced DRESS syndrome.

Case report: A 67-year-old diabetic male with MRSA osteomyelitis in the right foot was treated with IV vancomycin via PICC line plus oral rifampin after a toe amputation. Two weeks later, he was found to have pancytopenia with WBC 3.8 (62% neutrophils, 17% lymphocytes and 6% eosinophils), Hgb 11.4, Hct 34.3 and platelets 101 (baseline 247). Rifampin was stopped because it was thought to be the cause of the pancytopenia. Vancomycin was continued. Three weeks later, he developed a disseminated erythematous, maculopapular rash diffusely distributed over the trunk, and the upper and lower extremities. He had spikes of fever with max temperature of 103°F. He developed hypotension with BP of 90/30 and was admitted to hospital. His WBC count was 3.1 with 70% neutrophils, 6% lymphocytes and 11% eosinophils, Hgb 10.1, Hct 30 and platelet count of 80. He also developed acute renal failure with sCreat 1.7 (baseline 1.0). Initially he was suspected to have septic shock or toxic shock syndrome and his PICC line was removed. Vancomycin was continued. However, his rash, fever and hypotension did not improve. Drug allergy reaction was then suspected and skin biopsy performed. While waiting for blood culture and pathology results, vancomycin was stopped and changed to daptomycin to cover for MRSA osteomyelitis. IV steroids were given, followed by a taper dose of oral prednisone. Rash, fever and hypotension significantly improved in the next days after stopping vancomycin and beginning the steroid treatment. The pancytopenia gradually resolved. Blood cultures and PICC tip culture were negative. The skin biopsy showed a superficial perivascular inflammatory infiltrate of lymphocytes and eosinophils, consistent with a drug eruption of the early interphase type.

Discussion: Delayed allergy reaction induced by vancomycin can manifest as DRESS syndrome. It may be difficult to differentiate DRESS from toxic shock syndrome or septic shock with symptoms of fever, rash and hypotension. The presence of eosinophilia and a rapid response to steroids may support the diagnosis of hypersensitivity. Skin biopsy may help confirm the diagnosis. Recognition of these uncommon side effects and providing appropriate treatment may prevent a potentially fatal outcome.

Poster Presentation

Poster Presentation 2008 American College of Physicians Regional Meeting, November 1, 2008

Why Do Physicians Overprescribe Stress Ulcer Prophylaxis?

Syed Hussain, MD; Mihaela Stefan, MD;
Michael Rothberg, MD; Paul Visintainer, PhD

BACKGROUND: Stress ulcer prophylaxis (SUP) is only indicated in a few situations, most of which occur in the intensive care (ICU) setting. Although multiple studies have shown that inappropriate use of SUP is common for non-ICU hospitalized patients, little is known about why physicians prescribe SUP without supporting evidence. This study seeks to understand which factors influence physician prescribing behavior regarding stress ulcer prophylaxis.

METHODS: We designed a cross sectional web-based survey for internal medicine residents and hospitalists at Baystate Medical Center, a University-affiliated tertiary care hospital. The survey consisted of 20 questions which assessed physicians' knowledge and behaviour surrounding prescribing of SUP for non-ICU patients. The survey was emailed to 150 residents and hospitalists. Bivariable analyses were performed and variables with a p-value of <0.05 were included in a logistic regression model to determine characteristics most associated with inappropriate prescribing.

RESULTS: Ninety-nine physicians (32 hospitalists and 67 residents) completed the survey (response rate 66%). Based on their answer to the question "When you round on non-ICU hospitalized patients, how often do you prescribe SUP?" respondents' prescribing was categorized as either high ($>25\%$ of the time) or low ($\leq 25\%$ of the time). Sixty-nine percent of physicians were high prescribers, and 59% thought that their prescribing was not evidence-based. Although 40 of 98 physicians stated they prescribe according to a guideline, all but 2 referenced guidelines that do not exist (e.g. ACP). Most (65%) thought that they prescribed as often as their peers and that their peers prescribed too much. The majority (66%) recommended SUP for a hypothetical patient on glucocorticoid therapy. In the bivariable analysis the following factors were associated with high prescribers: poor knowledge about SUP indications ($p=0.007$), fear of potential gastrointestinal bleeding without SUP ($p=0.04$) and fear of the legal repercussions of not prescribing SUP ($p=0.04$). There was no association with age, sex, level of training, or place of training (US vs. international graduate). Concern about side effects was inversely related to prescribing ($p=0.002$), and 51% of the respondents did not know any of the side effects of acid suppressive therapy. The same 4 factors remained statistically significant in a multivariable analysis that also controlled for gender, level and place of training. High prescribing was more likely among physicians who feared gastrointestinal bleeding without SUP (OR 2.7, 95%CI: 1.01, 7.28) or feared legal repercussions (OR 3.02, 95%CI: 1.07, 8.56). High prescribing rates were less likely among physicians with good knowledge

about SUP (OR 0.39, 95% CI: 0.20, 0.74) and those expressing concern about side effects (OR 0.24, 95%CI: 0.09, 0.61).

CONCLUSION: As in prior studies, we found that physicians often prescribe stress-ulcer prophylaxis in the non-ICU setting. Fear of legal repercussions and ignorance of the side effects of acid suppressive therapy were strongly associated with inappropriate prescribing. Educating physicians about the adverse effects of acid suppression therapy and about existing national guidelines might reduce inappropriate prescribing.

Poster Presentation

Poster Society of General and Internal Medicine National Meeting,
Miami Beach, FL, May 2009

Is It Elder Abuse?

Jackcy Jacob, MD; Chaudhry Zulfiqar, MD; Raquel Belforti, DO;
Sandra Bellantonio, MD; Michael Rosenblum, MD; **Todd Capizzi, MD;**
Sarah Workman, MD; Elizabeth Case, MD

Introduction: Abused elderly patients are 3.1 times more likely to die within 3 years than unabused elders. Elder abuse is difficult to assess, in part because most elderly patients have many co-morbidities, both physical and mental, that can mask abuse. We report a case whose findings were suspicious for elder abuse but were related to a rare medical condition Case: We admitted an 86 y/o woman with Alzheimer's living with her grandson who is her sole caregiver and has a history of mental illness. Protective Services reported she was found soiled with feces and with multiple ecchymoses on the left thigh and shoulder, right arm and wrists, in the suprapubic region, and groin, raising the suspicion for sexual abuse. The bruises were initially small and enlarged rapidly. On HD #3, she became tachycardic and hemoglobin dropped from 8.3 to 4.9. She received 2 units of PRBCs and was transferred to the ICU; CT of the abdomen revealed multiple large hematomas. Coagulation workup shockingly revealed elevated APTT of 109.5 seconds with normal INR. Further evaluation revealed factor VIII to be decreased to 13.3%, with Factor VIII inhibitor to be increased to >50% Bethesda units. Thus, to our surprise, we discovered that what initially appeared to be elder abuse was in-fact a case of acquired hemophilia. Discussion: The incidence of elder abuse is 1.3% and the incidence of acquired Hemophilia A is 0.2-1.0 case/million persons/yr; 50% of cases of acquired Hemophilia A are idiopathic and occur before age 30 or after age 60. The incidences of both conditions are grossly underestimated. Elder abuse is underreported due to embarrassment, intimidation, and mental or physical inability to recognize and report abuse. Acquired Hemophilia A, caused by acquired auto-antibodies directed against clotting factor VII, may be underestimated in older adults due to difficulty in diagnosis since patients with low titers of inhibitor may remain asymptomatic and undiagnosed until they undergo a major surgery or trauma. Typical findings when present, include hemorrhages in the skin, muscles, and soft tissues, as seen in our patient. Although a rare condition, given its prevalence in the elderly population, clinicians need to be aware of Acquired Hemophilia A. Conclusion: Although a patient may have significant risk factors for elder abuse, as did our patient (dementia, living with an adult child who is the caregiver and has mental health problems), a thorough investigation for any possible medical explanation for signs and symptoms of suspected abuse is essential.

Poster Presentation

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Award

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Management of Infective Endocarditis: Clinical Experience With Outpatient Parenteral Antibiotic Therapy

Julius Larioza, MD; Lena Heung, MD;

Richard B. Brown, MD; Amy Girard, RN

Objective: To describe our experience in treating infective endocarditis (IE) with outpatient parenteral antibiotic therapy (OPAT), and to identify new groups of patients with IE who may qualify for OPAT.

Methods: Following institutional review board approval, patients discharged from Baystate Medical Center with IE documented by modified Duke criteria treated with OPAT were identified. Data obtained included organisms implicated, endothelial surface involvement, emergent surgical intervention, indications of clinical stability, percentage of total therapy rendered after hospitalization, and one year follow-up. Pairwise comparisons of clinical groups were conducted using the Wilcoxon rank-sum test. For these comparisons, medians are reported. Analyses were performed using Stata (version 10.1, College Station, TX).

Results: Forty-three patients met criteria. Thirty-five percent were infected with Staphylococci; 40% harbored streptococci or Enterococci. Native valves and left-sided valves each constituted approximately 75% of total. All patients received ≥ 4 weeks of therapy, with $\geq 66\%$ of total treatment rendered after hospital discharge. The table provides further pathogen-specific data. A median of 7 days of hemodynamic stability and negative blood cultures occurred prior to discharge. After one year, no patients died from IE. Twenty-three percent were hospitalized during OPAT from intravenous catheter, antibiotic, or other complications, none for direct complications of IE.

Conclusions: Outpatient parenteral antibiotic therapy for infective endocarditis can be safely utilized, and at least 66% of care can be given in this manner. Our investigation provides enhanced data for employing OPAT for IE caused by Staphylococci and left-sided cardiac infections, and also provides favorable outcome data one year after treatment.

Poster Presentation

19th European Congress of Clinical Microbiology and Infectious Diseases, May 2009

An Especially "Sweet" Elder

Gina Luciano, MD; Douglas Porter, MD;
Sandra Bellantonio, MD; Maura Brennan, MD

Introduction: Hydrothorax is a rare complication of peritoneal dialysis occurring in about 2% of patients.(1) The authors present a case occurring in a high-functioning elder. **Case:** A 67-year-old female was on peritoneal dialysis for renal disease due to Wegener's granulomatosis. She had dyspnea and cough which worsened with exertion and after dialysis. Laying on her right side alleviated her symptoms. She was in no distress with normal vital signs. Her chest was dull to percussion and breath sounds were reduced at the right base. A chest x-ray showed an effusion and thoracentesis relieved the dyspnea. Fluid analysis revealed a transudative effusion with glucose of 460 mg/dL. The patient's serum glucose the same morning was 103 mg/dL. A diagnosis of sweet hydrothorax was made. **Discussion:** Sweet hydrothorax is characterized by a transudative pleural effusion which is typically right sided.(1,2) It may result from increased peritoneal pressure, diaphragmatic defects or abnormal lymphatic drainage.(1,2) Chest x-rays will show an effusion, and peritoneal scintigraphy and CT peritoneography may also suggest sweet hydrothorax.(2) However, definitive diagnosis is via thoracentesis which reveals a transudative effusion. A very high glucose gradient can also be present; hence, the name 'sweet hydrothorax'. Therapy consists of cessation of continuous ambulatory peritoneal dialysis (CAPD) and thoracentesis to ease symptoms.(1,2) In many cases, CAPD can be successfully resumed; however, refractory cases may require pleurodesis.(1,2) Thoracotomy and video-assisted thoracic surgery for direct repair are also options.(1) **Conclusion:** Elderly patients with decreased cardiopulmonary reserves are less able to tolerate a hydrothorax. Older adults often choose CAPD since dangerous fluid shifts can occur in hemodialysis and transportation issues can be challenging. As the population ages and the prevalence of geriatric renal disease increases, physicians must anticipate and treat dialysis-associated complications in elders. Clinical, educational and research collaboration between geriatricians and nephrologists is essential.

Poster Presentation

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

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

Case Presentation: An 81-year-old obese female (BMI = 42.6) with type 2 DM, heart failure, and DJD status-post right knee replacement was admitted to the hospital for acute renal failure. She was diagnosed with rapidly progressive glomerulonephritis requiring treatment with high-dose (60mg daily) prednisone and cyclophosphamide. She had limited mobility (Braden scale 11/23) and poor nutritional status (albumin 2.2). On hospital day (HD) 19, three painful approximately 1cm x1cm “scalloped bordered” ulcers developed along the right inguinal and bilateral buttock areas. Wound care service was consulted for evaluation and treatment of possible pressure ulcers. Herpes simplex virus (HSV) wound culture was obtained because the wounds were not located along bony prominences. History of previous HSV infection was unknown. Proper bed positioning, off-loading, nutritional support and local wound care were initiated. On HD 22, wound culture was positive for HSV. Patient was treated with acyclovir 200mg PO every 12 hours with decrease in wound size upon hospital discharge on HD 26. Discussion Appropriate diagnosis of wounds in hospitalized patients is important. The case highlights the value of recognizing cutaneous HSV infections in patients with risk factors for pressure ulcers. Infection may present with ulcerative skin lesions similar to pressure ulcers without typical vesicular appearance of herpes infections. The vesicles are frequently destroyed by pressure, shearing forces, friction and moisture which are often present in perineal and buttock areas. Ulcers are typically painful and are not particularly located along bony prominences. This is believed to be a recurrence of infection in immunocompromised states rather than a primary infection. The key to diagnosis is a high index of suspicion. Risk factors include HIV infection and receipt of immunosuppressive agents particularly in transplant patients and those with autoimmune and rheumatological disorders. A positive HSV wound culture will confirm the diagnosis. Recognition of this condition has important implication in light of the Medicare limitations on payment for hospital-acquired conditions

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

Nodular Rash Many Months After Successful Treatment of Leprosy – A Delayed Presentation of Erythema Nodosum Leprosum

Srikanth Penumetsa, MD; Gregory Waryasz, MD; Ilse Levin, DO; Ranjit Dhelaria, MD; Alejandra Marin-Ruiz, MD; Orlando Torres, MD

Learning Objectives: 1. Erythema nodosum leprosum (ENL) is a rare immune complex reaction that can occur many years after successful treatment of leprosy. 2. Physicians should be careful to distinguish between infection and a late immune reaction as treatment regimens are different. Case Presentation: A 25-year-old man presented with a one week history of rash on his upper and lower extremities bilaterally, along with painful swelling of both hands. He reported a tingling sensation in the lesions and constant stiffness in his hands. Three years prior to the current presentation, he was diagnosed with Leprosy and was successfully treated with a three drug regimen that included Dapsone and Rifampicin for 1.5 years. On examination he had intermittent low grade pyrexia. There was an erythematous, nodular, painless rash (Fig 1), predominantly on his upper limbs, with edema in some of his previous "healed lesions". There was diffuse edema in his hands, with decreased range of motion and grip strength due to pain in his small joints. The patient was started on anti-mycobacterial therapy (dapsone & rifampicin) given his previous history. A skin lesion biopsy showed nodular granulomatous infiltrate with presence of a granular pink hue in some macrophages indicating mycobacterial debris (Fig 2). Routine AFB stain did not identify any bacilli and multiple FITE stains identified only one organism. ESR was elevated at 50mm/hr and a rheumatological workup was negative. The above findings were consistent with a diagnosis of Erythema nodosum leprosum with small joint inflammatory arthritis. He was started on prednisolone and mycophenolate mofetil (CellCept(R)) was later added to the regimen. Anti-mycobacterial was continued in view of the AFB stain findings on biopsy. The patient's arthritis improved after addition of CellCept and he was discharged, with follow-up in infectious diseases clinic. Discussion: Leprosy is an established cause of erythema nodosum, but is rare in the United States. Erythema nodosum leprosum, also known as "type 2 reaction", is usually associated with borderline-lepromatous and lepromatous classes of leprosy. It usually occurs during treatment of leprosy, but is also reported to have a delayed presentation, many years after completion of anti-mycobacterial therapy. ENL is considered to be an immune-complex reaction to the mycobacterial debris and elevated levels of TNF-alpha have been implicated in the pathogenesis. Mycobacteria can persist in the skin of patients up to a decade from the onset of disease, hence the possibility of a late presentation with ENL. Patients usually present with nodular skin lesions but can have other extra-cutaneous manifestations such as fever, arthritis, orchitis, iridocyclitis and neuritis. Our patient's skin lesions had a blister-like appearance, which

although is contrary to the presentation of typical erythema nodosum, is a usual feature of ENL. The standard treatment for ENL includes oral steroids with addition of immunosuppressants for severe and recurrent cases. Thalidomide had been shown to be effective but its use is limited due to its teratogenic effects. Our patient's symptoms improved considerably with CellCept, which has not been reported before.

Poster Presentation

Poster Society of General and Internal Medicine Regional Meeting,
Boston, MA, March 2009

Tracheoesophageal Fistula Masquerading as Intestinal Obstruction

**Srikanth Penumetsa, MD; Amit Bhargava, MD;
Mark Jankowske, MD; Boyd Hehn, MD**

Introduction: Acquired non-malignant tracheoesophageal fistula (TEF) is a rare complication of long term tracheostomy and occurs in up to 0.5% of patients. The management of this condition in ventilator dependant patients is often challenging, frequently resulting in poor patient outcome. We present a 63-year-old gentleman who was admitted with acute respiratory distress and intermittent abdominal distention. Case Report: A 63-year-old ventilator dependant quadriplegic Caucasian male, with a history of laryngectomy for throat cancer, was referred from a nursing home with acute respiratory distress. For one week prior to presentation, he had recurrent episodes of abdominal distention. Investigations for possible bowel obstruction included a CT Abdomen which only showed gaseous distention of bowel loops with no mechanical obstruction. On admission, he was hypoxic and had bilateral crepitations and rhonchi on pulmonary auscultation. Abdominal exam revealed a soft, non-distended abdomen with good bowel sounds and a PEG tube insitu. CXR revealed parenchymal infiltrates suggestive of aspiration pneumonia. He was treated for ventilator associated pneumonia with vancomycin and Zosyn. During the night of admission, he became acutely hypoxic and his airway pressures peaked to 55 CmH₂O. On examination, his abdomen was noted to be much distended and felt tense to palpation. While he was being resuscitated, the patient passed a large amount of flatus per-anum, resulting in prompt improvement in oxygen saturations and normalization of peak airway pressures. On abdominal auscultation, a hissing noise was heard with every ventilator delivered breath, raising a suspicion of a possible airway leak. Bronchoscopy confirmed a large tracheo-esophageal fistula with necrosis surrounding the tracheostomy site. It was postulated that, in retrospect, the patient symptoms of abdominal distention prior to admission were in fact due to TEF leading to significant gastric distention. Discussion: TEF is a rare and serious complication in mechanically ventilated tracheostomised patients. High cuff pressures have been implicated as the most common etiology. Development of TEF may be associated with decreased alveolar ventilation and CO₂ retention. Our patient's presentation with episodes of acute respiratory distress with concomitant abdominal distention was initially puzzling. However the subtle auscultatory finding on his abdomen prompted a search for a TEF, which in his case, was unfortunately irreparable due to severe necrosis and a complicated airway from previous laryngectomy. This case demonstrates the importance of recognition and management of risk factors in order to prevent this potentially devastating complication.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

Demonstration of Type-2 Iodothyronine Deiodinase (D2) Activity in Mouse Type I Skeletal Muscle

Waile Ramadan, MD; J. Enrique Silva, MD; Steven Huang, MD;

Although D2 is allegedly not expressed in rodent muscle, we demonstrated D2-mRNA in mice muscle using RT-PCR. Moreover, mRNA levels are 10-fold greater in Type-1 (aerobic) fiber muscle, and 2-3-fold higher in mice lacking the T3-receptor-alpha (Thra), which have increased muscle metabolism, suggesting an important physiological role for D2. However, attempts to demonstrate D2 activity failed. Reasoning that muscle homogenates may contain inhibitors, we isolated microsomes, a subcellular fraction enriched in sarcoplasmic reticulum, the intracellular site of D2. Initially, we used 5' [125I]-rT3 (reverse-T3) as substrate, measuring the release of [125I]-. Results showed 2-3 fold increase in activity following adrenergic stimulation (norepinephrine, cold exposure) which was antagonized by prazosin or propranolol. Activity increased 7-8-fold following cholic acid administration. Moreover, reflecting mRNA level difference, microsomes of Thra-0/0 mice had 2-3 times more activity than those of controls. A criticism to these results is that we measured [125I]- as product while others reported non-specific deiodination in whole homogenates. Thus to prove that the [125I]- release in our assay corresponded to D2 activity and formation of T3 from T4, we used [125I]-T4 as substrate and measured all products by HPLC. We confirmed the formation of T3 and the equimolar release of [I]-. Basal activities at T4 concentrations close to Km are in the range of 200 fmol/h/mg protein, whereas using T4 at maximal concentrations, activities reach 700, and surpassed 1000 in the presence of 100 nM cold T3, suggesting significant degradation of T4 and T3 by inner ring deiodination. Thus mouse muscle has significant D2 activity that catalyzes the activation of T4 into the 10-times stronger T3 when muscle thermogenesis is needed, and explains the higher metabolic rate of Thra-0/0

Poster Presentation

2009 Annual Meeting of the American Thyroid Association

Cascading Drug Errors - Hyponatremia Followed by Hypernatremia: Mirtazapine-Induced SIADH and Volume Depletion from Demeclocycline

Alejandra Marin Ruiz, MD; Fei Gu, MD; Maura Brennan, MD

Introduction: Adverse drug events are common and impose a heavy burden on elders and the health care system. Geriatricians often must assess for drug-related functional decline and delirium. The authors report a case in which mirtazapine triggered SIADH and delirium. Later, the treatment of hyponatremia resulted in dehydration and hypernatremia.

Case: A 75 y/o depressed man with weight loss was begun on mirtazapine. He developed falls, functional decline and confusion. In the ED he was unkept and delirious but euvoletic and neurologically non-focal. Medications included: buspirone, mirtazapine, benztropine and oxybutynin. He had a mild anemia and a sodium of 118. A head CT, complete metabolic panel, TSH and cortisol were normal. Geriatrics was consulted for delirium and self-neglect. Urine and serum studies documented SIADH. The geriatrician and a clinical pharmacist agreed that mirtazapine was the cause and calculated a clearance of 280 hrs. Mirtazapine and the anticholinergic drugs were stopped. Hyponatremia eventually resolved with demeclocycline. Prior to discharge, the team contacted the subacute providers to inform them that the SIADH should resolve 11 days after drug discontinuation. Ongoing fluid restriction and demeclocycline beyond that time might result in dehydration. Unfortunately, despite this communication, the demeclocycline was not tapered and labs were inconsistently monitored.

Two weeks later the patient was readmitted with hypotension, volume depletion and hypernatremia. After volume resuscitation he stabilized and returned home.

Discussion: Geriatric depression has a prevalence of almost 10 % in some studies. SSRIs and NSRIs are first-line and may be safer than heterocyclics but still have a risk of ADEs. Mirtazapine is useful for patients with weight loss and anxiety. It can be sedating but is fairly well tolerated. SSRIs frequently cause SIADH but many clinicians are unaware that mirtazapine also triggers SIADH.

Conclusion: Depression in elders must be treated but close monitoring is critical and pharmacists can assist frontline clinicians. Geriatricians and primary care providers must be aware that mirtazapine can cause SIADH resulting in confusion and functional decline. This case highlights the near disasters that flow from current discontinuities in our health care system. There is a pressing need for strategies to improve communication across transitions in care.

Poster Session

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Survival and Differentiation of Human Bone Marrow Derived Mesenchymal Stem Cells (hMSCs)

Sen Sabyasachi, MD, PhD

Pluripotent differentiation property of hMSCs have already been demonstrated. It's well known that human cells don't survive in serum free medium (SFM) condition. Our question was whether vascular factors derived from medium conditioned by human endothelial progenitor cells (hEPCs) could improve hMSCs survival in stress conditions and modify differentiation. hEPCs were obtained from day 5 cultures of circulating mononuclear cells by standard protocol and hEPCs were subsequently cultured in SFM to obtain conditioned medium (hEPC-CM). hEPC-CM increased the number of viable cells after 7 days of culture in SFM and hyperglycemia (20mM solution Glucose). hEPC-CM was more effective in increasing survival of hMSCs than medium conditioned by a mature human endothelial cell line derived from umbilical vein. Such survival effect can be due to presence of several potent growth factors and anti-oxidant enzymes in CM as confirmed by mass-spectroscopy. Culture of hBM-MSCs in SFM for 7 days led to upregulation of the mRNAs of mitochondrial form of SuperOxideDismutase (64 fold), PGC1A (PPAR α -cofactor1) (64 fold), markers of white adipose tissue (WAT), Leptin (LEP) and Perilipin (PLIN). When BM-MSC was cultured in SFM+hEPC-CM, there was an additional increase in mRNA expression of SOD2 (4-fold), UnCouplingProtein-1 (5-fold) and expression of PLIN, LEP were reduced. Virus mediated over-expression of PGC1A gene caused upregulation of SOD2, UCP1, LEP, PLIN expression also, but on addition of hEPC-CM there was reduction in expression of LEP, PLIN.

It appears CM improves cell survival in SFM and hyperglycemic states. MSCs appear to undergo adipogenic transformation in these conditions. Both, exposure to EPC derived factors and intracellular upregulation of PGC1A preferentially increases brown fat tissue (BAT) marker UCP1, but only the former reduces WAT markers. BAT unlike WAT is desirable in obesity. Our findings indicate importance of vascular derived factors for survival and preventing WAT and promoting BAT differentiation of mesenchymal stem cells in SFM and hyperglycemia, mimicking conditions, such as obesity and diabetes.

Poster Presentation

Endocrine Society Annual Session, Washington, DC, June 2009

Unintended Precipitation of Methadone Withdrawal by Naltrexone **Pragathi Saligram, MD; Senthil Sivalingam, MD; Liu Xiao, MD**

Introduction: A new extended release injectable formulation of Naltrexone (Vivitrol) was recently approved by FDA for treatment of alcohol dependence. This drug is administered by intramuscular injection once a month with the advantage of improving adherence. Here we report a case of severe Methadone withdrawal triggered by the intramuscular injection of Naltrexone in a Methadone dependent patient.

Case presentation: 47-year-old Caucasian male on Methadone for pain control was given Naltrexone injection (Vivitrol) at a physician's office for treatment of alcohol dependence. Within minutes of Naltrexone injection, he developed severe agitation, confusion, associated with headache, abdominal pain, nausea, and emesis. He was found to be diaphoretic, tachycardic at 100, hypertensive at 170/140 and had bilaterally dilated pupils.

Diagnosis: His clinical presentation was consistent with severe methadone withdrawal precipitated by Naltrexone injection (Vivitrol). He received parenteral Haldol and Lorazepam by Emergency Medical Services for severe agitation. He was then hospitalized for 6 days for supportive care and close monitoring. He was given Methadone at half his usual dose in addition to Lorazepam and Clonidine to minimize his withdrawal symptoms.

Discussion: Methadone is a full agonist at the mu-opioid receptor. Naltrexone is a potent competitive opioid antagonist with a very high affinity for the mu-opioid receptor. With sustained release injectable Naltrexone, plasma concentration peaks approximately 2 hours after injection followed by a second peak observed 2 to 3 days later. This sustained release Naltrexone also blocks the mu-opioid receptor for a total duration of 14-30 days. Thus it can precipitate both acute and prolonged withdrawal symptoms in patients who are Methadone dependent. For those who experience severe withdrawal symptoms, providing smaller doses of narcotics may be indicated given the long duration of withdrawal. In addition although the drug has a prolonged pharmacological effect, the blockade is also surmountable. This poses a very real risk to individuals who may attempt to overcome withdrawal on their own by self administering large dose of opioids. In summary, patients should receive sustained release Naltrexone only after extensive counseling and screening for opioid dependence. If these recommendations are followed, one would be able to avoid such untoward events.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

A Case of Delayed Hepatotoxicity Following N-Acetylcysteine Therapy **Mayu Sekiguchi, MD; Alvaro Rosales, MD; Michael Rosenblum, MD**

Case Presentation A 57 y/o female without history of liver disease was seen in the ED two hours after suicide attempt by ingestion of a large quantity of acetaminophen. Patient denied ingestion of alcohol or any other medication. In the ED she had stable vitals and was afebrile. She complained of nausea and vomited some white pill fragments. 50 grams of activated charcoal was given with 4mg IV ondansetron. Normal saline was started immediately and labs were drawn. N-acetylcysteine (NAC) protocol was initiated with loading dose of 150mg/kg IV infused over 1 hour for an acetaminophen level of 324 mg/L. Poison Control Center was contacted for help with management. The four-hour post-ingestion level (206 mg/L) was plotted on the Rumack-Matthew nomogram and was found to be above the "possible hepatic toxicity" line; thus she was continued on the two maintenance doses of IV NAC for a total of 21 hours. Her hepatic synthetic function was monitored; she had initial AST/ALT of 143/156 on admission which improved to 99/191 24 hours post-ingestion. INR remained at 1.2 with a slight increase in total bilirubin to 0.7 from 0.4. Acetaminophen level was <1mg/L by the end of the standard 21 hours of NAC infusion. Forty-six hours post-ingestion levels checked and surprisingly showed significant transaminase elevations with AST/ALT markedly increased to 945/1737 with stable INR. The patient was asymptomatic at this time and was not on nephrotoxic agents. The maintenance dose of 100mg/kg IV NAC was restarted for another 32 hours and hepatic enzymes and synthetic function were monitored until levels eventually decreased to AST of 68 and ALT of 533 with INR of 1.1. The patient was medically cleared for psychiatric admission on hospital day five. Discussion The standard treatment of acetaminophen overdose is usually effectively managed with NAC; however, as highlighted in this case presentation, some patients with acute toxic ingestion may require longer IV treatment than the standard protocol. In our patient, the 21-hour IV course was too short, and the delayed liver failure was fortunately discovered due to careful monitoring of the aminotransferase levels and synthetic function of the liver of the patient past the 24-hour mark when it initially appeared that the numbers were improving. Patients with massive ingestion of acetaminophen may have altered absorption kinetics due to the drug's solubility being exceeded, physiologically or chemically altered gastrointestinal emptying or motility, or other factors. These patients may benefit from gastrointestinal decontamination and prolonged NAC therapy. This case demonstrates that in patients with acute acetaminophen ingestion, erratic absorption may occur and cause toxic serum concentrations to persist beyond a standard 21-hour course of intravenous NAC therapy. Serial acetaminophen concentrations and aminotransferase level measurement at the completion of NAC therapy and then 12 - 24 later may help prevent this complication. This will help to ensure complete elimination of acetaminophen and absence of hepatotoxicity thus excluding the need for prolonged treatment.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

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

Mayu Sekiguchi, MD, MPH; Kathy Gibson-Tierney, MSN, RN, CWOCN; Armando Paez, MD

Background: Perineal cutaneous HSV lesions are sometimes difficult to differentiate from pressure ulcers, a largely preventable hospital-acquired condition. There is limited literature about these wounds. Objective: To describe wound characteristics, associated illnesses, clinical course, wound treatment and outcomes of suspected HSV (S-HSV) and HSV culture-positive (HSV-CP) perineal ulcers in hospitalized patients. Study Design: This is a retrospective study of S-HSV perineal wounds evaluated by single wound care nurse at Baystate Medical Center from May 2005 to August 2008. S-HSV lesions are defined as ulcerative wounds that are "atypical for pressure ulcers", "scattered", "circular", "located in non-pressure areas", "punched-out appearance" and/or "with associated vesicles." Subjects' age, sex, Braden score, concurrent illnesses, wound description, pertinent laboratory tests including HSV wound culture results and clinical course of the wounds are collected. Results: Seventy-one subjects have S-HSV infection. Thirty-five (49.3%) HSV wound cultures are sent; six (8.45%) have (+) results. Subjects with both S- and HSV- CP ulcers have "At Risk" Braden score (15.9, mean), high BMI (31.04, mean) and low albumin (2.51 Gm/dL, mean). Eighty-five percent have concurrent infectious illness and 17% have malignancies. Subjects with HSV-CP ulcers are old (60.5 yrs, mean), mostly females (n=5), require hemodialysis (n=5), are either critically ill (n=3) or neutropenic (n=3). Two are HIV (+) and 2 are given high dose steroids. Five are treated with acyclovir or valacyclovir; three have clinical improvement in wound appearance. Two subjects died. Conclusions: HSV-CP wounds are uncommon. Subjects tend to be old, females, immunocompromised and require hemodialysis. This study is limited to HSV (+) wound culture. S-HSV perineal wounds need further study.

When Does a Dementia Patient Score 29/30 on the MMSE? MMSE Limitations in Diagnosing Vascular Dementia

Mayu Sekiguchi, MD; Michael Rosenblum, MD

Introduction: Geriatricians are facile in using a variety of tools to tease out the nature and scope of cognitive deficits. However, most non-geriatricians only use one or two standardized tools to screen for dementia. The most well-known of these is the MMSE; its sensitivity and specificity can be vastly overestimated by otherwise experienced clinicians. We report a case in which a dementia patient was nearly discharged to an unsafe environment when he performed well on an MMSE evaluation. Case Presentation: WH was a 79 y/o man with a vague past history and one psychiatric admission in younger years. He fell on his way to the bank and fractured his left humerus. In the ED he was cachectic, unkempt and casually reported having lost over 80 pounds in a year. He lived alone with limited family contact and had not left his apartment in months; he frequently “no showed” for outpatient VA appointments. On admission, the patient was somewhat resistant to interview, hypervigilant and paranoid. His mood was labile and his speech and thought process were tangential and disorganized; there was no dysarthria or aphasia. At various times, he claimed to be friends with Barack Obama or accused a neighbor of dismembering insects on his chest. His initial MMSE was 24/28 with a short-term recall of 1/3. His judgment and executive function were poor. A medical evaluation was unrevealing and a head CT showed only small vessel disease. The patient insisted he would be fine at home and was unconcerned about the weight loss and his poor living situation. Geriatric and psychiatric consultants agreed that insight and reasoning were so poor that he lacked capacity. They suspected a longstanding paranoid disorder, perhaps schizophrenia, with a subsequent superimposed vascular dementia. A guardianship process was initiated and LTC planned. A few days later a new house officer on the team repeated the MMSE; his score was 29/30. The patient refused to cooperate with more detailed neuropsychological testing stating “I’m not going to play these Mickey Mouse games”. The resident wondered if his improved MMSE meant he really was capable of accepting the risks of independent living. The geriatrician returned and again demonstrated that the patient utterly lacked insight into his limitations. Guardianship was obtained; he was eventually placed at a long-term facility after two months of hospitalization. Discussion: Common screening tests for dementia such as the MMSE are not particularly sensitive for vascular dementia. The MMSE is not designed to detect the common deficits of vascular dementia. These usually include cognitive slowing, poor problem solving, and impairment in abstract thinking. This is not well understood; like our resident, physicians may doubt a dementia diagnosis if the MMSE is preserved. If vascular dementia is suspected, neuroimaging and formal neuropsychological

evaluation of processing speed and executive functioning may confirm the diagnosis. The patient should also be screened for depression, irritability and apathy as these are frequent in vascular dementia. Conclusion: A near-perfect MMSE does not necessarily rule out dementia; additional formal testing for specific cognitive deficits is required when there is high clinical suspicion. Coexisting psychiatric disease can also complicate the diagnosis. Geriatricians understand this but trainees and even medical attendings may not. Geriatricians should take the lead in educating house officers and hospitalists about the limitations of the MMSE. Clinicians need to be comfortable with a variety of cognitive tools; the overarching importance of a detailed history and grasp of risk is also critical.

Poster Presentation

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Facilitating Interns' Acquisition of Medical Knowledge and Core Skills through Experiential Learning

Reham Shaaban, DO; **Raquel Belforti, DO**;
Mihaela Stefan, MD; Patricia McArdle, EdD

Introduction "Intern Boot Camp", as it is known at our hospital, is an innovative program which provides necessary knowledge and skills for interns in internal medicine as part of their July orientation month. The initial months of internship are a time of angst and uncertainty for most interns as they assume their responsibilities for patient care, in particular the management of acute care situations. Often intern orientations are used to provide incoming residents with hospital policies, therefore leaving interns to practice medicine by the 'see one, do one, teach one' method. For the incoming July 2008 class, we developed a curriculum that provided interns with an opportunity to learn and practice core skills in medical knowledge and patient care, particularly in acute care situations. The orientation curriculum was also used to "diagnose" the learners, giving the opportunity to assess the incoming interns' strengths and weaknesses. Methods: Twenty-two interns in a large community hospital training program participated in an intensive orientation program. The curriculum consisted of eight, 90 minute sessions over a two week period. Simulation based training as a method of experiential learning was central in our curriculum. Each session began with a 30 minutes case scenario in the simulation center. The cases were: chest pain (NSTEMI and STEMI), shortness of breath (pulmonary embolism and CHF), change in mental status (narcotic induced and hypercapnia), and hypotension (sepsis and gastrointestinal bleeding). During each simulation session a team of 2-3 interns performed the patient assessment and management and were evaluated using a checklist for: diagnostic and therapeutic actions, differential diagnosis, communication, teamwork and leadership skills. A one-hour didactic session followed, comprised of group debriefing with emphasis on self reflection, teaching on the case experienced in the simulation lab, and the development skills in common daily tasks such as writing history and physicals, progress notes, handovers and discharge summaries. Medical knowledge was assessed using a 15 question multiple choice exam. The questions and the simulation sessions addressed similar themes. The same questions were completed pre- and post- training and will be re-administered six months into the internship year. Results: All interns participated in the eight boot camp sessions. We present the data from the medical knowledge assessment using the multiple choice test pre- and post-boot camp. The average percentage of correct answers on the exam prior to the orientation curriculum was 64% compared to 78% post orientation ($p < 0.001$). The data from the evaluation on competence in assessment, management, communication, and leadership is not yet processed. The interns who were

found to struggle during the orientation were also those who had difficulty during the first 4 months of residency and are already provided with educational plans. Conclusion: A two-week, simulation-based educational curriculum provides a realistic introduction to the basic knowledge and skills needed for beginning a medical residency. The improvement in medical knowledge was shown to be statistically significant. This experientially based curriculum was found to be valuable for program leadership in diagnosing the learners' performance, and providing programs with the opportunity to intervene and remediate areas of weakness early in the internship year.

Poster Presentation

Poster Society of General and Internal Medicine, March 2009

Society of General Internal Medicine National Conference

May 13-15, 2009, Miami Beach, FL

The Significance of Common Bile Duct Dilatation in Older Adults

Abdullah Shaikh, MD; Sandra Bellantonio, MD; David Desilets, MD, PhD

PURPOSE: The aim of this study was to determine whether dilatation of the Common Bile Duct (CBD) on ultrasound is associated with CBD calculi on Endoscopic Retrograde Cholangio-pancreatography (ERCP) in patients over the age 65.

METHOD AND MATERIALS: An experienced endoscopist prospectively collected data on 2,018 patients undergoing ERCP in a tertiary referral center from 7/00 to 7/07. Two hundred eighty-two patients with an Ultrasound (US) report of "Dilated Common Bile Duct" with no report of calculi were referred for ERCP. Of these, 114 patients (40%) had ducts \leq 10mm, and 168 (60%) had ducts $>$ 10mm. We divided the two groups based on age $<$ or \geq age 65; the \leq 10mm group had 19 patients (17%) aged \geq 65, and the $>$ 10mm group had 94 (56%) geriatric patients. The older patients were retrospectively selected for analysis (chi square) and compared with non-geriatric patients with similar findings. All analyzed patients were symptomatic, had an ultrasound, and a biliary sphincterotomy and balloon or basket sweep of the CBD.

RESULTS: The overall incidence of calculi on ERCP was similar in older and younger patients and 47% and 42%, respectively. However, 46/94 (49%) of patients \geq age 65 with a CBD diameter $>$ 10mm on US had an ERCP confirmed CBD stone, compared to only 23/74 (31 %) of younger patients ($p=.019$). We found no statistically significant difference in the incidence of calculi between the older and younger age group when the CBD measured 10 mm on US ($p=.27$). Thus giving US a Negative Predictive Value of 68.9% when the report states no stones and the duct is $>$ 10mm.

CONCLUSION: Less than half of all patients referred to ERCP for a dilated CBD with no mention of stones on US have ERCP confirmed calculi, regardless of age. CBD dilatation of $>$ 10mm on US is more associated with calculi in older but not in younger patients. Other authors have reported that a dilated CBD is associated with increasing age, and in 98% of the patients studied duct dilatation was 6-7 mm (upper limit of normal =7-8mm). Thus, a dilated CBD on US in older patients should trigger an evaluation for calculi or other conditions, and should not be considered an incidental finding or part of normal aging especially in symptomatic patients.

CLINICAL RELEVANCE/APPLICATION: Other pathologies must equally be considered when CBD dilatation with no calculi is reported on US in both young and older patients.

Electronic Presentation

Radiological Society of North America (RSNA) 2008 Annual Meeting, December 2008

Mice Lacking the Thyroid Hormone Receptor Alpha Gene Spend More Energy in Thermogenesis, Burn More Fat and Are Less Sensitive to High-Fat Diet-Induced Obesity

J. Enrique Silva, MD; Paula Pelletier, MSc; Karine Gauthier, PhD;
Olga Sideleva, PhD; Jacques Samarut, PhD

Abstract: Unable to activate brown adipose tissue (BAT) thermogenesis, α -T3-receptor-deficient mice (Thra-0/0) are cold intolerant. Our objective was to investigate the impact on energy economy and mechanisms of the alternate facultative thermogenesis developed. Energy expenditure [oxygen and food consumption] is elevated in Thra-0/0 mice reared at room temperature. Such difference disappears at thermoneutrality (30°C) and expands as ambient becomes colder ($P < 0.001$). Despite eating more, Thra-0/0 are leaner than WT mice ($P < 0.01$), while these, whether on chow or high fat diet, gained more weight (g/day: 0.12 ± 0.002 vs 0.08 ± 0.002 and 0.25 ± 0.005 vs 0.17 ± 0.005 , respectively) and adiposity than Thra-0/0 mice ($P < 0.001$). The respiratory quotient (RQ) was lower in Thra-0/0 than WT mice ($P < 0.001$), post-fed or fasted, on chow or HiFat, indicating a preference for fat as fuel, which was associated with increased lipoprotein lipase (LPL) expression in skeletal muscle of Thra-0/0 mice, but with no differences in gene expression in white adipose tissue. Type-2 deiodinase (D2) was increased in BAT and aerobic muscle of Thra-0/0 mice. This and liver D1 were increased by HiFat in both genotypes, as also were serum T3 and T3/T4 ratio, but more in Thra-0/0 than WT mice ($P < 0.001$). Remarkably, when studied at thermoneutrality, genotype differences in weight and adiposity gain, RQ, D2 and LPL disappeared. Thus, disruption of BAT thermogenesis in Thra-0/0 mice activates an alternate facultative thermogenesis that is more energy demanding and associated with reduced fuel efficiency, leanness, increased capacity to oxidize fat and relative resistance to diet-induced obesity, in all which muscle LPL and deiodinases play a key role.

Mild Cognitive Impairment - Not To Be Forgotten

Manmeet Singh, MD; Maura Brennan, MD; Geetika Sachdeva, MD

Introduction: All clinicians are aware of Alzheimer's disease. However, Mild Cognitive Impairment [MCI] may be more prevalent, has important clinical implications and is often underdiagnosed. The authors report a case in which MCI was missed until a geriatrician and an intern clarified the history.

Case discussion: An 81-year-old diabetic man presented to a Geriatric Evaluation Clinic for an assessment. He felt well, lived alone and was able to perform his daily activities including driving and finances. He drank alcohol rarely, was not depressed and had not fallen. He took no prescription or OTC drugs likely to impact cognition. His memory had declined over four years; he now needed to track commitments with notes on a calendar. This usually sufficed but at times he had forgotten to pick up a grandchild at school. He was embarrassed and felt he had let his family down; the memory lapses were beginning to affect his life. He was alert and fully oriented. His physical examination was benign; he scored 28/30 on the MMSE. He missed one point on delayed memory and another on serial sevens despite experience in the stock market. He labored to place the hands accurately on a clock; he named 12 animals in a minute on verbal fluency testing. He failed to improve recall of a 10 word list with repetition. He was diagnosed with MCI. The geriatrician explained the diagnosis, risk of progression to dementia and offered neuropsychiatric testing.

Discussion: MCI is characterized by memory impairment, preserved functional abilities and the absence of dementia. Roughly 10-15% of elderly MCI patients progress to dementia over one year. The most common form of MCI is the amnesic type; this is associated with hippocampal atrophy and frequently advances to AD. There is currently no treatment although Vitamin E and Donepezil have been tried. Cognitive screening tools such as the MMSE lack sensitivity in diagnosing MCI. The best diagnostic tool is a careful history by a skilled clinician. Conclusions: Most medical residents are unaware of MCI although it may be a transitional state between normal aging and dementia. Screening for MCI is rarely done during office visits although these patients require close monitoring. Participation in a geriatric evaluation clinic is one way to educate medical residents about MCI. This will improve the geriatric skills of house officers and identify and support a vulnerable group of elders.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Advanced Giant Basal Cell Carcinoma: A Case of Self-Neglect Due to Chronic Mistrust of Medical Care

Senthil Sivalingam, MD; Sandra Bellantonio, MD

INTRODUCTION: Self neglect in the elderly can be multifactorial with physical, medical and social aspects. We describe a case of a huge basal cell carcinoma (BCC) neglected due to chronic mistrust of medical care stemming from previous experiences with the medical community. **CASE:** An 84 yo woman was brought to the ED by her son secondary to chest wall ulcer of long duration with 1 week history of pain and drainage from the wound, resulting in patient being bedridden. No significant PMH except, possible skin cancer in her chest which she did not follow-up. ROS was negative for fever, chills or SOB. The patient was living with her son for 10 years after her daughter with Downs Syndrome passed away secondary to pulmonary embolism when coumadin therapy was discontinued after an indeterminate length of time. The vitals were normal and on exam there was a 20 cm X 30 cm ulcer on the chest wall eroding the sternum. CT chest showed central pulmonary embolism and huge ulcer completely eroding the sternum. The biopsy of the lesion showed BCC. The patient and son declined any treatment for cancer and pulmonary embolism. Patient was assessed by psychiatry, oncology, surgery and social service before being transferred to long term care. **DISCUSSION:** Self neglect is characterized by failure to engage in self care that adversely affects the health and hygiene of oneself. It is the most common reason for adult protection service intervention in the elderly. The cause is multifactorial and is associated with increased mortality in the elderly. It usually requires a multidisciplinary approach and targeted interventions should be individualized. In our patient, a history of medical mishaps related to her daughter and other experiences including a missed diagnosis of appendicitis, created chronic mistrust of physicians. This resulted in the patient seeking delayed medical care and consequently led to an advanced stage of BCC. A single channel of communication was established with a physician of her choice which enabled her to process information and come to a reasonable conclusion. The involvement of family was important. To avoid self neglect establishing a doctor patient relationship is one of the most important factors. The relationship should be based on trust as care depends on patients' acceptance and belief in the medical team. Involving the family, respecting the patient's individuality, and making changes slowly with education and follow through are paramount.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Patient and Cardiologists' Perceptions of the Benefits of PCI for Stable Coronary Disease

Senthil K. Sivalingam, MD; Michael B. Rothberg, MD, MPH;
Javed Ashraf, MD, MPH; John Joelson, MD;
Neelima Vallurupalli, MD; Marc Schweiger, MD

Objective: For patients with acute coronary syndromes, emergent percutaneous coronary intervention (PCI) can be life-saving. For patients with chronic stable angina, however, benefits of PCI are limited to relief of angina. Following the highly-publicized COURAGE trial, which confirmed the limited benefits of PCI, we hypothesized that few cardiologists would believe that PCI reduced major cardiac events, but that patients would continue to believe that it does.

Study Design: Between December 1, 2007 and August 31, 2008, we surveyed patients who had already consented to elective catheterization and possible PCI about the informed consent process and about their beliefs regarding the benefits of PCI. We also surveyed referring and interventional cardiologists about their beliefs using 3 patient scenarios.

Results: 154/164 (94%) patients and 27/32 (84%) cardiologists, agreed to participate. Most patients reported that a doctor spent ≥ 5 minutes explaining the procedure and $>1/2$ received written information. 96% felt they knew why they might undergo PCI and $>1/2$ stated that they were actively involved in the decision making. Nevertheless, 88% believed that PCI would reduce their risk of MI and 82% thought it would reduce their risk of death. Only 26.3% of cardiologists believed PCI would prevent MI or death in any of the 3 scenarios. Lower income was associated with the belief that PCI would prevent mortality (OR=2.27, 95% CI: 1.09, 4.76) and the level of chest discomfort was associated with the belief that PCI would reduce MI (OR=1.40, 95% CI: 1.03, 1.91). Patients and cardiologists believed PCI would reduce symptoms.

Conclusion: The COURAGE trial appears to have convinced some cardiologists that PCI does not reduce mortality in stable coronary disease, but this message has not reached patients. More research is needed on how to best communicate the medical evidence so that patients can make informed decisions.

Emergence of Gentamicin-Resistant Bacteremia in Hemodialysis Patients Receiving Gentamicin Lock Catheter Prophylaxis

Stephen Sweet, MD; Stephen Gobeille, MD; **Daniel Landry, MD**;
Sarah Haessler, MD; **Chirag Vaidya, MD**; Gregory Braden, MD

Recent reviews suggest that antibiotic locks could be utilized in catheter-dependent chronic hemodialysis patients in an effort to reduce the rate of catheter-related blood stream infections (CRIs). Although these studies have shown a significant decrease in CRIs, there are no data regarding the long-term consequences of this practice. Over a 4 year period, beginning in October 2002, we initiated a gentamicin/heparin lock (GHL) protocol in 1488 chronic hemodialysis patients receiving dialysis through a tunneled catheter in 8 outpatient units. Within the first year of the GHL protocol, our CRI rate decreased from 17 to 3.7 events per 1000 catheter days. Beginning 8 months after initiation of the GHL protocol, febrile incidents occurred in 17 patients with 26 episodes of coagulase negative *Staphylococcus aureus* resistant to gentamicin. Over the 4 years of GHL use, an additional 8 patients developed 10 episodes of gentamicin-resistant CRI (8 cases *Enterococcus faecalis*, 1 case methicillin-sensitive *Staphylococcus aureus* and 1 case of *Streptococcus salivarius*) of which there was one death, 2 cases of septic shock requiring ICU admission and 2 cases of endocarditis. In these 8 patients, the mean duration of catheter days was 306.5 (range 29 to 1023) and the mean duration of GHL was 227 days (range 27 to 1022). Treatment included catheter removal and 2-8 weeks of intravenous antibiotics. Due to these events, the GHL was discontinued in 2006. While the use of a GHL effectively lowered the CRI rate in our dialysis population, within 8 months gentamicin-resistant CRI emerged. We conclude that gentamicin-resistant infections are a serious complication of the long-term use of GHL. Alternative non-antibiotic catheter locks (e.g. ethanol, citrate, taurolidine or methylene blue with citrate) may be preferable in an effort to decrease the incidence of CRIs without inducing resistant pathogens.

Poster Presentation

National Kidney Foundation, March 25-29, 2009, Nashville, TN

A Surprising Cause for a Wound in a Nursing Home Resident: An Occult Sweat Gland Carcinoma

Ashita Talsania, MD; Maura Brennan, MD

Introduction: Cancers are primarily geriatric diseases which may present atypically in older patients. Frailty, coexisting medical and cognitive problems complicate both diagnosis and treatment. We report a case of a rare sweat gland cancer in a demented elder; it was thought just to be a non-healing ulcer. Case: A 79-year-old NH resident with dementia had a long-standing axillary ulcer with some localized pain and ongoing exudate. He underwent outpatient incision and drainage but failed to heal. Two months later, he was admitted for more aggressive debridement due to persistent discharge, positive wound cultures and an elevated white count. He had a non-healing sinus tract that measured approximately 1 x 0.35 X 5 cms. It was friable and bled easily. A chest CT showed left axillary phlegmonous changes, but no fluid collections to suggest abscess, adenopathy or chest nodules. Intraoperatively, the surgeons found a firm area inferior to the ulcer between the infected tissue and the previous surgical site and suspected a malignancy. A frozen specimen revealed a sweat gland carcinoma with involved margins. The patient was transferred to surgical oncology for wider local excision and axillary dissection. A final pathology report documented a high-grade eccrine adnexal carcinoma with squamous differentiation. Discussion: Sweat gland carcinomas are rare, have a high metastatic potential and poor prognosis. Only roughly 200 cases of eccrine sweat gland and 38 cases of apocrine gland carcinoma exist in the world literature. Diagnosis is challenging and often delayed; they frequently present as histological surprises. These carcinomas occur primarily in adults, with a peak incidence in the fifth and sixth decades. Since the cancers are so rare, it is unclear if there is a second peak later in life, whether the presentation in elders differs or if alternative treatment strategies are needed for geriatric patients. It is possible that these cancers are more prevalent in older patients than is currently appreciated since caregivers may be slower to biopsy and debride wounds in frail elders. Conclusion: Geriatricians and nursing home staff need to be more aware that non-healing wounds may represent a malignancy. Due to the small number of sweat gland carcinomas reported, these patients present diagnostic and management challenges as well as opportunities for collaborative research with oncologists.

Poster Presentation

2009 Annual Scientific Meeting of the American Geriatrics Society, Chicago, IL, April 29 to May 3, 2009

Publication

Journal of the American Geriatrics Society, May 2009 Issue

Heparin and Hyperkalemia: The Unexpected Cost of Prophylaxis

Ashish Verma, MD; Ryan Joyce, MD; Lauren Meade, MD

Introduction: Hyperkalemia is a common electrolyte disorder encountered in hospitalized patients. Below is a case of heparin-induced hyperkalemia in a patient admitted for congestive heart failure exacerbation. This case notes the increased health care cost and resource utilization due to this increasingly common intervention. Case Presentation: 76-year-old female with diabetes, hypertension and CHF presented with increasing dyspnea and cough initially managed for dehydration. Diuretics were held and she was hydrated with intravenous fluids. She deteriorated with development of overt heart failure and acute renal failure. The fluids were discontinued and lasix begun. By day four, she was back to baseline and ready for home. It was noted that she had become persistently hyperkalemic which delayed her discharge by three days. The differential for hyperkalemia included DM-associated RTA type IV, hyperglycemia & insulin deficiency state, B-blocker enhanced kalemic response (metoprolol had been uptitrated for BP management), increased catabolic state and heparin therapy. A work up excluding other causes implicated heparin as the likely culprit for hyperkalemia. Heparin was discontinued and the potassium trended to normal range. Discussion: Up to ten percent of patients on heparin therapy have greater than normal potassium level (1). Heparin is a potent inhibitor of Aldosterone production. Its effect is mediated by either a reduction in the number or the affinity of angiotensin II receptors in the zona glomerulosa cells (2). Patients with normal renal function have a small increase in serum potassium. But in those with renal insufficiency, the rise could be clinically significant. Aldosterone suppression occurs within a few days of initiation of heparin therapy, is reversible, and is independent of either dose or type of heparin. As the clinical evidence for DVT prophylaxis in hospitalized patients strengthens, standard practice of care now increases the number of patients exposed to heparin. Increased use in turn leads to more heparin complications including bleeding and hyperkalemia. In this case, heparin-induced hyperkalemia alone extended this patient's length of stay by three days with increased cost utilization via renal consults, extra blood tests, corrective medication(s), and EKGs. Conclusion: Clinicians need to be aware of not only heparin -induced hyperkalemia but also the potential economic burden of this therapy. Patients at low risk of venous thromboembolism, may have more cost effective interventions like pneumatic compression boots or compression stockings. This shall be an interesting area for future research.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

Munchausen's Malingering Microbes?

Ashish Verma, MD; Mohamed Elarabi, MD; Michael Rosenblum, MD

Introduction: Polymicrobial bacteremia is a rare entity in patients without immunocompromise, prolonged hospitalizations or invasive procedures. We present the first documented case of a patient with four separate and distinctive episodes of polymicrobial infection highly suspicious for self-manipulation of intravenous access. Case: Our patient is a 32 year old woman with poorly controlled diabetes, borderline personality disorder, difficult peripheral access and history of intravenous drug abuse who presented to various ED departments with recurrent DKA and inexplicable pain. Episode I: The patient developed bacteremia 48 hours after a central line was placed for fluid hydration. Initial blood cultures grew *Pseudomonas* species. Despite antimicrobial therapy, she continued to have fever and additional cultures grew two distinct species of *Pseudomonas*, *Klebsiella oxytoca*, MRSA and *Torulopsis glabrata*. Multiple searches for the nidus of infection drew a blank. A PICC line was placed and the patient was discharged home to complete a course of antibiotics. Episode II: A few months later, she was admitted for DKA and had an IJ line placed. Two days later she developed fever and blood cultures grew *S. viridans*, *K. oxytoca* and Coagulase-negative Staphylococci. The central line was removed and antibiotics were initiated. Patient went home on oral antibiotics. Episode III: A week later, another admission for DKA and another central line for access. Blood cultures following fever grew *S. viridans*, *P. paucimobilis*, MRSA and *Candida albicans*. Following improvement she was discharged home with oral antibiotics. Episode IV: A number of months later, she brought in a syringe full of pus 'from her arm' and the whole cycle was repeated. All intrinsic sources of bacteremia have been eliminated through repeat diagnostic evaluation. The only common factors during her hospitalizations with bacteremia have been central access and the patient herself. When discussed with her PCP, the patient has denied line tampering. Discussion: We propose that the recurrent polymicrobial bacteremia in our patient is a manifestation of the extreme form of factitious disorder called Munchausen's syndrome. Asher in 1951, described individuals who travelled widely seeking hospitalization by fabricating bizarre and dramatic episodes of illness (1). In malingering, feigning illness has an external incentive (e.g., obtaining narcotics as in our patient), while factitious disorder has no other incentive than to be a patient and experience the sick role. An empathetic counselor as a mentor to focus on the patient's suffering and need for someone to care for them along with superior communication and a team-based approach with consistency are paramount for the management of this complex ailment (2). References: (1) Munchausen's syndrome: Asher, R, Lancet pp.339-341, 1951. (2) Factitious Disorder Presenting as Bacteremia: Glenn Catalano et al J. FLORIDA M.A./August 1995/Vol. 82, No. 8/535.

Poster Presentation

Poster Society of General and Internal Medicine Regional Meeting, Boston, MA, March 2009

Overtreatment Of Hyperlipidemia In The Outpatient Setting

Ashish Verma, MD; Siddarth Wartak, MD; Mohammed Elarabi, MD; Ejaz Khalid, MD; Michael Rothberg, MD, MPH

BACKGROUND: National guidelines recommend treatment with statins for patients at moderate to high risk of cardiovascular disease. Quality-of-care studies demonstrate that high-risk patients are often undertreated, but it is not known to what extent low-risk patients receive unnecessary treatment.

METHODS: Retrospective cross-sectional study of 650 patients aged 35-80 years at High Street Health Center. Patients with incomplete data, contraindication to statins, and treatment for hypertriglyceridemia were excluded. For each subject, we recorded age, gender, race/ethnicity, language, smoking history, total, HDL and LDL cholesterol, systolic blood pressure, antihypertensive therapy, coronary artery disease (CAD) equivalent (diabetes, coronary artery disease, or cerebrovascular disease), and physician's level of training. Subjects' 10-year cardiovascular risk was assessed using the Framingham equation. We considered patients overtreated if they received statins with a 10-year risk <10% and undertreated if they received no statin with a 10-year risk >20% or CAD equivalent. Predictors of under- and overtreatment were assessed using multivariable logistic regression.

RESULTS: Of 576 subjects included, 52% were female, 54% white, 35% smokers, 25% diabetic and 56% hypertensive. Overall, 30% took statins: 8% of patients were overtreated, while 52% of patients were undertreated. Only 58% of diabetic patients received treatment. In multivariable analysis, overtreatment was associated with older age (OR 1.44 per 5 years, 95% CI 1.06, 1.96), higher LDL (OR 2.5 per 30 mg/dl, CI 1.4, 4.5) and more cardiac risk factors (OR 4.0 per risk factor, CI 1.8, 8.7). Undertreatment was associated with younger age (OR 1.16, CI 1.0, 1.3), lower LDL (OR 1.8, CI 1.4, 2.5) and fewer risk factors (OR 1.8, CI 1.12, 2.6). Race, gender and specific risk factors were not associated with over- or undertreatment.

CONCLUSIONS: Despite well-publicized national guidelines, many patients remain over- and under-treated for hyperlipidemia. Physicians' decisions appear to reflect LDL values and risk factors rather than true cardiovascular risk.

Poster Presentation

American Heart Association Annual Meeting, November 2009

Wellen's Syndrome: Mark of "The Widow"

**Ashish Verma, MD; Siddharth Wartak, MD;
Neelima Vallurupalli, MD; Timothy Mulligan, MD**

EKG findings can sometimes be misleading in patients with chest pain. It may cause confusing interpretations such as 'non-specific T wave inversions'. Wellen's syndrome is the EKG findings suggestive of a proximal LAD lesion which if misinterpreted could have disastrous consequences. We present a case where timely pattern recognition led to an excellent outcome. Case: A 57 year old non-smoker, hypertensive and hyperlipidemic Caucasian male presented with chest pain. He had three days of intermittent substernal discomfort with shoulder radiation, unrelated to exertion and associated with nausea and shortness of breath. Patient was pain free upon presentation to the ER. EKG had deep T wave inversions in the precordial leads I & AVL. There was no enzyme bump. Aspirin and heparin were commenced. Cardiac catheterization confirmed a tight proximal LAD lesion which was stented. Patient had an uneventful recovery and went home on the usual prescription for CAD risk modification. Discussion: The proximal left anterior descending coronary artery territory myocardial infarction is the most worrisome MI. It is attributed to occlusion of a segment of LAD prior to or at the origin of the first septal perforator. Thus it is associated with compromised perfusion to a large area of the myocardium and the conduction system, resulting in heart blocks, cardiogenic shock and fatal arrhythmias. Hence, the nickname 'widow maker'. Wellen and colleagues (1), in 1982, formally described two electrocardiographic patterns predictive of this lesion. The criteria for Wellen's syndrome(2) include, 1) history of chest pain, 2) little or no cardiac enzyme elevation, 3) no pathological ST elevation, 4) no loss of precordial R waves and 5) either biphasic T waves in leads V2 & 3 or symmetrical deeply inverted T waves in leads V2 and 3. Clinical importance of this syndrome is threefold. Firstly, these patients are at high risk of early anterior MI. Hence, prompt revascularization is indicated. Two, the critical LAD lesion may be misinterpreted as 'non-specific T wave changes' which could have fatal consequences. Thirdly, if these patients were sent for a stress test, it may lead to an MI or even death. The T-wave changes in Wellens syndrome may be a consequence of brief periods of severe ischemia not associated with necrosis or even a subendocardial infarction. References: (1) de Zwann, Wellens HJJ. Characteristic electrocardiographic pattern indicating a critical stenosis high in left anterior descending coronary artery in patients admitted because of impending myocardial infarction. *Am Heart J* 1982;103:4:730-736. (2) Tandy TK et al. Wellens' syndrome. *Ann Emerg Med.* 1999 Mar; 33(3): 347-51.

Poster Presentation

Poster Society of General and Internal Medicine Regional Meeting, Boston, MA, March 2009

Sickle Cell Anemia Masking Malignancy

Siddharth Wartak, MD; Carmela Mancini; David Rose, MD

Introduction: Patients with sickle cell (SC) anemia often develop chronic multiorgan and life-threatening complications. Hematological malignancy however is rare in SC patients, making the diagnosis of malignancy highly dependent on clinician suspicion.

Case: Over a 6-month period, a 50-year-old man with SC anemia developed an increased frequency of hospitalizations for painful crises and red blood cell transfusions, ultimately developing a productive cough, shortness of breath and chills. On examination he was febrile, tachycardic, tachypneic, cachectic and had bilateral crackles on lung exam. Labs showed a leukocytosis, microcytic anemia, hyponatremia (Na 131), Cl 113, CO₂ 17, BUN/Cr 29/1.5, and bilateral basal infiltrations on chest radiography. He was treated for sickle crisis and pneumonia with analgesics, oxygen, fluids, and antibiotics. His anemia was refractory to initial therapy; tests for hemolytic anemia and aplastic crisis were unrevealing. Over several days he developed stupor. A head CT was normal. The cause of his altered mental status was initially attributed to end-stage SC anemia. His family began to consider a "comfort measures only" plan of care. Because of the combination of low anion gap of -1, worsening renal failure, hypercalcemia (10.1), and hyperammonemia (83), additional testing was performed, which revealed an elevated serum total protein (12.6) and gamma globulin (7.5) and a decreased albumin (2.8). The differential diagnosis was expanded to include light chain disease. Immunofixation showed IgG monoclonal protein with kappa light chain specificity. Bone marrow analysis revealed 70% plasma cells, confirming the diagnosis of multiple myeloma (MM). The patient was treated with decadron and melphalan and made significant improvement, returning to his baseline functional status.

Discussion: This patient had classic complications of SC anemia, including bone pain, recurrent infection, renal failure, and recurrent hospitalizations for crisis. The underlying MM, masked by his SC anemia for an unknown duration, was a diagnostic challenge, as all symptoms were explained by the primary disorder. In retrospect, we believe many of his symptoms were caused by the MM, not the SC anemia. His AG of -1 was due to the presence of immunoglobulins. The renal failure and normal anion gap could be a combination of type 4 RTA in SC anemia and from underlying MM. His refractory anemia was due to bone marrow failure from MM. His altered mental was due to metabolic encephalopathy, hypercalcemia and hyperviscosity. The high ammonia was due to increased protein breakdown and has also been reported as a rare cause of encephalopathy even in the presence of normal liver function.

Conclusion: The combination of MM and concurrent SC anemia is rare. The similarities in clinical presentation make the diagnosis challenging. The search for a second disease was prompted by a refractory response to therapy and a high index of suspicion.

Oral Presentation

2009 American College of Physicians National Meeting, April 2009

Awards

Winner 1st Place Oral Presentation 2008 American College of Physicians Regional Meeting, November 2008

SIADH with Profound Hyponatremia in a Patient with Long-Term Use of Valproate, Aripiprazole and Mirtazapine

**Jaqueline White, MD; Senthil Sivalingam, MD;
Srikanth Penumetsa, MD; Amit Bhargava, MD; Lauren Meade, MD**

The syndrome of inappropriate antidiuretic hormone secretion (SIADH) with resulting hyponatremia is a well-known side effect of many psychotropic medications. However, profound hyponatremia, with serum sodium less than 105 mmol/L is much less common. We describe a case of SIADH with profound hyponatremia likely due to the concomitant use of valproic acid, aripiprazole, and mirtazapine. A 53 year old woman with bipolar disorder was admitted with altered mental status, rhabdomyolysis, and acute renal failure after being found down in her home for an unknown period of time. Her admission plasma sodium was 102 mmol/L; plasma osmolality 219 mmol/L; urine sodium 10 mmol/L; urine osmolality 332 mmol/L. All likely causes of hyponatremia including diuretic use, hypothyroidism, adrenal insufficiency, and lung or CNS pathology were ruled out and SIADH was diagnosed. SIADH was thought to be due to her medications which included valproic acid, aripiprazole, and mirtazapine, all of which she had taken for at least 6 months. These medications were stopped on admission and the patient was admitted to ICU for close monitoring. The hyponatremia was treated with 3% hypertonic saline with a goal of not more than 10 mmol/L rise in 24 hours. The sodium was slowly corrected to normal levels over the next 3 days. The patient's mental status improved to baseline and she was discharged from the hospital with close follow-up. Anti-diuretic Hormone (ADH) secreted by the posterior pituitary gland plays an important role in regulation of sodium homeostasis in humans. In SIADH, there is inappropriate secretion or effect of ADH causing hyponatremia, low plasma osmolality and high urine osmolality. SIADH can have multiple etiologies which include CNS pathology, medications, pulmonary conditions, infection, or trauma. Among medications – chlorpropamide, anti-psychotic medications, anti-depressants are known to cause SIADH. Usually medication-induced SIADH produces mild hyponatremia which develops shortly after initiation of therapy. Hyponatremia usually resolves on withdrawal of the offending medications. While SIADH resulting from medications is common, this case is unusual in the degree of hyponatremia and in the delayed onset with long term use of medications. It underscores the importance of continued surveillance of electrolytes despite the chronicity of medication exposure.

Poster Presentation

2008 American College of Physicians Regional Meeting, November 1, 2008

A Hospitalist Led Multidisciplinary Team Rounding Model to Improve Quality of Care

Surinder S. Yadav, MD; Jan Fitzgerald, MS, RN, CPHQ;
Donna Borah, RN, MHA; David Ling, MD; Evan Benjamin, MD, FACP

Hospitalists face immense challenges to give the best care at maximum efficiency and safety. Our aim was to pilot a hospitalist led MDR model of patient care. In our community hospitalist model, there is no geographic location of physicians to one unit contributing to variable communication and lack of continuity in care. Our program comprises 9 physician rounders during the day each assigned 14-16 patients spread across 9 units. We performed a PDSA cycle; a pilot for geographic model of care was studied on one medical unit. The geographic model included one physician rounder conducting rounds with a nurse and case manager at bedside. A quality of care checklist was employed and each patient assessed daily. We developed a survey tool to evaluate quality of care provided by hospitalists, comparing pre and post survey data for the pilot unit. We looked at the rapid response team (RRT) for the unit, postulating reduction in RRT calls indicating improved care through effective communication and use of a quality measures checklist. FINDINGS: In the PRC survey, our national percentile ranking and percent excellent care provided improved after initiation of the geographic MDR model. Our overall quality of care increased from 62% ranking to 92%. The quality of care provided by the doctor increased from 26% to 40%. The discussion of care provided by the doctor improved from 17% to 83%. During the pilot we confirmed completion of a quality checklist for each patient during MDR. Overall, we saw a 24% decline in RRT calls on the pilot unit, from 67 (8 months pre) to 51 calls (8 months post). CONCLUSIONS: Our data support change for MDR. We saw improved perception of the quality of care, and the communication of that care which was our primary aim.

Poster Presentation

Society of General Internal Medicine, May 2009

Height Is the Preferred Index for Left Atrial Volume Measurement in Overweight and Obese Adults

Gui Hua Yao, MD, PhD; **Jiang Cui, MD**; Gustavo P. Camarano, MD; William L. Hiser, MD; Mara Slawsky, MD; James R. Cook, MD; Leng Jiang, MD

Background: Left atrial enlargement (LAE) is currently identified by left atrial volume (LAV) normalized by body surface area (BSA). We hypothesized that indexing LAV to BSA (LAV/BSA) in obese individuals would overcorrect for LAV due to the contribution of adiposity to BSA. In contrast, LAV normalized for height (Ht) or Ht with allometric powers (Ht^{2.0} or Ht^{2.7}) would better define LAE, given the documented consistent strong relationship between Ht and fat free mass.

Methods: We analyzed 312 cases (mean age 50.3 ± 14.5 years, 35% men) with good imaging quality, sinus rhythm, normal LVEF and no significant valvular disease. Based on body mass index, 5 groups were defined: normal (46), overweight (110) and obese (class I, 81; II, 47; and III, 28). LAV was measured using biplane area-length method and indexed to BSA, Ht, Ht^{2.0} and Ht^{2.7}. The prevalence of LAE was calculated using the upper limit of 95th percentile of confidence intervals for each LAV parameter. Tissue Doppler E/E' ratio and cardiovascular (CV) risk factors were obtained.

Results: There was no significant difference in gender and age among the groups. CV risk factors were prevalent in overweight and obese groups (47.3%, 60.5%, 59.6% and 82.1%). E/E' increased across the groups ($P < 0.001$). LAV indexed by all Ht methods increased significantly ($P < 0.001$) with a graded increase in prevalence of LAE across the groups. LAV/BSA showed a paradoxical decrease in prevalence of LAE in overweight and obese groups.

Conclusions: LAV/BSA significantly underestimated the prevalence of LAE in overweight and obese populations. Ht, either itself or with allometric powers, is the preferred index for LAV measurement.

Post-Operative Atrial Fibrillation after Aortic Valve Replacement for Aortic Stenosis is Unrelated to Left Atrial Volume Even When Corrected by Body Surface Area

Gui Hua Yao, MD; **Ali Ronan, MD; Jiang Cui, MD;**

James Cook, MD; John Rousou, MD; Jiang Leng, MD; Kathy Burns, CCRP

Objectives: Whether left atrial (LA) size is a risk factor for postoperative atrial fibrillation (POAF) remains controversial. We hypothesized that the controversy might be related to the varieties of cardiac surgery and the inconsistency in the measurements of LA size, such as dimension, area and volume, with or without body size correction. The aim of this study was to reevaluate this issue in patients who underwent aortic valve replacement (AVR) for aortic stenosis. **Study design:** We retrospectively studied 168 consecutive aortic stenosis patients (mean age 70.5 ± 12.5 years, men 58.9%) who underwent AVR, with respects to age, gender, body surface area (BSA), body mass index, LA dimension, area and volume, LVEF, aortic valve area, peak and mean gradients, interventricular septum thickness, posterior wall thickness, pulmonary artery systolic pressure, mitral early inflow velocity to annulus early tissue velocity ratio (E/E'), concomitant coronary artery bypass grafting (CABG), and history of hypertension and diabetes. Patients with a history of AF, mitral valve stenosis or concomitant mitral valve surgery were excluded from the study. **Results:** POAF occurred in 45.2% of the study population. Univariate analysis identified advanced age and concomitant CABG as risk factors for POAF ($P < 0.05$). There were no significant differences in gender, LA dimension, area, or volume with or without BSA correction, or other echocardiographic parameters between POAF and non-POAF patients ($P > 0.05$). Multivariate logistic regression analysis showed advanced age was the only independent predictor of POAF ($r = 0.02$, OR = 1.03, 95% CI = 1.00 - 1.06). **Conclusions:** POAF after AVR for aortic stenosis is unrelated to LA size, including dimension, area, and volume, with or without BSA correction. Advanced age is the only independent predictor of POAF in this study.

Significantly Misclassified Left Atrial Size by Left Atrial Dimension or Area: A Three- Dimensional Echocardiography Study

Gui Hua Yao, MD; **Neelima Vallurupalli, MD**;
Janet D'Amours; Jiang Leng, MD; Qi Wen Ye; Darrel Grigerick;
William Hiser, MD; Kathy Burns, CCRP

Objectives: left atrial (LA) volume (LAV) calculated from biplane method and corrected for body surface area (BSA) is currently considered as an accurate index of LA size. However, LA anteroposterior dimension (APD) and area (LAA) on two-dimensional echocardiography (2DE) remain the most common measures in routine practice. We sought to determine the accuracy and the role of each method in classifying LA enlargement when compared to three-dimensional echocardiography (3DE). Study design: Standard 2DE and 3DE were performed on 65 consecutive patients (mean age 58.4 ± 14.5 years, men 36.9%) who were in sinus rhythm and had good image quality. APD was measured at end systole on parasternal view and LAA on apical 4-chamber view. LAV was calculated by 3DE and biplane area-length (AL) formula using a shorter perpendicular midline length. Classification of LA enlargement for each parameter was based on the cut-off values recommended by the American Society of Echocardiography. Results: The mean value of LAV-3DE was 74.4 ± 25.4 ml (range 35.2 to 139.4 ml). There were significant correlations ($P < 0.001$) between LAV-3DE and biplane LAV-AL ($r = 0.92$, SEE 10.1 ml), LAA ($r = 0.88$, SEE = 2.3 cm²), and APD ($r = 0.76$, SEE = 3.8 mm). However, for classifying the degree of LA enlargement, significant underestimation was demonstrated by APD, LAA, and biplane LAV-AL (64.6%, 64.6%, and 10.8%) when using LAV/BSA as the standard. The total misclassification was up to 67.7%, 69.2% and 23.1% for APD, LAA and biplane-LAV, respectively. Conclusions: The commonly used APD and LAA, although correlate well with 3D-LAV, are inappropriate for classifying LA enlargement, given their significant misclassification in LA size. Biplane LAV by area-length method correlates best with LAV-3DE and should be applied in routine clinical practice with a correction for body size.

Poster Presentation

American Heart Association Scientific Sessions, November 2008

Significantly Misclassified Left Atrial Size by Left Atrial Dimension or Area: A Three-Dimensional Echocardiography Study

Gui Hua Yao, MD; **Neelima Vallurupalli, MD**; Denise Bienvenue; Jiang Leng, MD; Heather Carpenter; Kim Hernandez; William Hiser, MD

Objectives: left atrial (LA) volume (LAV) calculated from biplane method and corrected for body surface area (BSA) is currently considered as an accurate index of LA size. However, LA anteroposterior dimension (APD) and area (LAA) on two-dimensional echocardiography (2DE) remain the most common measures in routine practice. We sought to determine the accuracy and the role of each method in classifying LA enlargement when compared to three-dimensional echocardiography (3DE). **Study design:** Standard 2DE and 3DE were performed on 65 consecutive patients (mean age 58.4 ± 14.5 years, men 36.9%) who were in sinus rhythm and had good image quality. APD was measured at end systole on parasternal view and LAA on apical 4-chamber view. LAV was calculated by 3DE and biplane area-length (AL) formula using a shorter perpendicular midline length. Classification of LA enlargement for each parameter was based on the cut-off values recommended by the American Society of Echocardiography. **Results:** The mean value of LAV-3DE was 74.4 ± 25.4 ml (range 35.2 to 139.4 ml). There were significant correlations ($P < 0.001$) between LAV-3DE and biplane LAV-AL ($r = 0.92$, SEE 10.1 ml), LAA ($r = 0.88$, SEE = 2.3 cm²), and APD ($r = 0.76$, SEE = 3.8 mm). However, for classifying the degree of LA enlargement, significant underestimation was demonstrated by APD, LAA, and biplane LAV-AL (64.6%, 64.6%, and 10.8%) when using LAV/BSA as the standard. The total misclassification was up to 67.7%, 69.2% and 23.1% for APD, LAA and biplane-LAV, respectively. **Conclusions:** The commonly used APD and LAA, although correlate well with 3D-LAV, are inappropriate for classifying LA enlargement, given their significant misclassification in LA size. Biplane LAV by area-length method correlates best with LAV-3DE and should be applied in routine clinical practice with a correction for body size.

Poster Presentation

American Heart Association Scientific Sessions, November 2008

Double Blinded Randomized Comparison Between Lidocaine Jelly and Plain Aqueous Gel for Urethral Straight Catheterization and the Q-Tip Test

Obi Okafor, MD; Reyhan Ayaz, MD;
Alexander Knee, MS; Oz Harmanli, MD

Objective: To compare the pain perception between Lidocaine and plain aqueous gel during assessment of postvoid residual volume and the Q-tip test.

Methods: This is a double blinded randomized comparison of 2% Lidocaine jelly or aqueous gel when they are used for postvoid residual volume measurement and the Q-tip test. Relevant baseline characteristics and the Wong-Baker FACES (0-5) pain scores were compared.

Results: After randomization, Lidocaine and the aqueous gel arms consisted of 69 and 68 women, respectively. Baseline characteristics of the groups were similar. Significantly fewer women in the Lidocaine group (62.3%) reported any pain than those allocated to Surgilube (80.9%) (Odds ratio: 0.39, 95% confidence interval, 0.18-0.85). The mean pain score was significantly lower in the Lidocaine group (0.90 ± 0.9 versus 1.65 ± 1.23 , $p < 0.001$).

Conclusion: When compared to aqueous gel, 2% Lidocaine jelly significantly reduces the pain perception during evaluation of postvoid residual volume and the Q-tip test.

Poster Presentation

29th American Urogynecologic Society Annual Scientific Meeting,
Chicago, IL, September 4-6, 2008

Prototype Device for Non Invasive Measurements of Cervical Collagen

Roman Starikov, MD; Fadi Bsati, MD; Michael Plevyak, MD;
Glenn Markenson, MD; David Starikov, MD

Introduction: In the United States preterm labor is the major cause of infant morbidity and mortality. Screening and identifying those at risk is crucial to improving neonatal morbidity and mortality. Currently fetal fibronectin (fFN) measurements in cervicovaginal secretions in conjunction with sonographic cervical length measurements are the most clinically useful and cost effective tests used to identify those at risk. However, other tests and markers are currently being evaluated. One of these tests is measurement of auto fluorescence from the cervix reflecting collagen content. The non invasive device Collascope™ described by R. Garfield has been shown to predict labor in animal and human models and may prove to be a useful tool in the future. However, the Collascope™ is bulky, expensive, and therefore, not practical. It was developed in early 90s, but still did not find any practical applications. The Nitride Materials and Devices group at the Center for Advanced Materials (University of Houston) has focused its research efforts on the development of advanced optoelectronic devices based on III nitrides and other wide bandgap semiconductor materials. The technology used for the epitaxial growth of III nitrides ultimately allows for integration of all sensor components into a miniature (in the order of few millimeters) single, solid-state device. Light Emitting Diodes (LEDs), Photodiodes (PDs) and their combinations are currently being developed in the group for various advanced applications. Research team from University of Houston is currently working in collaboration with Baystate Medical Center on effort to miniaturize the portable system that would allow for time-resolved measurements (TRM) and steady state (SS) measurements using our miniature sensors based on solid-state LEDs and PDs.

Materials and Methods: We have fabricated an experimental sensor setup based exclusively on solid-state components. This setup consists of a GaN based ultraviolet (UV) LED from Sensor Electronic Technology Inc, SC (model number UV TOP335SET3), and a conventional silicon based photodiode. As a first step we measured fluorescence of a sample prepared from animal tissues (a beef meat layer placed between two sapphire slides).

Results: The spectral response measured by using the silicon photodiode from the samples excited by the UV LED, indicated an appropriate collagen fluorescence emission peak at the wavelength of $\lambda = 473$ nm.

Conclusion: The preliminary results indicate that alternative methods to measure real time fluorescence of collagen using inexpensive and miniature solid state optoelectronic components based on wide bandgap semiconductor materials are feasible.

Poster Presentation

New England Perinatal Society Meeting, March 27-29, 2009

A Comparison of Short-term Outcomes Between Laparoscopic Supracervical and Total Hysterectomies

Elena Tunitsky-Bitton, MD; Esin Sertac, MD;

Alexander Knee, MS; Ayse Cital, MD; Oz Harmanli, MD

Objectives: To compare perioperative outcome measures of laparoscopic supracervical (LSH) and total hysterectomies (TLH).

Materials and Methods: All women who underwent laparoscopic hysterectomy with or without cervical removal for benign gynecologic conditions at our institution from January 2000 and August 2008 were included in this study. Those who had any other concomitant surgery except for adnexal removal and cystoscopy were excluded. Baseline characteristics, rates of operative and postoperative complications, successful laparoscopic completion, as well as operative time, perioperative change of hemoglobin concentration, and length of hospitalization were compared between laparoscopic supracervical hysterectomy (LSH) and total laparoscopic hysterectomy (TLH). Mann-Whitney U, a non-parametric test, was used to evaluate significant differences. All the categorical variables were evaluated using Pearson's Chi-Square test with a continuity correction. A p value of <0.05 was used for assignment of significance. Using logistic regression models, we determined the crude odds ratios (ORs) and 95% confidence intervals (CIs) for each discrete outcome measure. We then combined the statistically significant patient characteristics in a multivariate stepwise logistic regression model to calculate the adjusted ORs.

Results : Of the 1016 consecutive women, 566 (55.7 %) underwent LSH and 450 (44.3 %) had TLH. The groups were similar with respect to age, race, gravidity, parity, and body mass index. TLH group had significantly more patients who underwent concomitant adnexal surgery. While most of the patients in both study groups had multiple indications listed, there were more patients in the LSH group whose indications included uterine leiomyoma and menorrhagia, while pelvic pain and endometriosis were listed more frequently in the TLH group. Operating time was not statistically different between the groups, averaging 167 minutes ($p=0.547$). Length of hospital stay was statistically longer for the TLH vs for the LSH group, 32.92 (± 16.19) vs 28.11 (± 14.85) hours, ($p<0.001$). Conversion to laparotomy was more likely in the TLH group, with adjusted odds ratio (AOR) of 2.25 (1.20-4.22) as was the occurrence of urinary tract injury, AOR of 4.75 (1.21-18.56). When evaluated in combination, serious postoperative complications, classified as life-threatening or those requiring re-operation, were more frequent in the TLH group than in the LSH group (AOR of 2.72 (1.35-5.49)).

Conclusion: In this largest comparison, short-term morbidity of TLH and LSH is overall similar. TLH presents a clinically small, but statistically significantly increased risk of conversion to laparotomy and urinary tract injury.

Oral Presentation

Society for Gynecologic Surgery (SGS), March 30 - April 1, 2009

Is Laparoscopic Supracervical Hysterectomy Better in Obese Women? A Comparison of Perioperative Morbidity with Total Laparoscopic Hysterectomy

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

Objective: To compare operative and post-operative indices for obese patients undergoing laparoscopic supracervical (LSH) and total laparoscopic hysterectomy (TLH).

Methods: All women with a body mass index (BMI) of at least 30kg/m² who underwent laparoscopic hysterectomy with or without cervical removal for benign gynecologic conditions at our institution from November 1999 to August 2008 were included in this study. Baseline characteristics, rates of operative and postoperative complications, successful laparoscopic completion, as well as operative time, perioperative change of hemoglobin concentration, and length of hospitalization were compared between LSH and TLH.

Results: Of the 319 consecutive obese women, 192 (60.2 %) underwent LSH and 127 (39.8 %) had TLH. The groups were generally similar with respect to the patient characteristics. The groups had similar frequencies of morbidly obese women (BMI >40). Length of hospital stay was statistically longer for TLH ($p=0.037$). Perioperative indices such as operating time, conversion to abdominal hysterectomy and perioperative change in hemoglobin as well as serious postoperative complications such as urinary injury, fever, ileus, and wound infections were not statistically different between LSH and TLH.

Conclusions: In this first study comparing LSH and TLH in an obese population, cervical preservation does not appear to offer any clinically significant advantage.

Iron and Associated Expression of the Transferrin Receptor (CD71) and Heme-Oxygenase-1 (HO-1) in Kaposi Sarcoma

Patrick O'Donnell, DO; Liron Pantanowitz, MD;
Sharon Marconi; Ashlee Moses, MD

Background: Human herpesvirus-8 (HHV8) seropositivity far exceeds the prevalence of Kaposi sarcoma (KS). This suggests that other cofactors like iron may be required for KS development. Iron stimulates KS growth in vitro and is found within KS tumor cells. However, the mechanism of iron utilization by KS cells is unknown. The aim of this study was to investigate whether iron in KS is associated with coexpression of the transferrin receptor (CD71), which facilitates the cellular utilization of iron, and heme-oxygenase-1 (HO-1), an enzyme which catalyzes the rate limiting step in heme catabolism and intracellular release of iron.

Method: 19 formalin-fixed, paraffin embedded archival cutaneous KS lesions (1 patch, 8 plaque, 10 nodular stage) were studied. Sections were stained for iron, CD71, HO-1, and LNA-1 (HHV8 latent infection).

Results: Iron was identified within KS lesional cells of 15 (79%) cases. KS cells in all cases (100%) demonstrated LNA-1, CD71, and HO-1 immunoreactivity.

Conclusion: These data show that iron in HHV8 infected KS lesional cells is associated with coexpression of CD71 and HO-1. This suggests that HHV8 infection upregulates proteins in KS lesional cells related to iron metabolism that may be important for KS development and growth.

Poster Presentation

American Society of Dermatopathology, October 2008

Rosai-Dorfman Disease: a Rare Pulmonary Presentation

Patrick O'Donnell, DO; Jonathan Freeman, MD; Vandita Johari, MD

Rosai-Dorfman disease (RDD), also known as sinus histiocytosis with massive lymphadenopathy, is a histiocytic proliferation of unknown etiology which most often involves cervical lymph nodes. Extranodal disease, usually limited to skin, bone, and the head and neck region, can occur in up to 40% of cases. Lower respiratory tract involvement is rare, mostly presenting near the subglottic superior trachea. An 82 year old male presented with a 3 month history of hoarseness and hemoptysis. A CT revealed a 5 x 4 cm mass-like density in the superior segment of the left lower lobe with bilateral axillary and mediastinal lymphadenopathy. He underwent thoracoscopic wedge resection of the left lower lobe with axillary and mediastinal lymph node biopsies. Fresh tissue submitted for bacterial, fungal and mycobacterial cultures revealed no growth. Histologic examination of the lung revealed a parenchymal lesion composed of histocytes with abundant pale eosinophilic cytoplasm with focal emperipolesis (Figure 1) characteristic of RDD. Extensive fibrosis, marked chronic inflammation, multinucleated giant cells, necrosis and rare necrotizing granulomas were also present. Stains for acid fast and fungal organisms were negative. Lymph node biopsies revealed morphologic findings typical of RDD. This case report highlights a rare pulmonary presentation of RDD, that raised the possibility of malignancy clinically, and infection morphologically. To our knowledge, this is the first reported case of RDD of the lung associated with necrotizing granulomatous inflammation, the significance of which is unknown.

Poster Presentation

College of American Pathologists Annual Meeting, September 2008

Unique Histopathologic Variants of Cutaneous Kaposi Sarcoma

Patrick O'Donnell, DO; Liron Pantanowitz, MD;
Wayne Grayson, MBBCh, PhD

Background: Kaposi sarcoma (KS) is a low-grade angioproliferative neoplasm derived from lymphatic endothelium. Lesions progress from early patch stage into plaques that ultimately form tumor nodules. The aim of this study is to describe five unique histopathological variants of cutaneous KS.

Method: Skin biopsy material submitted to a busy South African dermatopathology practice diagnostic of KS was reviewed. Formalin-fixed, paraffin-embedded tissue was routinely processed and stained with hematoxylin and eosin. Confirmatory immunohistochemical stains included CD31 and LNA-1 (HHV-8).

Results: All biopsies were procured from HIV positive patients with a clinical diagnosis of nodular cutaneous KS tumor. Five distinct histologic KS variants, not previously well characterized in the literature, were identified including glomeruloid KS, ecchymotic KS, telangiectatic KS, pigmented KS, and KS with myoid nodules. Tumor cells in all of these variants were immunoreactive for CD31 and LNA-1.

Conclusion: These unique cases highlight the ability of KS to exhibit variable histomorphology. Dermatopathologists need to be aware of these newly described variants in order to avoid the potential for their misdiagnosis.

Poster Presentation

American Society of Dermatopathology, October 2008

Does Proteinuria Predict Severity in Eating Disorders?

Allison Paroskie, MD; Laura Koenigs, MD;
Nancy Miller, MD; Claire Norton, RD

Background: Abnormalities in urinalysis have been described in patients with eating disorders (ED). There have not been studies that correlate urine findings with disease severity.

Objective: To correlate proteinuria with markers of eating disorder severity at the initial visit to an eating disorder program.

Design/Methods: Data from a retrospective chart review of 120 outpatients referred to an eating disorder clinic. Data analyzed: weight difference from peak weight to intake weight, history of binge eating/purging, BMI, orthostatic vital signs, UA, prealbumin, & creatinine. We compared the presence/absence of PTR with variables using 2-sample t-test assuming equal variance. Mean of the independent variables was calculated & compared.

Results: Patients with PTR had larger orthostatic HR difference (neg. PTR 11.5, pos. PTR 15.2, $p = 0.10$). There was a trend towards lower BMI in the PTR group (BMI: neg. PTR 19.1, pos. PTR 18.0, $p = 0.14$). There was little/no difference between the groups regarding creatinine, pre-albumin, or measurements of weight.

PTR was associated urine pH > 8 (neg. PTR 19%, pos. PTR 8%, $p = 0.148$). PTR was not found to be associated with presence of purging events (neg. PTR 78%, pos PTR 71%, $p = 0.6$) or amenorrhea (neg PTR 42%, pos PTR 32%, $p = 0.5$).

Conclusions: This study provides information regarding the initial evaluation of outpatients with EDs. We were unable to demonstrate any statistically significant differences between patients who presents with proteinuria. The noted trend in change in lying to standing HR suggests that PTR may be from orthostasis. Other markers of serious eating disorders (% max wt, % ideal weight, amenorrhea, prealbumin) were not associated with PTR. Further studies should be done to evaluate PTR and other objective data in patients with eating disorders to determine markers of disease severity.

Poster Presentation

Pediatric Academic Society Annual Meeting, May 2009

A Brief Intervention Using a Web-based Patient Self Management Assessment Tool Improves Blood Glucose Control (HbA1c) in Type 2 Diabetes

Gary Welch, PhD; Jane Garb, MS; Rebecca Shayne, MS

Computerized patient self management assessment tools have shown promise in office-based diabetes education research and offer the potential benefit of wide translation. We evaluated the Diabetes Self Care Profile (DSCP) that briefly assesses diet, exercise, medication, and physical activity behaviors, identifies one behavior selected by the patient for discussion, documents practical and psychosocial barriers to optimal self management, including attitudes and barriers to insulin therapy, and provides visual feedback on HbA1c control. The DSCP cost \$15,000 for IT development and was applied within a larger clinical trial evaluating novel patient centered approaches to diabetes education. Fifty eight poorly controlled (HbA1c >8%) Type 2 patients took part in the intervention. Patient characteristics were: mean age 57.2 ± 10.9 ; 63.8% female, 81.0% White, 12% Hispanic; 72.3% married; mean diabetes duration 7.0 ± 6.5 yrs; 49.4% some college education or higher; 63.6% had received diabetes education before; 84.5% were oral agent treated and 22.4% insulin treated; mean baseline HbA1c 8.9 ± 1.2 ; mean CES-D depression score 18.6 ± 10.9 ; patients attended 3.5 ± 0.8 out of 4 scheduled intervention sessions over 6 months with a Certified Diabetes Educator who used the DSCP report to guide education sessions. Results showed that HbA1c improved by $-1.0 \pm 1.3\%$ (effect size=0.8) over the 6 month intervention ($p<0.01$). Univariate analyses showed significant improvements in BMI (-0.8 ± 1.7), self care behaviors (10.8 ± 11.1), diabetes distress (-10.6 ± 15.8), diabetes treatment satisfaction (10.9 ± 5.0), and social support (13.5 ± 27.8) during the intervention (all $p<0.01$). A final regression model examining mediators of HbA1c change included diabetes self care, diabetes distress, and treatment satisfaction and explained 40% of HbA1c variance ($F=8.13$, $p=0.0003$).

Association of Post Surgical Treatment Behaviors and Frequency of Clinical Follow-up with Gastric Bypass Weight Loss Outcomes 2 Years Post Surgery

Garry Welch, PhD; Jane Garb, MS; Sofija Zagarin, PhD;
Cheryl Wesolowski; Jay Kuhn, MD; John Romanelli, MD

Lifestyle and behavioral factors are considered critical to weight loss success following gastric bypass surgery, yet these factors are not well understood. We conducted a 2 year follow-up of $n=100$ consecutive gastric bypass surgery patients seen at the Weight Loss Surgery Department, BMC. We used the Bariatric Surgery Self-management Questionnaire (BSSQ) to assess 7 salient behaviors: Eating style, Fluid intake, Physical activity, Management of dumping syndrome, Protein intake, Fruit and vegetable intake, and Multivitamin intake, and examined the association of BSSQ scores with percentage excess weight loss (%EWL) 2 years post-surgery. Physical activity (PA) was also assessed by clinical interview using a standardized scale. Seventy five patients participated: not included were 6 with repeat surgery, 2 who died, and 17 who refused to take part or could not be found. Sample characteristics: female 85.3%, white 84.0%, mean age 43.8 ± 10.9 yrs., BMI 49.8 ± 6.9 . Mean # post-surgical clinic visits were: surgeon 4.8 ± 2.7 , dietician 4.8 ± 2.4 , support group 6.2 ± 7.9 . Mean weight changed from 301.2 ± 56.7 to 206.4 ± 46.4 lbs ($p < 0.01$). Results of regression analyses showed only BSSQ Physical activity behavior score was significantly associated with %EWL ($R^2=0.08$, $p < 0.01$). Other BSSQ behaviors and number of clinic team visits were not predictive of %EWL. Mean aerobic PA assessed by interview improved from 1.3 ± 4.0 to 14.0 ± 17.8 METs /week ($p < 0.01$) and was significantly associated with %EWL ($R^2=0.07$, $p=0.02$). It will be important in future research to investigate whether increased PA caused additional weight loss or whether weight loss facilitated increased PA.

Bariatric Surgery for the Treatment of Morbid Obesity: A Meta-analysis of Weight Loss Outcomes for Laparoscopic Adjustable Gastric Banding and Laparoscopic Gastric Bypass

Garry Welch, PhD; Jane Garb, MS; Sofija Zagarin, PhD;
Cheryl Wesolowski; Jay Kuhn, MD; John Romanelli, MD

A meta-analysis was conducted of clinical reports providing bariatric surgery weight loss outcomes for morbidly obese patients over the period 2004-2007. Studies included were randomized controlled trials, non-randomized controlled trials, and uncontrolled case series involving patients receiving either laparoscopic adjustable gastric banding (LAGB) or laparoscopic gastric bypass (LGB) surgery. Electronic databases searched included Medline, SCOPUS, Proquest and the Cochrane Library Database of Systematic Reviews. An initial search identified 514 publications of which 429 were excluded, resulting in 85 eligible publications, 29 of which had sufficient data for inclusion in the analysis. The studies involved n=7,643 patients and were largely academic hospital based (79.3%) and retrospective in design (72.4%). Weight loss outcome was defined by excess percentage body weight (%EWL) and analyses involved calculation of composite effect size for LAGB and LGB using a random effects model. The analyses produced a composite %EWL of 62.2% for LGB surgery and 49.4% LAGB with outcomes for LGB significantly superior to LGB at all three post-surgical time points examined (1,2, and >3 years). Problems were identified regarding incomplete or suboptimal data reporting in many studies reviewed and high patient attrition bias was evident at 2 year (42.7% LAGB, 71.7% LGB) and >3 year (77.1% LAGB, 69.1% LGB) endpoints. Despite these problems regarding study quality there was no evidence of publication bias (file drawer effect) and findings were similar to those reported earlier for LAGB and LGB. Recent developments in national standards for surgical programs and clinical outcomes trials are expected to improve research in this area.

Imaging Evaluation of Breast Implants: Complications and Implant Associated Pathology

Erica Tyler, MD; David March, MD;
Adrienne Hansen, MD; Vivian Miller, MD

Background Information: Breast augmentation has been in practice since the late 19th century. The first such procedure in 1895 involved the autologous transplant of a lipoma. Subsequent techniques have included free injection of paraffin and silicone. Silicone gel implants were first used in 1962. Since then, an estimated 1-2 million women have undergone silicone breast augmentation both for cosmesis and for reconstruction following mastectomy. Saline implants gained popularity in 1992, when the FDA temporarily restricted the use of silicone implants.

Patients with implants can provide a challenge in screening and diagnostic breast imaging due to implant related complications as well as unrelated, concomitant breast disease. Implant complications include rupture, capsular contracture, herniation through the fibrous capsule, migration, and peri-implant fluid collections. In addition, implants may be affected by benign and malignant neoplasms. Hematologic and inflammatory conditions may also involve breast implants and affect their imaging appearance.

Education goals/Teaching points: The goals are to review the imaging appearance of different types of implants and their potential complications; review the imaging appearance of other pathologic entities that may affect breast implants; and describe how the use of different imaging modalities may narrow the differential diagnosis of implant-related breast pathology and contribute to patient management.

Key anatomic or physiologic issues, imaging findings or imaging technique the proposed exhibit will address:

Imaging modalities will include mammography, sonography, and MRI. The different types of implants will be discussed and examples provided. The imaging findings of intra- and extra-capsular implant rupture, and other complications, along with potential diagnostic pitfalls will be reviewed.

Pathologic entities that can affect breast implants, other than those related to implant complications will also be reviewed and discussed. Examples will be provided of both benign and malignant breast lesions. Strategies for imaging these patients will be provided.

Conclusion: Familiarity with the imaging appearance of breast implants, their associated complications, and the appearance of concurrent breast disease are important elements of breast imaging, and will aid in accurate diagnosis.

Presentation

The American Roentgen Ray Society 109th Annual Meeting, Boston, MA, April 26-May 1, 2009

Nodal Staging of NSCLC: A Pictorial Atlas of Thoracic Lymph Node Stations Utilizing FDG PET/CT

Erez Vidan, MD; Laurie Gianturco, MD;
Boyd Hehn, MD; Gary Hochheiser, MD

The initial staging of non-small-cell lung cancer has significant prognostic and therapeutic implications. Both CT and FDG PET/CT are currently used in the initial workup of NSCLC. While CT alone is adequate for tumor (T) staging, the added value that FDG PET/CT provides has been clearly demonstrated in the assessment of regional lymph node involvement (N) and in detecting distant metastases (M). The presence of malignant lymph nodes in the mediastinum can significantly alter management and prognosis, and so, their detection and accurate localization is highly important in a staging workup. A thorough knowledge of the anatomic locations of thoracic lymph nodes is critical for the physician interpreting an FDG PET/CT study performed for NSCLC staging. The location of a node can alter the stage and prognosis, determine a patient's surgical candidacy, and also help the clinician determine the best possible route for lymph node biopsy. We present a pictorial atlas of the thoracic lymph node stations utilizing images from FDG PET/CT studies to help simplify the anatomy of thoracic lymphadenopathy. Learning the anatomic locations of the thoracic lymph node stations as outlined by the American Joint Committee on Cancer will lead to more consistent reporting of PET/CT studies between readers and will allow the interpreting physician to communicate more effectively with referring oncologists, pulmonologists, and thoracic surgeons.

Poster Presentation

Society of Nuclear Medicine, 54th Annual Meeting, June 2007

Common False Positive Findings on FDG PET/CT: An Atlas of Artifacts, Normal Variants, and Incidentals

Erez Vidan, MD; Laurie Gianturco, MD

Purpose: 1. To share with the viewer a collection of common false positive cases encountered with FDG PET/CT.

2. To educate the viewer regarding the importance of understanding these common false positives so that they are not mistaken with pathologic findings.

Summary: We hope to illustrate many common false positives encountered on FDG PET/CT studies. This will help the viewer understand that there are benign and artifactual causes of increased metabolic activity, so that these entities will not be confused with malignant pathology. Remembering these common false positives will also help broaden one's differential diagnosis.

Electronic Presentation

Radiological Society of North America, 94th Annual Meeting, December 2008

Award

Cum Laude Award; Radiological Society of North America, December 2008

Ethical Dilemmas in the Reflective Writing of Clerkship Students

Elisabeth Bennett, PhD; John O'Reilly, MD; Thomas Campfield, MD

Background and Problem Statement: As part of a new Ethics course, clerkship students reflected on ethical issues through writing. Course materials described ethical reflection as a process that helps a student to reach a consensus when different value systems are in conflict. Students considered values they bring to medicine and the value systems of others, learned how to discuss and analyze value conflicts, and developed a basic understanding of ethical concepts in this course. The course produced 40 pages of reflective entries. Little is known about how students process ethical dilemmas and so the reflections provided an opportunity to study ethical dilemmas that affect how students develop as physicians. **Review of Literature** Despite the importance of ethics in medicine, research has shown a decline in empathy and altruism during medical school (Haidet et al; Newton et al.; Tsimtsiou et al). A dramatic decline is reported in the third year, although these studies were not able to pinpoint why. Researchers have suggested factors such as fatigue, loss of idealism, exposure to a "hidden curriculum", and the general challenge of clinical learning. Medical ethics is about "upholding the beliefs of prioritizing the patient's best interests and societal good while respecting the patient's rights as a person (Dingle & Struber, p. 187)." Coulehan et al. suggest that students are socialized to professional values during medical school where medical language replaces other forms of communication and the affective capacity is diminished.

Research Method and Question: Since prior studies have not explained how a decline in empathy occurs, a qualitative study design was selected as an appropriate method to analyze the reflective writings for content. The purpose of this study was to understand how 3rd year medical students process ethical dilemmas through reflective writing. This abstract addresses the research question: What ethical dilemmas did students discern through the writing? Open and axial coding of data yielded the findings through inductive analysis.

Findings: Three major categories described ethical dilemmas discerned from the data. These are: 1. Role Conflict, 2. Hidden Curriculum, and 3. Boundaries of Care. Role conflict is the internal tension students experience when they navigate their roles as learner in daily practice. Conflicts include learning their place on the care team and the realization that optimal learning is not necessarily optimal patient care. Hidden Curriculum is content of informal learning in daily practice that differs from formal coursework. Hidden curriculum occurs most often when a student observes behavior of residents and attendings that conflicts with ethical values. Examples include mistrust in the physician-patient relationship, disrespect, value judgments, and conflicts of interest such as transferring a difficult patient. Boundaries of care

describes the way students negotiate the parameters of medical practice, which include complex right versus right ethical dilemmas (Kidder, 1995). Examples include defining social versus technical futility, personal safety versus patient care, side effects of care, and handling disagreement amongst experts.

Discussion: The writings analyzed represent single-sided perceptions rather than the whole story of an incident. As such, it is clear students create ethical meaning from what is said and done in the clinical setting and much learning occurs informally through experience, observation, and reflection. Other members of the care team, such as residents and attendings, are powerful role models for positive and negative ethical behavior. This study highlights the need for medical students to be given opportunities to process these experiences within a framework of values in medicine. Additionally, faculty can reinforce institutional supports for students when there is a perceived breach of ethics, which may counter empathy loss.

BOOT CAMP: Implementation of an Intensive Simulation-based Educational Curriculum for New Surgical Interns

Gladys L. Fernandez, MD; Patrick C. Lee, MD; **Loki Skylizard, MD;**
Myron St. Louis, MD; David W. Page, MD; Ronald Bush, BS;
Richard B. Wait, MD, PhD; Neal E. Seymour, MD

Objective: In order to rapidly improve new surgical trainee skill at the onset of employment, we initiated an intensive preparatory training experience for starting post-graduate year (PGY) 1 surgical residents at Baystate Medical Center and report early performance results of this training.

Interventions: BOOT CAMP consisted of 8 procedural skills and simulated patient care exercises during weekly 3-hour skills lab sessions over 9 weeks. These consisted of instrument use, knot-tying, suturing, laparoscopic skills, airway management, central venous catheter and chest tube insertion, and patient care problems (shock, respiratory, cardiac, and trauma management) using high- and low-tech simulations. Faculty and senior residents served as teachers.

Main Outcome Measures: Baseline cognitive skills were assessed with written tests on basic patient management. Post-BOOT CAMP tests similarly evaluated cognitive skills. In addition, technical skills were expressed as a mean score for all activities for each resident. These were compared to test results for PGY-2s who had not received BOOT CAMP training (unpaired t-tests).

Results: 75% of residents improved their cognitive skills test scores over the 9 weeks' training. There was great variability in technical skills among PGY-1s (mean post-training scores $71 \pm 13\%$ SD; range 53-82%), and 2 residents' technical skills were below the lower 95% confidence limit. PGY-2 technical skills scores remained better than PGY-1 scores (82 ± 1 vs 71 ± 4 ; $p < 0.05$) but written exam scores were similar.

Conclusions: A procedural and cognitive training curriculum for new PGY-1 surgical residents was successfully implemented. Variations in performance were noted, with early indications of performance outlier behavior that have directed efforts to facilitate peer-appropriate performance.

Podium Presentation

New England Surgical Society Meeting, Boston, MA, 2008

Development of a Surgical Resident Curriculum in Human Patient Simulation for Cognitive Skills Training

Gladys L. Fernandez, MD; Patrick C. Lee, MD;
Elizabeth M. D'Amour, RN; Neal E. Seymour, MD

Introduction: Our hypothesis is that the utilization of Human Patient Simulation (HPS) training results in improved cognitive resident training in a 'low risk – high gain' simulation environment, and results in improved overall performance.

During the course of residency training in Surgery, learners at our institution are exposed to traditional educational methods, as well as additional, innovative methods through the use of high-fidelity simulation trainers. Simulation curriculum implementation is undertaken routinely in the course of HPS training, using a physiologically modifiable and reproducible model for cognitive skills task training. We have developed a curriculum that incorporates 'realistic' simulated patient encounters with common disease states and postoperative complications which allow us to survey medical knowledge, diagnostic acumen, clinical management, communication, professionalism and practice-based learning evidenced during simulated patient encounters.

Methods: Once per week, residents are involved in simulation-based training with a realistic HPS case scenario. After a brief discussion of pertinent topics, a junior resident is presented with a specific nursing complaint regarding an ill patient. The resident responds to the patient setting and nursing concerns and proceeds with patient evaluation and management of physiologic events as encountered. Many of the ACGME outlined core competencies are addressed during the HPS encounter. Team work, consultation for assistance, and other patient care parameters are addressed during these training activities. Procedural tasks, such as physical examination, needle thoracostomy, endotracheal intubation, and others, are often incorporated into the HPS training sessions. The 'realistic encounter' is followed by an immediate post-scenario debriefing which addresses issues encountered, patient care details and outcomes. Individual and team interactions are assessed by simulation instructors, as well as self-assessment and pertinent discussion. Data obtained in these sessions is incorporated into a standardized evaluation tool created at our Simulation Center. This tool is referred to as a supplement for measuring performance and determining understanding, as well as evaluating the need for further assessment, training and remediation.

Impact: Because patient outcomes are not reasonable measures of resident performance, we propose the use of the HPS training evaluation results, in conjunction with traditional assessments, as means of determining whether simulation-based training improves educational outcomes. Preliminary data reveals improved performance over repeated HPS training exposures in several critical core competency areas.

Medical Student Performance in Surgical Patient Simulation Correlates With End-Of-Clerkship Oral Examination Performance

Gladys L. Fernandez, MD; David W. Page, MD; Elizabeth M. D'Amour, RN; Richard B. Wait, MD, PhD; Neal E. Seymour, MD

Objective: The study purpose was to demonstrate that medical student performance in simulated surgical patient care correlates with performance in verbally-expressed patient care as measured during the end-of-clerkship oral examination (OE), using a uniform performance measurement instrument.

Setting: University affiliated community hospital

Participants: Forty-six Tufts 3rd year medical students (MS3s)

Interventions: MS3s received patient simulation training during the surgical clerkship over a period of 20 months including 7 twelve-week clerkship blocks at our institution. The simulation training consisted of 5 scheduled simulations per student, drawn from a core of simulated patient experiences. All students had the same didactic exposure over the 12-week rotation. An end-of-clerkship oral examination patterned on the American Board of Surgery (ABS) certifying exam was given, testing verbally-expressed patient management on randomly selected cases. Examiners were blinded to student simulation experiences.

Main Outcome Measures: Simulation and OE performance were measured using an 8-item instrument assessing diagnostic, therapeutic, and presentation skills (5-point scale), with a final score comprised of the mean of assessed items. Performance trend in successive simulations was tested by repeated measures ANOVA. Pearson correlation test was performed for simulation and OE performance.

Results: MS3s received 5.89 ± 0.91 (SD) hours simulation training (median = 6 hours) and all finished at least 4 simulations (range 4-8). A significant improvement in simulation performance was observed over 4 successive simulations ($p < 0.0001$). Simulation performance correlated well with OE performance ($r = 0.415$; $p = 0.0041$).

Conclusions: Performance in simulation during the surgical clerkship correlates well with end-of-rotation OE performance, and suggests that the skill sets employed during these two activities are similar. This suggests a means of discovering performance issues during formative training that might impact subsequent summative assessment.

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

JEAN PIAGET