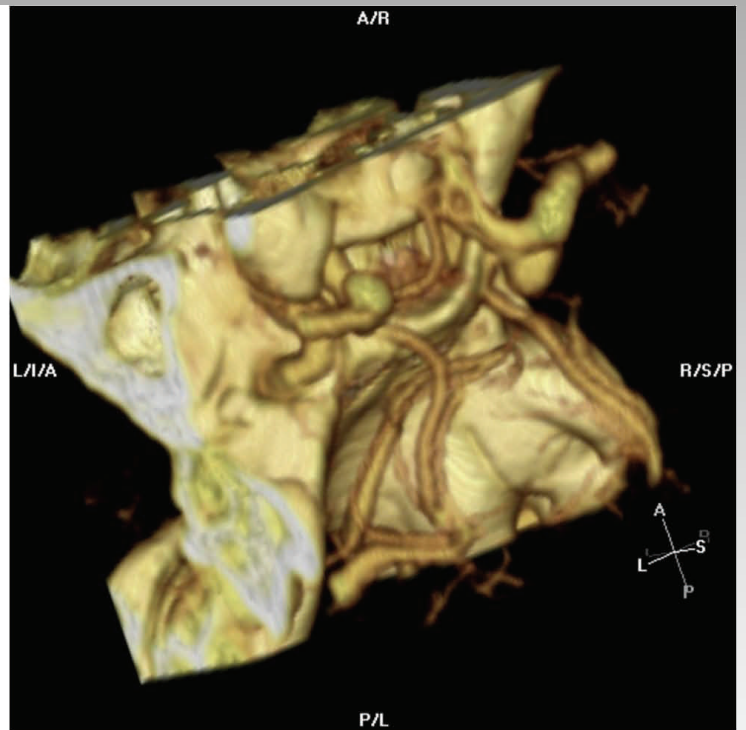
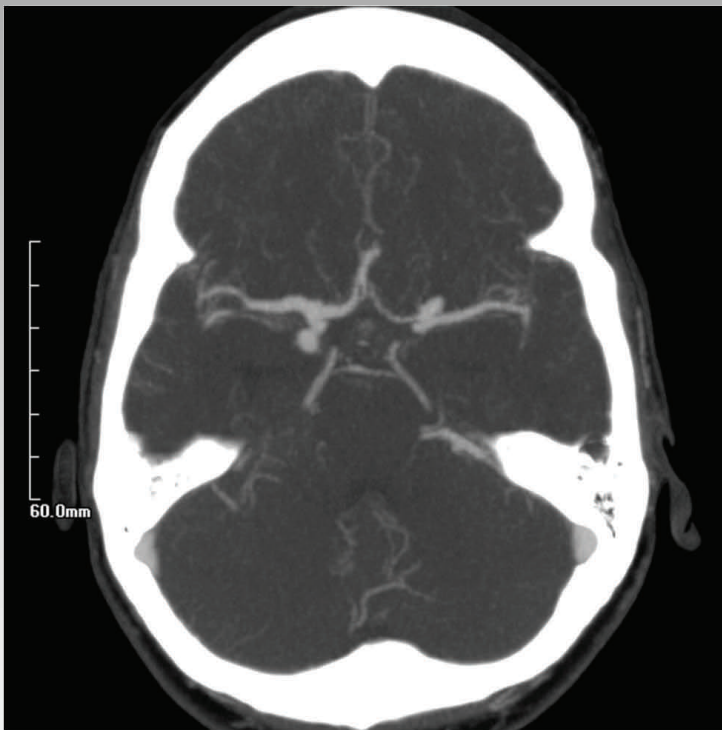


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- Preface -

May 17, 2011

It is my pleasure to welcome you to Arrowhead Regional Medical Center's Sixth Annual Resident Research Day. On the following pages you will find abstracts covering a wide range of topics and encompassing original research as well as case reports. The time and effort on the part of our Residents represented by these submissions is much appreciated.

Research provides the necessary catalyst to drive future innovation in our field of medicine. Several of this year's submissions illustrate the remarkable answers which can be gleaned simply by asking "what if" or "why". Others explore new approaches to established problems; or conventional approaches to new developments. Yet others help illustrate uncommon presentations of common diseases as well as common presentations of uncommon processes.

I hope that the issues raised between these covers will inspire others to further explore questions raised. Thanks to each ARMC Resident and collaborator whose research is included. It is inspiring to participate at an institution dedicated not only to outstanding clinical care, but committed to performing the research that may change the course of that care in the future.

Special thanks again, to Dr. Ed Lee, for his tireless commitment to helping to make this event a reality for the past six years.

David Lanum, M.D.
Co-Editor



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David Lanum, MD

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EVALUATION OF HIV-RELATED MORBIDITY AND MORTALITY IN PATIENTS AT ARROWHEAD REGIONAL MEDICAL CENTER

Kristina Angelo, DO,
Christopher Dalinkus, DO,
Michelle Nowroozi, DO,
Daniel Pearce, DO
Department of Family Medicine, ARMC

BACKGROUND

With the advent of anti-retroviral therapy (ART) in 1998, the United States has seen a decline in the morbidity and mortality of HIV positive patients. Mortality rates in HIV infected individuals since ART have become much closer to the mortality of the general population within the first 5 years of seroconversion¹. Although ART has proven beneficial, patients with limited resources, inadequate health care follow-up, and other social problems, including poverty, discrimination, and sexual biases, may increase the morbidity and mortality of patients with HIV². The goal of this study will identify the predictors of morbidity and mortality during hospital admission for HIV positive patients.

METHODS

This is a retrospective, epidemiologic study performed at Arrowhead Regional Medical Center. The medical records of HIV positive patients who were admitted to the Internal Medicine service between May 2007 and December 2010 were reviewed. The patient information extracted included age, sex, length of stay, all admit diagnoses, CD4 count, CD4 percent, absolute CD4 count, viral load, race, use of antiretroviral therapy, HIV diagnosis date (if available), ICU length of stay (if applicable), insurance, and appropriate prophylaxis upon discharge. Comparison was made between patients currently on ART and those not. Further subgroup analysis was made between groups after stratifying patients by their CD4 counts at presentation.

RESULTS

A significant difference was found in the CD4 counts, CD4%, and viral loads between patients on ART vs. not on ART. There was also a significant difference in patients requiring ICU level care and the ICU length of stay between ART and no ART groups. In addition, when comparing patients with some form of insurance vs. patients with no insurance, there was a significantly larger group of patients on ART with insurance than those on ART without resources. When examining mortality, there were a significantly higher number of patients who were not on ART that died. There was no significant difference between age, sex, length of stay, or race. Preliminarily, most of the morbidity and mortality for patients not on ART was in patients with *Pneumocystis jiroveci* pneumonia.

Sub-group analysis demonstrated that with lower CD4 counts, there were a greater number of patients that required ICU care, and increased ICU length of stay when not on ART. Also, a significantly larger number of patients were found to have some type of insurance when on ART as compared with those without insurance.

DISCUSSION

As predicted, patients not receiving treatment for HIV have higher in-hospital morbidity and mortality. This is reflected by more ICU admissions, longer ICU stays, and greater risk of death. Despite options for people with limited resources to receive treatment for HIV, a larger number of our uninsured patients are not receiving adequate anti-retroviral treatment for their illness, putting this population at increased risk of morbidity. Efforts to increase public education and public health awareness of HIV should be undertaken to address these issues.

A CASE OF PULMONARY ARTERIOVENOUS MALFORMATIONS SECONDARY TO HEREDITARY HEMORRHAGIC TELANGIECTASIA

Rachna Bali¹ D.O, M.S.,
Lia Katz¹ M.D
Department of Internal Medicine, ARMC.

INTRODUCTION:

Hereditary hemorrhagic telangiectasia (HHT) also known as Osler-Weber-Rendu syndrome is an autosomal dominant vascular disease affecting approximately one in 5,000 - 8,000 individuals. It is characterized by epistaxis secondary to mucocutaneous telangiectases of the nose, mouth, lips and fingertips, and by arteriovenous malformations (AVMs) that affect the arteries of the brain, lung, nose, and gastrointestinal tract leading to serious morbidity and a high rate of mortality in affected patients. It is estimated that pulmonary AVMs are present in up to 30% of patients with HHT. Here we present a case of HHT complicated by pulmonary AVMs and subsequent successful embolization.

CASE REPORT:

33 year old Hispanic female with a past medical history significant for seizure disorder and anemia presented to the ARMC emergency department to refill her dilantin medication for seizure disorder. A routine examination revealed an O2 saturation of 91% on room air with the review of systems positive for cough, chills and dyspnea on exertion. Chest x-ray showed questionable right lower lobe nodule versus infiltrate with a Chest CT recommendation. Subsequent Chest CT with IV contrast revealed multiple right-sided pulmonary AVMs along with an abnormal room air ABG – etiology unknown at the time of the ER visit. Patient was thereafter scheduled at the ARMC Internal Medicine clinic for further work- up and management. A detailed history taking revealed that patient has a family history on her paternal side of HHT, which included her father. A brain MRI was obtained which did not show brain AVMs. Pulmonary function test revealed mild airflow limitation for the volumes being utilized with a significant response to bronchodilator. The shunt study demonstrated a 25% shunting; considered to be moderate to marked shunting with normal being <5%. The patient eventually received successful embolization of four large AVMs and is currently free of dyspnea.

DISCUSSION:

This case illustrates the value of complete history taking as the etiology of patient's pulmonary AVMs was found as soon as she stated that she has a family history of HHT. It also demonstrates the importance of early recognition of this disease and close monitoring in order to prevent future complications including mortality.

PRIMARY INTRACEREBRAL UNDIFFERENTIATED PLEOMORPHIC HIGH -GRADE SARCOMA; A CASE REPORT AND REVIEW OF LITERATURE.

John Capua, D.O.
Shawnawaz Quereshi D.O.
Silvio Hoshek M.D.
Department of Neurological Surgery,
Desert Regional Medical Center
Arrowhead Regional Medical Center

Primary intracerebral involvement of undifferentiated pleomorphic high-grade sarcoma (UPGHS) previously known as malignant fibrous histiocytoma is unique. Most commonly, UPGHS neoplasms involving the central nervous system (CNS) are metastatic in origin. The majority of primary CNS arising UPGHS originate from the meninges. We report a 60 year old gentleman who presented with primary intracerebral inflammatory UPGHS without dural involvement. No source of metastatic origin was identified. We also review other previously reported cases, including treatment and prognosis associated with these extremely rare primary originating CNS neoplasms. To date, the reported cases of primary CNS arising UPGHS number only 42 cases.

A NOVEL SCORING SYSTEM FOR THE ASSESSMENT AND TREATMENT TIMELINE OF CEREBRAL ABSCESES: C.A.S.S (CEREBRAL ABSCESS SEVERITY SCORE)

Vladimir Cortez, D.O.
Department of Neurological Surgery,
Arrowhead Regional Medical Center

Objective: Cerebral abscesses are often difficult to institute a treatment protocol given their rapid nature, unpredictable effect on damaging the brain, and detrimental outcome on the patient. This author has attempted to determine a universal scoring system for the treatment of abscesses based on a wide based literature review of the current treatment modalities, case presentation, and proposed algorithm.

Methods: Internet literature review of cerebral abscesses on the US National Library of Medicine. Key words used included: cerebral abscess, brain abscess, imaging & brain/cerebral abscess, lumbar puncture, cerebral spinal fluid markers (S100B), electroencephalogram & brain/cerebral abscess, steroids & brain/cerebral abscess, stereotactic surgery, craniotomy, bur hole. Various journal articles were process and reviewed for determination of treatment options.

Results: In accordance to the evidence presented within this research article, the mainstay of treatment for cerebral abscess includes surgical intervention and antibiotic regimen. A novel numeric scoring system was formulated and denoted as CASS for Cerebral Abscess Severity Scale. The function of the CASS score is to guide the intervention process as all abscesses should be surgically treated within twenty-four hours.

Conclusions: Despite current advances in imaging modalities, the diagnosis of cerebral abscess remains elusive and difficult to treat. Currently, there is not a universal approach to effectively managing cerebral abscesses. The CASS score is novel scoring system that utilizes constitutional signs and symptoms that are sensitive to CA combining with radiological imaging. Although its effectiveness remains to be tested, The CASS score is based on anecdotal evidence and previous case presentation in the literature, which proves to be proficient. The next rational step is to implement the use of the CASS score within our practice group and determine its utility.

Keywords: Cerebral abscess, brain abscess, imaging (CT/MRI), lumbar puncture, cerebral spinal fluid markers (S100B), electroencephalogram & brain/cerebral abscess, steroids & brain/cerebral abscess, stereotactic surgery, craniotomy, bur hole.

MINIMALLY INVASIVE TREATMENT OF LUMBAR SPINAL STENOSIS AND ASSOCIATED DEGENERATIVE SCOLIOSIS WITH X-STOP

Vladimir Cortez, D.O.
Department of Neurological Surgery,
Arrowhead Regional Medical Center

Objective: Lumbar spinal stenosis (LSS) is a common etiology seen in patients with chronic low back pain. Commonly associated with LSS includes spondylolisthesis, facet hypertrophy, neuroforaminal stenosis and scoliosis. The purpose of this paper is to present a two-fold treatment option of LSS with degenerative scoliosis by the implementation of an interspinous prosthetic device known as X-STOP.

Methods: Retrospective study of 55 patients at Desert Regional Medical Center (DRMC) who underwent treatment for chronic low back pain related to LSS and associated radicular symptoms with X-STOP between November of 2006 through October of 2008 were evaluated. Radiologic evaluation of lumbar X-rays prior to undergoing X-STOP procedure confirm 15 patients from the initial 55 with degenerative scoliosis associated with LSS. Degenerative scoliosis was assessed with measurement of the Cobb angle using the upper most vertebra with translational and rotational changes to the superior end plate to the lowest most vertebra with similar changes to the inferior end plate.

Results: The 15 patients with documented evidence of scoliosis underwent treatment for LSS with X-STOP. The median Cobb angle prior to undergoing X-STOP treatment was 9.9 with a minimal Cobb angle of 5 and a maximal of 19.4. The median Cobb angle post-operative was 6.7 with a maximal degree of 16.8 and a minimal of 1.2. Average percent decrease in Cobb angle degree was estimated to be 30, with a range 0% to 93%. There was a significant reduction (and in some cases complete resolution) of symptoms based on clinical follow-ups. From the initial 15, 14 patients' quality of life was restored to a modest level of function in comparison to their pre-operative condition. One patient (67F) remain unchanged post-operative with no change in pre and post operative Cobb angle degree.

Conclusion: In all, X-STOP can be also consider to be an effective treatment option for LSS with degenerative scoliosis, provided that the patient meets exclusion criteria to undergo standard laminectomy and posterior fusion.

Keywords: Lumbar Spinal Stenosis (LSS), laminectomy, facetectomy, degenerative scoliosis, X-STOP (Interspinous process decompression system), Cobb angle, neurogenic claudication, radiculopathy, parasthesia

EFFECT OF CONTINUOUS INFUSION KETOROLAC TROMETHAMINE ON PAIN PERCEPTION AND NARCOTIC USE .

Caitlin Downer
Andrew Lowe
Department of Pharmacy
Arrowhead Regional Medical Center

The study objective was to investigate the effect of a low dose continuous infusion of ketorolac tromethamine on pain perception and opiate use. Surgical patients between the ages of 18 and 60 were included in the study. Patients were excluded if they had coexisting medical conditions. Each patient was randomized to receive a continuous infusion of ketorolac tromethamine 120 mg in 500 ml dextrose 5% in water, or placebo, each infusing at 10 ml/hr. Continuous infusion was started at the end of the surgical procedure. Each patient was started on PCA with morphine or hydromorphone without a basal rate. Bolus doses of opioids were ordered for breakthrough pain. Pain was assessed daily using a visual analogue scale. The number of times the patients pressed the PCA button and the number of doses administered were recorded. PCA was discontinued after 48 hours and oral analgesia was started. Results and conclusions will be presented.

CLINICAL PREDICTORS OF WOUND BOTULISM – A DIAGNOSTIC AND TREATMENT STRATEGY

Chuck Emond, D.O.
 Carol Lee, M.D.
 Michael Neeki, D.O.
 Department of Emergency Medicine
 Arrowhead Regional Medical Center

We present a case series of patients who presented to Arrowhead Regional Medical Center between 2006 and 2009 and were ultimately diagnosed with wound botulism secondary to intravenous drug use.

Introduction:

As emergency medicine physicians, we pride ourselves in early recognition and treatment of life threatening pathology. However, unfamiliarity with some uncommon disease processes can prevent this aggressive approach. Since the introduction of black tar heroin in the 1990s, wound botulism secondary to skin popping has become a lethal habit. The mixture of the components of the black tar is a breeding ground for *Clostridium botulinum*. The virulent bacteria thrives in the anaerobic environment provided by abscesses that develop after subcutaneous injection of the heroin. Its neurotoxin quickly spreads systemically via the lymphatic and vascular circulation, leading to the development of classic yet non-specific signs and symptoms of wound botulism. Symptoms develop rapidly and range from mild to fatal. The morbidity and mortality of wound botulism can be drastically reduced if clinicians are adept at recognizing its clinical predictors and expediting appropriate treatment.

Discussion:

Although many hospitals very seldomly, if ever, see a case of wound botulism, nine cases were diagnosed at Arrowhead Regional Medical Center between 2006 and 2009. Retrospective review of this hospital's experience dealing with wound botulism reflects a consistent prolonged time delay between patient presentation and request for antitoxin delivery. Considering that the fatality rate of wound botulism has been noted to be as high as 15% and that early treatment of the disease can halt progression and shorten the duration of ventilator dependence, this study aims to develop a protocol to assist in rapid identification of these patients. There are several historical and physical exam clues that suggest wound botulism as a likely etiology. These clues, along with a high clinical suspicion, should prompt the clinician to initiate appropriate evaluation and treatment. Since there can be a delay of up to 4 days between blood sample acquisition and positive toxin assay results, treatment is initiated empirically with botulinum antitoxin. This remedy can only be obtained via transport from the CDC, so the primary rate limiting step in the treatment process is the amount of time taken to contact the CDC. Stabilization of the patient and treatment of other associated conditions must occur until definitive therapy for the wound botulism is given with the antitoxin. Recovery times vary, as indicated by the wide range of hospitalization durations in this study. All patients in this study, regardless of disease severity, survived to hospital discharge after receiving the antitoxin.

PRESCRIPTION REFILL MANAGEMENT

Michelle Fajardo, M.D.
 Amrita Sandhu, D.O.
 Emily Ebert, M.D.
 Department of Family Medicine
 Arrowhead Regional Medical Center

Prescription refill management is a common challenge faced by all physicians. With the vast amount of patients cared for and the wide range of medical problems being managed, it is an even greater challenge in primary care. Much provider and nursing time is spent handling refill requests, especially when refills are not obtained during a clinic visit. When prescription refills are not obtained during a clinic visit, the following additional steps are needed to process the request: (1) patient request by phone or fax, (2) chart pulled from medical records, (3) decision making by clinical support staff or provider, (4) medical record documentation, (5) communication between the clinic and pharmacy, (6) patient notification, and (7) chart returned to medical records.

To assess the problems specific to Arrowhead Regional Medical Center, a task force was formed to address key issues. The task force consisted of Zarina Baqai, RN (Ambulatory Service Manager), Dr. Amrita Sandhu, D.O. (Family Medicine PGY-3), Dr. Michelle Fajardo, M.D. (Family Medicine PGY-3), Dr. Andrew Lowe, PharmD (Director for Pharmacy Services), Dr. Martha Melendez, M.D. (Vice Chair for Family Medicine), Dr. Emily Ebert, M.D. (Associate Medical Director, Ambulatory and Medical Services), Ms. Candace Jenkins, RN (Nurse Supervisor of McKee Clinic), and Ms. Winona Eichner, RN (Specialty Clinic Supervisor). Questionnaires were then created and distributed to both staff and patients at the three Family Medicine Health Clinics (Fontana, McKee, and Westside) to appraise their satisfaction of the current system and areas for improvement. The total amount of staff respondents consisted of: five PGY-1's, five PGY-2's, eight PGY-3's, fourteen post-graduate physicians, three nurse practitioners, and eight clinic support staff. Our group of clinic support staff included 1 C.A and 1 R.N. from Mckee, 2 R.N.'s and 1 L.V.N from Fontana, and 1 L.V.N and 1 R.N. from Westside. The total amount of patient respondents were 102 from Fontana, 67 from Westside, and 25 from Mckee.

From our data, we can see that although a great deal of providers and clinic support staff are somewhat to very unsatisfied with the current prescription refill system, our patient population is relatively happy with the services that we provide them. Also by reviewing the total number of messages processed by each clinic weekly, we can see that Mckee has almost 33% more messages than Fontana and almost 50% more than Westside. From our data, we were also able to analyze barriers for patients' in obtaining their refills, and also barriers for our staff leading to a less than optimal prescription refill process. Using the information obtained from the questionnaires along with other suggestions discussed by the task force, we were able to develop several ideas and implement some of these changes in order to improve our current system. Further study is being conducted to evaluate if these changes have indeed led to improvement.

LEMIERRE'S SYNDROME: A CASE REPORT

F. Farmand,
T. Stepanyan,
M. Nowroozi
Department of Family Medicine
Arrowhead Regional Medical Center

Lemierre's Syndrome is a rare disease characterized by an originating oropharyngeal infection, most commonly *Fusobacterium necrophorum*, leading to thrombophlebitis of the internal jugular vein and subsequent metastasis to the lung and other regions. While the post-antibiotic era seemed to have nearly eradicated the disease, the past several decades have shown a resurgence of cases. We present a case of a patient whose disease course was complicated by multiple, bilateral septic emboli, ARDS requiring mechanical ventilation, and bilateral pneumothoraces. This patient particularly benefited from the use of Volumetric Diffusive Ventilation, multiple chest tubes for drainage of abscess, and ultimately surgical ligation of the right internal jugular vein.

MENKES KINKY HAIR DISEASE - A CASE REPORT

Rori Fletcher, DO
Aimee Vercio, MD
Department of Family Medicine
Arrowhead Regional Medical Center

Menkes Kinky Hair Disease is an X-linked recessive genetic disorder caused by a mutation in the ATP7A gene. This gene codes for the copper-transporting ATPase in cell organelles. Without the proper transporter, copper dependent enzymes are unable to receive copper or function properly. This leads to a fatal progressive neurodegenerative disease known as Menke Kinky Hair Disease or Syndrome. This case report describes a three month old male who presented with pneumonia and later developed seizure activity during the hospitalization. On further questioning, the mother revealed that she had genetic studies done during her pregnancy secondary to a familial genetic disease. The prenatal records were ordered and discovered the infant had the mutation for Menkes Kinky Hair Disease. The mother had never disclosed this information to the pediatricians or the father of the baby. The patient was transferred to a University Medical Center where treatment could be started immediately. Despite early treatment with copper injections, the disease is usually fatal by three years of age. Families affected need to be given the proper support and education regarding the disease prognosis, its rapid progression and treatment options.

BROWN-SEQUARD PLUS SYNDROME IN A TRAUMA PATIENT

Nani Gelvezon, D.O.,
Department of Surgery
Arrowhead Regional Medical Center

Brown-Sequard Plus Syndrome is a less pure but more common form of Brown-Sequard Syndrome. Brown-Sequard Syndrome is defined as the ipsilateral loss of tactile discrimination, proprioception, and muscle strength, as well as contralateral loss of pain and temperature sensation. It is most commonly due to penetrating spinal cord injuries, however can be manifested due to tuberculosis, epidural hematomas, or spinal cord herniation. A 34-year old female presented to the emergency room as a trauma patient secondary to multiple stab wounds to the torso and back, as well as being struck on the head with a hammer. She presented with a Glasgow Coma Score of 15 upon arrival, but with the inability to move her right foot. Her stab wounds were located on the left periareolar area, left inframammary fold, sternum, left axilla, left posterior deltoid, and four paraspinal lacerations spanning from T7 to L1. Imaging revealed associated hematomas at the stab wound sites. She was emergently taken to the operating room after being a transient responder to resuscitation, underwent exploratory laparotomy, pericardial window with right ventricular repair of a superficial laceration, left axillary exploration and subsequent ligation of branches of the axillary vein and artery, and bilateral chest tube placement. Postoperatively, she was admitted to the surgical intensive care unit, whereupon she had an uneventful course and was transferred to the floor on hospital day 4. An attempt to ambulate the patient fails as she is unstable to stand, complaining of right lower extremity weakness. A detailed neurologic exam reveals decreased right knee and hip flexion, decreased proprioception on the right great toe, decreased pain and temperature sensation on her right, and decreased pinprick sensation on the left from T6 and below. An MRI of her thoracic spine reveals partial transection of the spinal cord at the T9-10 disk space. A neurosurgery consultation was obtained, who recommended the patient to wear a thoracic brace, and to obtain a follow-up MRI in 1-2 weeks to evaluate for any cerebrospinal fluid leak or collection. The patient continued to receive in-patient physical therapy and was subsequently discharged to an acute rehab facility for further treatment. Follow up two months after discharge reveals great improvement in ambulation, and that she is able to walk without a walker.

This case shows a variation of the textbook Brown-Sequard Syndrome and the importance of a thorough neurological exam on patients with penetrating paraspinal injuries. A sooner recognition of the neurological deficits of this syndrome can lead to earlier aggressive physical therapy, thereby increasing the patient's chances for full or almost complete recovery.

POSSIBLE LINK BETWEEN FIBROMYALGIA AND BIPOLAR DISORDER: A CASE REPORT

Khatera Ghazanfar, D.O.
Department of Behavior Health
Arrowhead Regional Medical Center

Fibromyalgia (FM) is a chronic and debilitating condition characterized by diffuse musculoskeletal pain in the presence of 11 tender points (TPs) located at 18 specific anatomical sites [1, 2]. FM is a member of the affective spectrum disorder (ASD), which includes psychiatric conditions, such as major depressive disorder (MDD) and post-traumatic stress disorder (PTSD), and medical conditions, such as irritable bowel syndrome (IBS) and migraine [3, 4]. Previous studies have shown a high prevalence of FM patients with mood and anxiety disorders, indicating a possible link between major affective disorder and FM [1, 2, 5-8]. This case report presents and discusses a case of a patient with both FM and bipolar disorder (BD) in an attempt to explore a possible link between the two.

Key words: Fibromyalgia, major affective disorder, bipolar disorder

PATIENT SATISFACTION AND CONTINUITY OF CARE IN FAMILY HEALTH CENTER AT FONTANA

A. Goharbin MD.
Department of Family Medicine
Arrowhead Regional Medical Center

Background: Continuity of care is central to the core beliefs of family medicine and has been associated with higher patient satisfaction. In settings where not all providers can be available at all times as in a teaching facility, satisfaction may be compromised.

Method: Surveys were distributed to patients at the family medicine clinic at Fontana investigating different levels of satisfaction. Age, race and continuity of care of the respondents were also surveyed. Results were analyzed using a Chi-square to test the association between pt satisfaction and other variables. Spearman Correlation was utilized to find correlation between categorical variables

Results: 127 surveys were returned but only 80% of which could be used. 61% of patients were extremely satisfied with their overall quality of care. Patient satisfaction however did not have any correlation to continuity of care with same provider or clinic.

Conclusion: Patients are satisfied with their care at the Fontana clinic. Literature indicates that continuity of care is positively associated with patient satisfaction, however this study does not support it. This may be due to similarity in practice styles of providers, access to electronic medical record or small size.

THE SHORT-TERM EFFICACY OF INTRAVENOUS VS. ORAL PHENYTOIN LOADING IN THE EMERGENCY DEPARTMENT IN PATIENTS PRESENTING WITH SEIZURE ACTIVITY

Evan Houck DO, Lionel Lee DO, Thomas Minahan DO
Andy Lowe PharmD
Department of Emergency Medicine and Pharmacy
Arrowhead Regional Medical Center

INTRODUCTION

Phenytoin remains one of the oldest and most commonly prescribed anti-epileptic medications currently in use today. Intravenous (IV) and oral phenytoin are commonly used for loading phenytoin in the emergency department (ED). Unfortunately, there is a paucity of data concerning the clinical efficacy of oral versus intravenous loading. Our objective was to investigate and see if IV phenytoin loading compared to oral phenytoin loading led to a decreased level of seizure activity within 48 hours of being seen in the ED.

METHODS

We obtained the pharmacy records of all patients given phenytoin in a large, urban ED from October 2008 – October 2009. These records were then reviewed and organized to determine which patients met inclusion or exclusion criteria. The study was done in a retrospective fashion. These patients were then called by phone and questioned about their seizure activity in the 48 hours following their ED visit. Patients were then placed in to one of four groups: IV loading seizure present, IV loading seizure free, oral loading seizure present, and oral loading seizure free. All patient data was kept confidential throughout the process and an institutional review board approval at Arrowhead Regional Medical Center was obtained prior to study initiation.

RESULTS

There were a total of 290 loading doses of phenytoin given to 247 patients during the study period. The average patient age was 40 years and the average loading dose administered was 797.9 mg (200 mg – 1500 mg). There were 168 IV doses and 122 oral doses and there were 166 males and 81 females.

Out of the 170 patients remaining in the study group after application of the inclusion and exclusion criteria, 90 patients received oral loading and 80 patients received IV loading. Of the oral study group patients, 35 patients were able to be contacted and included in the final analysis. Of these 35 patients, four patients (11.5%) reported having a recurrent seizure event within 48 hours of leaving the ED. Of the IV study group patients, 39 were able to be contacted and included in the final analysis. Of these 39, nine patients (23%) reported having a recurrent seizure event within 48 hours of leaving the ED. When analyzed using a 2 x 2 contingency table and Fisher's exact test, the P-value was found to be 0.1567 between the two groups reporting a recurrent seizure within 48 hours.

CONCLUSION

Phenytoin continues to be a commonly used medication in the ED for controlling seizures. Moreover with seizures representing a common disease seen in the emergency department and accounting for 1 out of every 100 adult ED visits, perhaps this study will examine our management of seizures. Although the study has its limitations, the clinical and financial significance should be reviewed for further research.

THE WORST HEADACHE OF YOUR LIFE: HOW ABOUT THE WORSE NOSEBLEED OF YOUR LIFE: SEVERE EPISTAXIS IN HEMORRHAGIC RUPTURE OF NASAL ARTERIOVENOUS MALFORMATION

Katie P. Huynh, DO¹, Jeffrey E. Quigley, BS², Michael Neeki, MS, DO³

¹Department of Neurosurgery, ²Western University of Health Sciences, ³Department of Emergency Medicine, Arrowhead Regional Medical Center

Introduction: Hereditary hemorrhagic telangiectasia (HHT), eponymously known as Osler-Weber-Rendu syndrome, is a genetically inherited disease defined by a clinical triad of recurrent epistaxis, telangiectasia, and arteriovenous malformations (AVM). Recurrent epistaxis is the most common and emergent presentation of HHT. Long term risk is related to AVMs, which may occur in any organ system. AVMs may be discovered in routine screening or in the work-up of a severely symptomatic patient. Here we describe a patient who was diagnosed with HHT after presenting to the emergency department with a severe episode of epistaxis refractory to anterior nasal packing that would require multiple blood transfusions and eventually embolization of the involved facial arteries.

Case presentation: A 28-year old African American gentleman with a history of recurrent epistaxis presented to the emergency department directly from the otolaryngology (ENT) clinic. He was referred to ENT clinic for removal of nasal packing from an outside facility where his most recent epistaxis was treated with bilateral anterior nasal packing and blood transfusion. Upon removal of the nasal packing there was notable pulsation of the nasal septum, the external nose, and the upper lip. A vascular abnormality was suspected; therefore the nasal packing was replaced to reduce the risk of re-bleeding.

An angiogram of the head and neck revealed a large cutaneous AVM fed by a hypertrophied branch of the left lingual artery. A cerebral AVM was incidentally discovered at that time. Cerebral MRA revealed multiple vascular abnormalities which was consistent with a diagnosis of HHT. Interventional radiology was performed to coil the mid facial arteries. Nasal packing was left in place.

Despite the nasal packing, he began to bleed on post-operative day two and again on post-operative day three which required a blood transfusion and another attempt at embolization; this time of bilateral external carotid artery branches. This second embolization was successful. Before hospital discharge, the nasal packing was removed without any further bleeding. The cerebral AVMs were at the suprasellar cistern and had prominent draining veins into the cavernous sinus. Thus the neurosurgeons felt that resection or embolization conferred an unacceptably high risk of stroke. He was managed and followed as an outpatient without recurrence for two-years.

Discussion: Recurrent or severe epistaxis should suggest the diagnosis of HHT. The diagnosis can be confirmed by the presence of either telangiectasia and AVM, or both. It is estimated that 68-100% of HHT patients have telangiectasia of the nasal mucosa and 95% experience some degree of epistaxis in their lifetime. Hemorrhage is the primary emergent concern and thus hemostasis and volume replacement are the goal in treatment. Severe epistaxis may require embolization of feeder vessels or surgical techniques

COMPLICATIONS AND MORBIDITY ASSOCIATED WITH CERVICAL THORACIC ORTHOSES (CTO) USE IN THE ELDERLY

Katie P. Huynh, DO¹, Mariko Ferronato, BS², Dan Miulli, DO¹, John Culhane, MD³

¹Department of Neurosurgery, ²Western University of Health Sciences, ³Department of General Surgery, Arrowhead Regional Medical Center

Introduction: Cervical thoracic orthoses (CTO) are used in patients with cervical or upper thoracic fractures who are poor surgical candidates or whose injuries are not severe enough to warrant surgery. These braces help provide external immobilization of the injured spinal region and to stabilize the fracture. Some examples of CTO's include the Minerva brace, Halo, and sternal occipital mandibular immobilizer (SOMI). If the injury is in the lower thoracic spine, a thoraco-lumbar sacral orthosis (TLSO) is often used. The complications associated with the use of CTO's in the elderly are not well defined, as most studies examining the efficacy of CTO's on immobilization are done in healthy young individuals. Craniofacial pressure ulcers, particularly on the occiput, chin, and mandible are known common complications of CTO's. Respiratory distress has also been seen in case reports, yet there are no studies examining the morbidity associated with CTO use in the elderly (patients over the age of 65).

Methods: A retrospective observational case series from September 2009 to July 2010 was performed at Arrowhead Regional Medical Center, a level II trauma center in San Bernardino County, California. Elderly patients who had complications associated with CTO use were selected.

Results: Five patients between the ages of 68 and 90 were included. All had cervical or thoracic fractures; three secondary to motor vehicle accidents, one from a mechanical fall, and another due to a bicycle accident. One patient developed a stage III pressure ulcer on her chin from a Minerva brace six days after its application, which ultimately required surgical intervention. Another patient in a Minerva brace experienced respiratory arrest while obtaining upright films. She was re-intubated, and ultimately underwent a percutaneous tracheostomy and surgical intervention for her C-spine injury. The patient who required a Halo experienced respiratory distress during its application and was subsequently intubated. The patient in a TLSO was intubated secondary to respiratory distress due to the brace's restricting nature, which was ultimately adjusted with resolution of her respiratory distress. A third patient in a CTO developed respiratory distress while in X-ray suite due to hyperextension of the cervical spine. The CTO was immediately adjusted while in X-ray suite, thus potentially avoiding a more serious respiratory complication.

Conclusion: Elderly patients are at a higher risk for increased morbidity from the use of a CTO, particularly in the form of respiratory distress. This may be due to anatomic changes such as kyphosis, decreased pulmonary reserve and the presence of chronic illnesses in addition to their acute trauma. It is important for physicians to be aware of this, and to vigilantly check the braces for proper fitting in order to decrease these risks.

DOES DIHYDROPYRIDINE CALCIUM CHANNEL BLOCKERS LOWER SERUM SODIUM: NIFEDIPINE VERSUS AMLODIPINE ON SODIUM LEVELS

Katie P. Huynh, DO¹, Tina Le, PharmD², Scott Glenny, BS³, Tyler Carson, BS⁴, Dan Miulli, DO¹, Andrew Lowe, Pharm²

¹Department of Neurosurgery, ARMC, ²Department of Pharmacy, ARMC, ³Loma Linda University School of Pharmacy, ⁴Western University Health Sciences Center

Introduction: Guidelines for blood pressure (BP) management in the hypertensive neurosurgical patient vary depending on the type of injury: stroke (ischemic, hemorrhagic, aneurysmal, etc) versus traumatic brain injury (TBI). The setting of injury and the patient's medical history are coupled to come up with an optimal plan to prevent re-bleeding or ischemia associated with too high or too low a blood pressure, respectively. Calcium channel blockers (CCB) are often used for BP management in such settings and work through inhibition of transmembrane flow of calcium, resulting in inhibition of the calcium-dependent contraction of myocardium and vascular smooth muscle.

During the hypertensive crisis phase, nicardipene intravenous drip is initially used to decrease the blood pressure to prevent further progression of the intracranial hemorrhage or convert ischemic strokes into hemorrhagic ones. Once stable, the patients are transitioned over to dihydropyridine CCB's via the oral route. Amlodipine and nifedipine are the most used agents. It has been noted that when nifedipine (especially Adalat CC) was administered, there was a decrease in the serum sodium level. This change was not seen with amlodipine. Hyponatremia is a common electrolyte disorder encountered in neurosurgical patients. In addition to iatrogenic reasons (medications, fluid overload), other causes can include syndrome of inappropriate antidiuretic hormone (SIADH) and cerebral salt wasting (CSW). This study investigates whether there is any effect on serum sodium levels in brain injury patients treat with nifedipine versus those on amlodipine.

Material and Methods: A retrospective chart review comparing patients admitted to the hospital from November 1, 2010 to March 1, 2011, who were treated for hypertension. 362 patients were on nifedipine while 317 patients were taking amlodipine. Both groups were further subcategorized into neurosurgical and medical patients. Serum sodium levels were followed to see if hyponatremia is more prevalent in neurosurgical patients. Subjects on nifedipine were compared to those on amlodipine to see if hyponatremia was noted in the former group.

Results: The two medications are similar to one another with respect to their effects on serum sodium levels. In general, hyponatremia is not noted in patients treated with either nifedipine or amlodipine. Although hyponatremia is sometimes seen in the neurosurgical patient on admission, even prior to the administration of calcium channel blockers.

Discussion: Nifedipine and amlodipine are both in the dihydropyridine class of CCB and exert their effects through blockage of L-type calcium channels. Our original hypothesis that nifedipine contribute to hyponatremia was not supported by this study. In the hypertensive patient with any intracranial pathology, it is of the utmost importance to control the blood pressure while being cogni-

TOTAL RADIATION EXPOSURE DURING AN ACUTE STONE EVENT IN PATIENTS WITH AND WITHOUT PRIVATE INSURANCE

Katie P. Huynh, DO¹, Daniel J. Greene, BS², Joshua Chamberlin, BS², Christopher Tenggardjaja, MD³, Forest Jellison, MD³, D. Duane Baldwin MD³

¹Department of Neurosurgery, ARMC, ²Loma Linda University School of Medicine ³Department of Urology, Loma Linda University Medical Center

Introduction: Radiation exposure from computed tomography (CT) is significant resulting in 1 of 1000 patients developing a fatal malignancy. In addition to CT scans, stone patients are also exposed to ionizing radiation from plain films and fluoroscopy. Physician knowledge of radiation risks is poor and may contribute to excess exposure. Lack of health insurance may result in delays in treatment and subsequent increased radiation exposure. The purpose of this study was to determine radiation exposures in insured and uninsured patients presenting with a single stone episode.

Material and Methods: A retrospective review of 100 consecutive patients who were treated for a single stone episode was performed. Diagnostic imaging, stone characteristics and demographics were recorded. Total radiation exposure was compared by insurance status (private, public and uninsured) using a linear regression with $p < 0.05$ considered significant.

Results: Age, gender, and stone burden were statistically similar between insured and uninsured patients. Privately insured patients received less radiation per stone episode than those not privately insured (34 vs. 45 mSv; $p=0.027$). 6 of 50 patients with private insurance received more than 50 mSv compared to 18 of 50 without private insurance (12% vs. 36%, $p=0.004$).

Conclusion: Patients without private insurance are at greater risk for higher radiation exposure when presenting with urinary calculi. Efforts to reduce radiation exposure in all patients are required.

A MULTI-CENTER, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, DOSE-ESCALATION STUDY OF NNZ-2566 IN PATIENTS WITH TRAUMATIC BRAIN INJURY (TBI): PRELIMINARY REPORT.

Katie Huynh, DO; Susanna Oh, DO; Jamshid Mistry, DO; Dan Miulli, DO, Javed Siddiqi, MD
Neurological Surgery, Department of Surgery,
Arrowhead Regional Medical Center,

Introduction: TBI is a leading cause of death and disability in industrialized societies, particularly among young people. Annually within the U.S., there are about two million emergency room visits for head injury, roughly 300,000 admissions for head trauma, nearly 52,000 deaths and approximately 80,000-90,000 cases of severe long-term disability. NNZ-2566 is a drug developed by Neuren Pharmaceuticals Ltd, in collaboration with the U.S. Department of Defense, as a neuroprotective treatment following traumatic brain injury (TBI). The goal of this phase of testing is to obtain evidence of the safety of NNZ-2566 in TBI, compared to placebo, by evaluating the incidence of adverse events (AEs) through to Day 30 post randomization or discharge, whichever occurs first, and serious adverse events (SAEs) through to 3 months (defined as 12-14 weeks) post randomization. ARMC is one of the highest performing academic centers participating in this study nationwide in terms of screening, enrollment and data collection.

Methods: All patients with traumatic brain injury (TBI) who come to ARMC are screened for eligibility for enrollment into the study at time of neurosurgical consultation. If eligible, formal consent is obtained and patients are then randomized for active drug versus placebo. Within the current cohort, a 20 mg/kg iv bolus infusion of NNZ-2566 over 10 minutes followed by a 1 mg/kg/h (Cohort 1, n=20), intravenous infusion for a total of 72 consecutive hours. During this time serial lab values are obtained as well continuous EEG monitoring for up to 7 days. Patients are then followed up at 1 month and 3 month time points for neuropsychological evaluation. Three groups of efficacy outcome are evaluated from time of 10 minute infusion to the 3 month follow up, these include: global outcomes, neuropsychological outcomes and physiological outcomes, comparing NNZ-2566 with placebo treatment.

Results: After 9 months and screening over 500 patients, 7 patients have successfully been enrolled at ARMC, the highest nationwide among 12 participating centers. Out of the 7 enrolled patients only 3 have had AEs and 1 out of those 3 had an SAE. Analysis by the sponsor, principal investigator and IRB have shown that these events are unrelated to the study drug. Furthermore, 1 and 3 month NP testing has been completed for 4 out of the 7 subjects and preliminary data, via the MPPI-4, GOS-E and GOAT exams show marked improvement in the patients overall cognitive capacity.

Conclusion: This prospective, double-blind, randomized, multi-center study is being done to prove safety of a new drug, NNZ-2566, for use in traumatic brain injury. Very preliminary results from ARMC suggest benefit from this drug, even as the study is ongoing at a dozen centers, and statistical analysis of the entire cohort is pending.

SUCCESSFUL TREATMENT OF CEREBRAL CRYPTOCOCCOMA WITH VORICONAZOLE IN AN IMMUNOCOMPETENT PATIENT

Roozehra Khan DO,
Kuo-Liang Huang MD,
Steven M. Beutler MD,
Niren A. Raval MD
Department of Internal Medicine,
Department of Family Medicine,
ARMC

A cryptococcoma is a rare infectious granulomatous space occupying lesion caused by *cryptococcal spp.* that appears tumor like. It can occur in many parts of the body, with lung and central nervous system (CNS) organ involvement more commonly seen. Cryptococcomas in the CNS have been described mostly in HIV patients, and very rarely in immunocompetent patients. To date, only 18 cases have been reported after 1990 in HIV negative patients. Successful treatment of a CNS cryptococcoma frequently involves both neurosurgical resection and medical treatment with antifungals, typically amphotericin B, flucytosine, and fluconazole. Here we present a case of cerebral cryptococcoma successfully treated with voriconazole without surgical intervention in an immunocompetent and HIV negative patient.

PREDICTORS OF POOR OUTCOME IN PATIENTS WITH ACUTE RHABDOMYOLYSIS

Roozehra Khan DO,
 Arsineh Khachekian DO,
 Anthony Ho DO,
 Linda Lam Pharm.D.,
 Edward Kuzmack,
 Dalia Nassman,
 Alex Zadeh DO,
 Kambiz Raoufi MD
 Department of Internal Medicine, ARMC

Introduction

Acute rhabdomyolysis is a frequent cause of hospitalization and has multiple etiologies. The mainstay of treatment is intravenous hydration and supportive care. However, certain groups of patients develop serious complications such as acute kidney injury (AKI) and compartment syndrome. This retrospective study examines the outcomes of all the patients that presented to Arrowhead Regional Medical center over four years and attempts to elucidate the predictors of poor outcome in this group of patients.

Methods

In a single-center, retrospective study, our group examined the demographics, treatment modalities, and final outcome of 254 patients who presented with rhabdomyolysis over a period of four years from 2007-2010.

Results

There were a total of 254 patients evaluated for this study, (230 males and 24 females), 136 of which received normal saline (NS) and 118 received sodium bicarbonate as a treatment option for rhabdomyolysis. Of the 254 cases of rhabdomyolysis, exercise-induced rhabdomyolysis contributed to 35% (n=89) of cases while substance abuse resulted in 16% (n=41) of cases. Of the 254 patients in the study, 92 patients (36%) developed AKI, 56 of them (41%) were from the NS group and 36 (30%) were from sodium bicarbonate group. Of those developing AKI, substance abuse accounted for 30% of patients (n=28) versus exercise-induced, which only accounted for 7.6% of patients (n=7). Of the patients with AKI, average initial Cr was 2.33 mg/dL while average initial CPK was 20,877 mg/dL. Of the remaining patients who did not develop AKI (n=162), initial average Cr was at 0.75 mg/dL while initial average CPK was at 57,953 mg/dL. There were a total of 14 (5.5%) serious complications in our study, 42% (n=6) of which were from NS group and 57% (n=8) were from sodium bicarbonate recipients. Of the patients experiencing serious complications, 2.36% (n=6) had to undergo surgery, 2.76% (n=7) underwent permanent hemodialysis, & 0.39% (n=1) encountered both surgery and HD. There were no cases of death in our study. In addition, among the 254 patients, 23% (n=58) also had co-morbid conditions, 58% (n=34) of which developed AKI while 41% (n=24) did not.

Conclusion

Administration of sodium bicarbonate was associated with fewer patients experiencing AKI; however, the rate of serious complications was higher with sodium bicarbonate recipients. Although exercise was the leading cause of rhabdomyolysis in our study, it was substance abuse that contributed to more cases of AKI than exercise. Initial Cr value also served as a better predictor of AKI in comparison to initial CPK levels, and patients with co-morbid conditions were at greater risk of developing AKI than those without any previous known medical conditions.

HYPOGLYCEMIC EVENTS IN THE ACUTE CARE SETTING: CAUSES AND PREVENTION

Tina Le,
 Andrew Lowe.
 Department of Pharmacy
 Arrowhead Regional Medical Center

The objective of the study is to examine the causes of hypoglycemia events occurring in patients being treated with antidiabetic agents in an acute care hospital, and to introduce process changes aimed at increasing safety. The study is a retrospective analysis of hypoglycemic events before and after process change. The following data elements are collected: patient age, sex, diagnoses, cause of hypoglycemia, antidiabetic regimen, treatment of hypoglycemia, dietary intake. Pregnancy, age less than 18, and acute hyperkalemia are exclusion criteria. Once causes of hypoglycemic episodes have been identified, drug dosing and monitoring process changes will be implemented. The incidence of hypoglycemic episodes following the implementation of changes will be evaluated. Results and conclusions will be presented.

EDUCATING MEDICAL RESIDENTS ON PERSONAL FINANCES TO ENCOURAGE BEHAVIORAL CHANGE

Gessnelle B. Lim, M.D.
Niren Raval, D.O.
Department of Family Medicine
ARMC

OBJECTIVES: First, to increase residents' base knowledge on topics on personal finance. Second, to provide awareness of their personal spending by means of analyzing cash flow via budgeting, as a tool or concept. Third, to encourage active contribution to a tax-advantaged retirement fund. Fourth, to encourage residents to meet with a financial professional. Fifth, for residents with children to establish a plan for the future using a will or trust.

METHODS: A four-lecture series entitled, "Taking Charge of Your Personal Finances During Residency," was given in order to educate residents about basic financial concepts. In order to determine an increase in resident knowledge, pre-tests and post-tests were distributed before and after each lecture. Residents subjectively marked their knowledge base. Additionally, before exposure to the lecture series, residents filled out a four-question Behavior Assessment Survey. Four to seven months later, residents were re-surveyed to determine if there were any behavior changes in line with the objectives for the lecture series. The behaviors followed were: whether or not they had actively used a budget, or budgeting tool, to analyze their cash flow in the last six months, whether or not they were actively contributing to a tax-advantaged retirement plan; whether or not they had met with a financial planner in the last six months, and lastly, whether or not they created a will or trust if they had children.

RESULTS: When data from the pre-tests and post-tests were plotted on a line graph with the x-axis as the subjective amount of knowledge a resident has on a given financial topic and the y-axis as the number of responses, the linear formations indicate that there was an overall subjective increase in knowledge base after each lecture. Behavioral change was documented as the amount of percent change that occurred four to six months after the lectures were given. Before the lecture "Budget and Debt Reduction", only 14% of the residents had used a budget or similar tool to analyze their cash flow. Months after the lecture, an additional 57% of residents polled had completed this task. Before the lecture, "Investments and Retirement," 36% of residents were already contributing to a tax-advantaged retirement plan. Months after the lecture, an additional 29% began to contribute. Before the lecture, "Intro to the Financial Professional," only 8% of the residents had met with one. Months after the lecture, an additional 23% of residents had discussed their personal finances with a professional. One-half of residents present for the lecture, "Insurances, Estate Planning, and Taxes," had children. Of those with children, only 10% had an established will or trust with their children's needs in mind. After the lecture, an additional 10% had created one.

CONCLUSION: Information on managing personal finances is lacking during medical residency. Residents have minimal knowledge but have a great desire to be educated. Providing real-life practical information can result in positive behavioral change allowing residents to make wise decisions to improve their financial well-being.

LAMELLAR BODY COUNT VERSUS PHOSPHATIDYLGLYCEROL (PG)

Jamie Lipeles,
Juan Arce
Department of OB/GYN
ARMC

Abstract:

Neonatal Respiratory Distress Syndrome is one of the most common causes of morbidity and mortality associated with pre-mature birth. A good amount of time and money are spent on the assessment of fetal lung maturity. The three main, readily available, tests to assess fetal lung maturity are lecithin/sphingomyelin (L/S) ratio, phosphatidylglycerol (PG), and lamellar body count. L:S ratio is considered to be a sensitive, but expensive and difficult test to perform and interpret. However, the L:S Ratio remains the Gold Standard for predicting fetal lung maturity. PG begins to increase appreciably in amniotic fluid several weeks after the rise in lecithin. Therefore, it often doesn't correlate well with L:S ratio and is, and is considered a less accurate and expensive screening test. Lamellar Body Count is a quick, relatively accurate, inexpensive test that is not affected by meconium stained amniotic fluid.

Objectives:

To assess correlation between amniotic fluid Lamellar Body Count and phosphatidylglycerol (PG). Additionally, we evaluated if Lamellar Body Count correlated with L:S Ratio. We also performed a cost analysis to determine if the more inexpensive, readily available PG test would be a more wise test to screen for Fetal Lung maturity.

Methods:

A retrospective study was conducted. We compared the results of phosphatidylglycerol (PG), Lamellar Body Count, and Lecithin/sphingomyelin (L:S ratio) from 17 samples of amniotic fluid, taken between 2010 and 2011 to determine the correlation. A cost analysis was also included in the study. Groups were compared by un-paired t-test and we utilized Instat 3 (California).

Results:

There were a total of 17 samples where the Lamellar Body, the PG spot presence, and L:S ratio were measured. We evaluated the statistics comparing the correlation of PG and Lamellar Body count. There were 9 negative PG spots and 8 positive PG spots. Groups were compared by un-paired t-test. The difference was not significant ($p = 0.253$ utilizing Instat 3)

Conclusion:

In this study, we were unable to confirm the correlation between mature L:S ratio, presence of PG spot, and higher lamellar body count. thus, our findings invalidated the use of Lamellar Body Count to predict Fetal Lung Maturity for wider clinical use. Our finding may be secondary to the low number of samples obtain during this study period. In the future we would like to increase the number of amniotic fluid samples.

OBESITY AND NUTRITION: SIMPLIFYING FOOD LABELS AND NUTRITION FOR SAN BERNARDINO COUNTY PATIENTS AND PROVIDERS

Deborah Liu, D.O.
Pooja Gupta, D.O.
Department of Family Medicine,
ARMC

Obesity and poor nutrition has been increasingly on the rise with society pushing for faster food and service. Multiple co-morbidities related to obesity such as hypertension, dyslipidemia, coronary artery disease, and diabetes have been attributed to poor nutritional intake and lifestyle habits. This has been a rising problem for the American society, and it is not only affecting adults, but children as well. The Inland Empire which encompasses the San Bernardino and Riverside counties, are no exception to this trend. San Bernardino County alone currently ranks the second highest in California for having the largest percentage of obese adult patients.³ In order to address the issue of rising obesity, the health care professional should be on the front lines of patient education. With the limited amount of time a health provider has to spend with each individual patient, nutrition and lifestyle issues are often easily glossed over briefly or completely forgotten.⁷ Patients often approach the health practitioner with questions such as "What does it mean to eat right?" and "What is a good food?" There is a plethora of fad diets bombarding the media, most of which are not effective in achieving and sustaining long term weight loss and improved nutrition. The other problem is the difficulty in deciphering the language and complex routines set out by many of these diets. Portion control and being able to determine which foods provide proper nutrition also compounds the problems surrounding obesity. In an attempt to simplify complex nutritional ideas, two guides were created to act as tools in guiding patients in proper dietary intake. The first guide is the "Food Label Guide" developed with language sophisticated enough, but not overly flourished, for the general population to comprehend. It is a tool devised to help understand what the lettering on packages mean and how they affect the individual if it were consumed. The second guide is the "Pyramid and Portions" guide to help a patient determine what types and how much of various foods should be appearing in their diet. It was modified from several well proven dietary methods, such as the DASH (Dietary Approaches to Stop Hypertension) diet¹³, Idaho Plate¹¹, USDA Food Pyramid¹⁵, and the Mediterranean diet.⁹ These guides were created to help the practitioner address complex nutritional issues within a few minutes of the visit, but also allow freedom for patients to make healthy choices for themselves.

DO PATIENTS EXPECT TO BE TESTED FOR HIV?

Lisa McAfee, D.O.¹, Chester Tung, OMS-II³, Yaminah Espinosa, OMS-III³, Munira Rahman, OMS-II³, Khuteja Fatima, PMS-II⁴, Ryan Clark, OMS-II³, Daniel Pearce, D.O.^{2,3}

¹Department of Emergency Medicine, ARMC, ²Department of Internal Medicine, ARMC, ³Western University of Health Sciences College of Osteopathic Medicine of the Pacific, ⁴Western University of Health Sciences College of Podiatric Medicine

Introduction: Human Immunodeficiency Virus (HIV) has led to an estimated 617,025 deaths in the U.S. as of 2008. Of the 1-1.2 million people living with HIV in the United States, approximately one quarter are unaware of their infection and are not able to take advantage of therapies that will provide healthier and prolonged lives. In fact, persons unaware of their positive status often already meet criteria for Acquire Immune Deficiency Syndrome (AIDS) by the time they have a positive test. Testing for HIV is the gateway to treatment and prevention. While much has been done to increase screening for HIV, there is no current literature concerning patient assumptions about testing. Between stigmatization of HIV and state HIV testing statutes that are neither consistent with one another nor with the Centers for Disease Control (CDC) recommendations, it is understandable that patients may not be aware of HIV testing guidelines.

Methods: The aim of this study was to assess patient expectations of routine HIV testing in various clinical areas, the effects of risk factors for HIV on expectations, and what percentage of patients desired testing. Also, we compared provider perceptions with actual patient expectations. A cross-sectional survey was administered to patients meeting criteria in multiple settings. Medical providers in each setting were also asked to participate in a separate survey, after they reviewed a study description.

Results: Of those approached, 89 participants qualified for the survey. A mean of 18.4% of participants expected HIV to be included with routine testing, with the highest expectations occurring among the Emergency Department (ED) and Internal Medicine (IM) participants (23% each). The only factor associated with expecting the test was wanting to be tested ($p=0.004$). The highest proportion of participants wanting a test was from the ED population (52%). Interestingly, there were no significant correlations between expecting a test and common independent risk factors for HIV such as sexual orientation, income, unprotected sex, sexually transmitted disease (STD) history, intravenous (IV) drug use, age, or race. Also, >50% of ED patients surveyed wanted a test but most would not have asked if not prompted by the survey. 59 physicians surveyed had a mean prediction (21%) quite similar to participant expectations (18.4%).

Conclusions: The conclusion that can be drawn from these results is that many patients assume they are receiving HIV testing in situations when it is not occurring. This can lend a false sense of security and lead to further HIV transmission. The high proportion of patients wanting HIV testing to be included in a hospital setting should prompt a review of policies promoting HIV testing, especially within EDs, where expeditious testing can be offered at low cost to the patient. Perhaps providers' perceptions of the stigma associated with HIV, a lack of consideration for testing, and time constraints are outweighing patients' wishes to be tested. This, in turn, may be limiting early detection and prevention of further HIV transmission.

SAFETY ANALYSIS OF PERCUTANEOUS DILATIONAL TRACHEOSTOMIES IN THE OBESE

Andrew McCague DO,
Harith Aljanabi,
David T. Wong MD
Department of Surgery, ARMC

Introduction: Since originally described in 1985 by Ciaglia, percutaneous dilational tracheostomy (PDT) has grown in popularity, and today is widely used for critically ill patients requiring long term mechanical ventilation. Since the inception of PDT, obesity has been considered a relative contraindication to its use.

Objective: The purpose of this study is to evaluate the risks of PDT in obese patients.

Method: A retrospective review was performed, of prospectively collected data, from 426 patients who underwent PDT at a single teaching institution from July 2003 to October 2009. The groups were separated into those who had a BMI of <30 or ≥ 30 kg/m². The following variables were collected: blood loss at the time of procedure, difficulty in tracheotomy dilation and/or tracheostomy placement, presence of tracheal ring breaks, any bleeding episodes requiring treatment by surgery or blood transfusion, pre and post-procedure pneumonia and stoma infection requiring antibiotics. All tracheostomies were placed using the Ciaglia Blue Rhino Introducer Kit™ (Cook Medical Inc., Bloomington, IN.).

Statistical analysis was performed with nonparametric statistics using Chi-square testing, p-value <0.05 as significant.

Results: No statistically significant difference was found between the obese and non-obese groups for any of the variables studied. Similar results were found when BMI of 40 was used for grouping.

	Non-Obese (n=295)	Obese (n=131)	p-value
Infection	1% (3)	0.8% (1)	0.79
Bleeding during procedure	0.7% (2)	1.5% (2)	0.51
Bleeding post procedure	3% (9)	3.1% (4)	0.96
Broken tracheal ring	15.3% (45)	13.7% (18)	0.88
Difficulty placement	19.3% (57)	22.9% (30)	0.41
Dilation Pressure	29% (85)	29% (38)	0.93
Malposition	4.8% (14)	2.3% (3)	0.25
Pre-op pneumonia	10.5% (31)	9.9% (13)	0.92
Post-op pneumonia	0% (0)	0% (0)	1.0

Conclusion: PDT can be performed safely in obese patients. There were no statistically significant differences in measured variables found between the two study groups. This study supports the use of Intensive Care Unit bedside PDT in the obese population.

A NEW S.C.A.L.E. FOR DEATH AND DISABILITY IN TBI: S100B AND OTHER PREDICTORS FOR OUTCOME OF HEAD INJURY.

Brian Miller, DO
Katie Huynh, DO;
Jamshid Mistry, DO
Javed Siddiqi, MD, PhD.
Department of Neurosurgery, ARMC

Introduction: Since the inception of the Glasgow Coma Scale (GCS) by Teasdale and Jennett in 1974 the assessment, outcome and success of interventions in comatose patients has been evaluated by this clinical tool. However, biomarker levels in blood after traumatic brain injury (TBI) may offer diagnostic and prognostic tools in conjunction with clinical indices. We propose to test the following combination of variables forming this research scale: S-100B serum level at admission, CT findings (+/- SAH, mild/moderate/severe Edema, +/-MLS), Age (<30, 30-60, >60), Lowest SBP reading in first 24 hours (SBP <90 versus > 90), Eyes (pupillary response).

Methods: 55 patients with a TBI, admitted to the Neurosurgery service, within the last 6 months had serum S100B levels ordered within 24 hours of the trauma. The clinical and radiographic variables were also collected and subsequently compared to GCS, highest ICP/lowest CPP and ISS at admission and at 7 days post-trauma. The data will be analyzed using multivariable logistic regression models to determine the additive strength of their combination and predictive values at different outcome points: One month, six months, and one year. Assigning weight to the different components can be arrived at once post hoc analyses are completed. These weights can be translated into numerical points to assign the scale variables.

Results: Preliminary results show a moderate to high increase in the values of serum S100B in patients with a GCS <10 (28). Along with the S100B values, physical findings such as pupillary response, age and SBP have also shown good prognostic value. The correlation between the physical findings alone and outcome has shown to be extremely important in prognosis. Patients who had only one reactive pupil or less (5) had significantly worse clinical outcomes. Of the patients whose age > 60 (22) and had moderate edema on CT (4) upon initial presentation, none were discharged with a GCS >14. Patient follow up at 1 and 6 months is still being obtained.

Conclusion: Though the data is still being collected, the overall trend supports the idea that S100B biomarker as well as other prognostic factors are adjuncts to the assessment of brain damage in TBI and may eventually prove to be better prognosticators of morbidity and mortality than the current index of evaluation. Because of the current variables in the S.C.A.L.E., future statistical analysis may yield a prognostic index void of one or more of the factors. If that is the case, there is still enough data to support the other variables such that a predictive score for prognosis is still achievable. Patient follow-up at 1 and 6 months post TBI will allow us to explore the functionality of this index. Further investigation is warranted.

DOES INFLAMMATION ON PAP TESTING PREDICT PRETERM BIRTH?

Heidi Miller, DO,
Kristina Roloff, DO,
Guillermo J. Valenzuela, MD
Department of OB/GYN, ARMC

ABSTRACT:

Objective:

The etiology of preterm labor is multifactorial, and inflammatory markers are well known to be elevated in the plasma of patients with preterm labor. We set out to determine if diagnosis of inflammation on a routine Papanicolaou (Pap) smear was predictive of preterm birth.

Study Design:

This is a retrospective review of patients delivered at our institution between January and May 2010. Deliveries were collected sequentially and records abstracted for age, gravidity, parity, ethnicity, & history of preterm delivery, and Pap smear results. Data was compared using an unpaired t-test and considered significant at $p \leq 0.05$.

Results:

255 cases were reviewed, 232 (91%) delivered at term, and 23 (9%) preterm. Inflammation was seen on Pap smear in a total of 43 (17%) of patients, which is lower than that reported in the literature¹. Inflammation was seen in 42 (19%) patients delivered at term, a markedly higher incidence than the preterm group. Only one (4%) Pap smear showed inflammation in the preterm group.

Discussion:

Inflammation on Pap smear was not associated with preterm delivery.

METHODS:

This is a retrospective review of deliveries performed at our institution between January and May 2010. The project was approved by the Arrowhead Regional Medical Center IRB. Only patients who had Pap smears at our institution were included to ensure consistency of pathological interpretation. The department follows the 2001 Bethesda classification system, which allows for reporting of non-neoplastic findings including a shift in flora consistent with Bacterial Vaginosis, the presence of polymorphonuclear cells (PMN's) as a marker of reactive cellular changes, and findings of inflammation as separate categories.

RESULTS:

Patients were divided into two cohorts: term (≥ 37 weeks) and preterm (< 37 weeks) based on estimated gestational age at delivery. The term and preterm delivery groups were well matched for age, gravidity, parity and ethnicity. Results were analyzed using an unpaired one-tailed t-test for significance, and significance was considered at $p \leq 0.05$.

ISOLATED L4 VERTEBRAL CRYPTOCOCCOSIS IN AN IMMUNOCOMPETENT PATIENT - A CASE REPORT

Tanya Minaian, D.O., Omid Hariri, M.S., OMS IV,
Peter Wan, D.O., Dan Miulli, D.O., FACOS, Javed Siddiqi,
M.D., PhD., FACS, Paul Bhambra, D.O.
Department of Neurosurgery, ARMC

Introduction:

Cryptococcus neoformans fungus can cause an infection called Cryptococcosis. *C. neoformans* is predominantly known for its opportunistic infection effects in severely immunosuppressed and immunocompromised patients. There are limited numbers of case reports that have reported this infection in immunocompetent patients. Also there have been a few case reports of thoracic vertebral cryptococcosis with cord compression in an immunocompetent patient. However, to our best knowledge there has been no presentation of an isolated vertebral cryptococcosis. We report a case of an interesting, yet unusual presentation of an isolated L4 cryptococcal infection in a completely immunocompetent patient.

Methods:

The present account gives a single report of a pathologically proven case of non-disseminated cryptococcosis infection to the lumbar vertebrae in an immunocompetent patient.

Case:

51 y.o male presented to the ARMC Emergency Department with a chief complaint of low back pain. Patient had no pain or paresthesias into the lower extremities, denied bowel/bladder incontinence, and there were no focal deficits upon thorough neurologic assessment. Lumbar spine imaging demonstrated an isolated L4 lytic lesion, highly suspicious for an infectious etiology. Given the location of the lesion, a metastatic lesion to the vertebral body could not be excluded. A thorough workup was performed and included tumor markers such as alpha fetoprotein, CEA, CA 19-9, beta-HCG, and PSA: all of which were unremarkable, in addition to a CT chest/abdomen/pelvis, which was negative as well. The patient's only known disease entity was Diabetes, as HIV and Hepatitis titers were negative and urine drug screen on arrival was also negative. An Interventional Radiology (IR) guided bone biopsy of the L4 vertebral body yielded final pathology consistent with *Cryptococcus*, given non-caseating granulomas and encapsulated yeast. A lumbar puncture was subsequently done, and while CSF was negative for india ink stain and cryptococcal antigen, final CSF culture was positive for *Cryptococcus neoformans*. An immunocompetent patient without a history of IVDA presenting with an isolated vertebral body cryptococcal infection allows for an unusual case report. Infectious disease experts recommended Amphotericin B and Flucytosine for several weeks, with a repeat lumbar puncture afterwards. CSF Cryptococcal infection had cleared. The patient was discharged home on Diflucan and Flucytosine.

Discussion:

Isolated vertebral cryptococcosis has never been reported in an immunocompetent person without HIV, or any other diseases process that can cause immunosuppression. The possibility of this rare and yet severe infectious process should be considered since the compression of the spinal cord could be an eventual consequences of this specific infectious etiology.

A RETROSPECTIVE REVIEW OF BLUNT AORTIC INJURY: ARE SUPINE PORTABLE X-RAYS SUFFICIENT ENOUGH TO RULE OUT BLUNT AORTIC INJURY?

Minera, Robert DO,
Takaki, Kenneth DO,
Neeki, Michael DO, MS.
Department of Emergency Medicine, ARMC

Blunt aortic injury (BAI) is well recognized as a serious threat to life in patients who survive initial blunt chest trauma and make it to the emergency room. The mortality of this condition has been shown to be significantly reduced when early detection and primary intervention takes place. Numerous studies show that around 10-15% of patients with BAI survive to make it to the hospital, of which upwards of 99% will die without intervention. The portable supine chest X-ray (CXR), a standard evaluation of the trauma patient per ATLS protocol, has been shown to be 81-100% sensitive in ruling out mediastinal injury with a specificity of only 60%. With the advent of a multi detector CT scanners, this entity is being detected more readily than ever before, often times rendering aortography a study of debatable needs. However, CT examinations of the chest often require a potentially unstable trauma patient spend time in the radiology department, placing this already labile patient in even more significant risk. In addition; CT imaging contributes to an already elevated financial cost, radiation exposure and future consequences are not yet fully appreciated. The cost of NOT detecting aortic injuries however, is fatal.

Previous published studies have addressed whether the use of routine CT chest imaging is indicated despite a lack of findings on the CXR with varying recommendations. This retrospective study is designed to review the Arrowhead Regional Medical Center Trauma Registry from 1996-2009 and to detect the number of patients that sustained blunt aortic injury and compare findings from our radiologists against the findings of these aforementioned studies. This study will also be utilized to detect the rate of false negatives during which BAI was present and was missed by our institution. Currently 71 patients have been detected by our registry data collection, statistics are underway to compile all findings.

REPEAT HEAD CT'S ON TRAUMATIC SUBARACHNOID HEMORRHAGES (TSAH) SHOW NO CLINICAL OR MANAGEMENT BENEFIT: IMPLICATIONS FOR UTILIZATION AND MANAGEMENT

Jamshid Mistry, DO;
Brian Miller, DO, MS;
Javed Siddiqi MD, PhD
Department of Neurosurgery, ARMC

Study Overview: The standard of practice in the neurosurgery community is often to repeat a cat scan on all intracranial hemorrhages regardless of injury type. This treats all intracranial injuries equally and often results on ICU observation periods in between the first and second CT. The cost saving and system utilization benefits of avoiding repeat CT's on select patients would be tremendous. This study retrospectively looked at repeat CT's of the brain on patients with traumatic subarachnoid hemorrhages (tSAH) as their only injury as well as patients with subdural hematomas (SDH), cerebral contusions, and epidural hematomas (EDH), and intracerebral hemorrhages (ICH). Over 100 head CT's with tSAHs and over 100 CT's combined with the other intracranial injuries were compared with a repeated CT on the same patient. Expansion of the tSAH was the main criteria looked at on the repeat CT. Changes in care such as operative intervention, upgrade to the ICU, if a third or fourth CT was ordered, or a procedure performed after the repeat CT was done.

Conclusion: 99/100 patients had no change in their management as a result of the repeat CT. The one patient that showed a change in their repeat CT had extensive tSAH and based on their mechanism likely had severe diffuse axonal injury as well. The other injuries (SDH, EDH, ICH, and cerebral contusions) had a 15% incidence of lesion expansion on the repeat CT and a 11 documented instances of a change in care as a result of the repeat CT. This supports the premise that repeating a head CT on an isolated tSAH does not influence or guide clinical care. The cost and resource savings from not routinely repeating a CT in these patients may potentially be considerable, especially in a county hospital setting.

DEADLY PATHOLOGY HIDDEN IN THE 'REVIEW OF SYSTEMS.

Siraj Mowjood DO, MPH
 Thomas Minahan DO, FACOEP
 Department of Family Medicine,
 Department of Emergency Medicine, ARMC

The purpose of this case report is to emphasize the importance of the review of systems in the history portion of the exam, especially in the emergency room setting, as well as a brief discussion on urethral strictures. The patient in this report is a 45 year old Hispanic male seen at the ARMC emergency room who initially came in with the complaint of left gluteal pain. The patient was triaged and believed to have a gluteal abscess. After a thorough history and physical it was determined that the patient did not have an abscess but rather inflammatory changes secondary to urinary retention caused by a urethral stricture. More importantly the patients urinary retention was causing severe acute renal insufficiency. It was the review of systems portion of the history and physical that helped uncover the patients underlying pathology. The review of systems should not be overlooked in any clinical setting as it can help guide the clinician towards treating the most pertinent needs of the patient, especially when the initial diagnosis turns out to be wrong.

EVALUATION OF INVOLUNTARY PSYCHIATRIC HOLD (5150) AMONG ELDERLY PATIENTS (GREATER THAN 65 YEARS OF AGE) FROM 2009-2010.

Jennifer Mullins, D.O.
 Katrina Platt, D.O.
 Katharine Schulz, MSIII

INTRODUCTION

Providing thorough assessment of elderly patients (65 years old or greater) in the acute hospital setting often challenges most experienced health care professionals. This is compounded when patients are not consciously seeking medical attention but have been brought in by various law enforcement or EMS as labeled "gravely disabled", "danger to self", or "danger to others." Our investigative aim was to evaluate the usage of involuntary psychiatric hold (5150) among the elderly patient population at a large, urban hospital. Placement of these holds is variable depending on the enforcing party and only later evaluated for validity by a psychiatrist or psychologist.

METHODS

A retrospective review of medical records was done between May 2009-April 2010 at Arrowhead Regional Medical Center located in Colton, CA. The study was submitted and approved by an institutional review board prior to commencement. The inclusion criteria for this study were patients with age greater than 65 and 5150 placed prior to arrival or in the emergency department. The primary outcome was to compare the patients' admitting diagnosis with their discharge diagnosis. The study further stratified trends in age, sex, co-morbidities, living circumstances, and interventions.

RESULTS

One third of patients were found to have a valid psychiatric issue that required them to be placed in a geriatric psychiatric facility. The remainder of patients investigated had the 5150 hold released and were therefore discharged to family members, a skilled nursing facility, or homeless shelter. One third were treated for a medical condition other than psychiatric during their course of stay, and approximately one fourth were placed on antipsychotic medications.

CONCLUSION

The majority of 5150 holds placed on elderly patients are inappropriately administered and placed. The resources utilized on 5150 elderly patients unfairly burden our healthcare system and a more revised system is recommended for better placement and usage of the involuntary holds.

ANTIEMETIC EFFECTS OF DRONABINOL IN CHEMOTHERAPY INDUCED DELAYED NAUSEA AND VOMITING

Steven Ng
Andrew Lowe
Department of Pharmacy, ARMC

The objective of the study was to investigate the antiemetic effects of dronabinol in chemotherapy induced delayed nausea and vomiting. Retrospective and prospective data collection was done on all patients who received highly emetogenic chemotherapy regimens at Arrowhead Regional Medical Center. Data on patients who received chemotherapy with dronabinol will be collected and reviewed. Patients currently receiving chemotherapy and dronabinol will be assessed for nausea and vomiting. Specific data elements include: patient medical record number, date of chemotherapy, medications used, antiemetics used, cost, payer, outcome of therapy. Results and conclusions will be presented.

NECROTIZING FASCIITIS AND DIABETIC KETOACIDOSIS

Timothy S. O'Kelley, DO
Sakona Seng, DO
Tom Minahan, DO
Department of Emergency Medicine, ARMC

Patient presentation and hospital course:

75 year old female with no know medical history presents to the emergency department with 7 days of left sided chest redness. A central ashen area is noted on the left lower sternal border, with extensive subcutaneous gas in the chest. Upon review of her laboratory data, she is in apparently new onset diabetes in Diabetic Ketoacidosis. Additionally, on reviewing her chest Xray, there is extensive subcutaneous gas in her neck, chest, and abdomen. The patient was emergently taken to the operating room where she underwent exploratory surgery at which time it was determined that she had necrotizing fasciitis and the extent of her disease was beyond treatment.

Discussion:

Discussion will include a review of current Pathophysiology of diabetic ketoacidosis and management. Also, it will include a review of literature on necrotizing fasciitis diagnosis and management.

A CLINICAL INTERVENTION FOR OBESITY USING A SERIES OF POSTERS

Graeme Reed MD
Luis Chaname DO
Department of Family Medicine, ARMC

Obesity is an increasing problem in America and is associated with many chronic diseases. In order to reverse obesity in a meaningful and lasting way, lifestyle change must be more than simply the temporary observance of a fad diet, it must be the adoption of eating and exercise habits which can be sustained. It is plausible that this will be better accomplished if the principles of healthy living are communicated in a simple, memorable manner and in such a way as to enable the patient to adopt each principle. This project attempts to do this by way of 5 posters each dealing with specific aspects of healthy nutrition presented in colorful, memorable ways and designed to be displayed in the clinic setting.

EFFICACY OF ROUTINE, REPEAT HEAD CTs IN ISOLATED BASAL GANGLIA HEMORRHAGES: PRELIMINARY REPORT.

Yoav Ritter, DO
John Capua, DO
Jamshid Mistry, DO.
Department of Neurosurgery, ARMC

Introduction: Intracerebral hemorrhage (ICH) is the second most common form of stroke (15-30%), yet the most deadly. Though the initial diagnostic study of choice is an unenhanced head CT; its usefulness thereafter in management of the patient can be cost ineffective and can undermine a clinical picture. Our purpose is to determine the utility of routine, repeat brain imaging in patients with acute basal ganglia hemorrhage and its role in clinical management; management being defined as any new action taken as a direct result of the repeat scan.

Methods: Patients with a basal ganglia hemorrhage from ARMC, RCRMC and DRMC were retrospectively evaluated based on ICD-9 codes from each respective neurosurgery census. Certain exclusion criteria were established, these included: intraventricular extension, previous history of hemorrhagic stroke, anticoagulation use, other significant cerebral pathology, and head trauma, and subacute bleed. Data was initially collected and three major criteria were established in determining the significance in management: initial head CT, repeat head CT (dimensions), action taken based upon repeat CT. Variables such as age, sex, dimensions and volume of clot, and initial GCS will also be analyzed using multivariable logistic regression models to determine the additive strength of their combination and impact on management will then be determined.

Results: Preliminarily, we find that hematoma volume and initial GCS play the most significant role in management. Of the 60 patients whose data have been reviewed thus far at ARMC, 68% (41/60) had a hematoma volume of less than 20cc. In 85% of those patients (35/41) the repeat head CT offered no utility in clinical management, rather only added cost. Furthermore, patients who had a GCS greater than 13 on admission (38) did not require any new intervention as a direct result of the repeat CT scan. Data from our other hospitals show similar results and we are currently in the process of analysis.

Conclusion: The purpose of our study was to evaluate the efficacy of routine repeat head CTs have on the management of patients presenting with BG hemorrhages. We retrospectively reviewed the charts of 60 patients presenting to our hospital between 2008 – 2010. Our data, along with the current literature, suggest that repeat routine images will not lead to any clinical decision-making especially amongst certain patient populations. The financial burdens that repeat CTs impose on institutions are by no means trivial. Theoretically the money saved can be allocated to advance and maximize the rehabilitation aspect of the treatment process.

EVALUATION OF OBSTACLES ENCOUNTERED AND OUTCOMES IN PATIENTS WHO DO NOT PICK UP MEDICATIONS

Ann Ryvkin
Andrew Lowe
Department of Pharmacy, ARMC

The aim of this project is to evaluate the reasons patients do not pick up their prescribed medications, and to determine the effect on their health outcome. This project will involve unclaimed prescriptions for 200 patients. Prescription medications that have not been picked up by patients will be reviewed, and the patients will be contacted to determine the reason. Each patient's medical record will then be reviewed for outcome measures. The following data elements will be collected: diagnosis, clinic or emergency department setting, number of medications, payer, reason provided by the patient, number of subsequent physician visits or hospitalizations, disease state outcome, and cost. The data will be aggregated and stratified by diagnosis, medical care location, payer, and reason for not claiming prescriptions. The outcomes and cost of therapy will be evaluated and the results and conclusions will be presented.

PATIENT SATISFACTION AT A FAMILY HEALTH CENTER

Lyudmila Salomatina, M.D.
Fred M. Watkins, M.D.,
Department of Family Medicine, ARMC

The health care industry is currently undergoing many changes. Beginning later in 2011, the Centers for Medicare & Medicaid Services, hereinafter CMS, will base Medicare reimbursement to hospitals in part on patient satisfaction as measured by written questionnaires filled out by patients. Medicare reimbursement to medical clinics and physicians for office visits will likely follow suit as the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CGCAHPS) is expected to base reimbursement for outpatient treatment on the same criteria. Based on past history, it is well known that other health insurance providers usually follow the lead of CMS. In order to be prepared for the implementation of this new reimbursement mandate based on patient satisfaction, we distributed an anonymous patient satisfaction survey in English and Spanish to patients at McKee Family Health Clinic, San Bernardino, CA in 2010 to assess patients' perception of the ambulatory care they receive. Patients returned one hundred fifty-six surveys, including suggestions and complaints. Our survey found that most of the patients rated their care as very good or four on a one-to-five scale. By assessing patient satisfaction now, it was hoped that areas of improvement would be identified so that changes can be implemented to maximize reimbursement from Medicare once CMS and CGCAHPS changes take effect.

PHLEGMASIA CERULEA DOLENS: A CASE REPORT

Katharine Schulz, BS,
Catherine Ho, DO,
Milton Retamozo, MD,
Vivian Davis, DO
Department of General Surgery, ARMC

Introduction: Phlegmasia cerulea dolens (PCD) is a rare complication of deep venous thrombosis characterized by venous occlusion throughout both the deep and superficial venous system. The term is derived from the classic triad of symptoms: painful, blue, edema.

Methods: This single case report illustrates a pathologically proven case of bilateral PCD via a sub acute presentation of signs and symptoms. Included is a brief review of the literature of case reports of PCD as well as cases involving inferior vena cava filters.

Case Summary: 67-year-old female presented with right lower extremity deep vein thrombosis for which she received Lovenox and Coumadin outpatient. After two weeks, patient presented to her local emergency room with shortness of breath and worsening now bilateral deep venous thrombosis. Patient was transferred to a second facility for higher level of care where the diagnosis of phlegmasia alba dolens and bilateral pulmonary embolism was made. Subsequently, a Trapease permanent inferior vena cava filter was placed.

After 11 days, patient was transferred to Arrowhead Regional Medical Center where the clinical diagnosis of phlegmasia cerulea dolens was made. Upon admission, patient was fully anti-coagulated with heparin. Venogram showed complete thrombosis of bilateral ilio-femoral and popliteal deep venous system. Catheter-directed thrombolytic therapy with tissue plasminogen activator and mechanical thrombectomy using Trellis â device was performed on both lower extremities with slight improvement of patency. The following day, mechanical thrombectomy with AngioJet â was performed. This resulted in improvement in the patency of the bilateral femoral and iliac venous systems, however the residual chronic clot at the inferior vena cava filter was resistant to thrombectomy. Further anti-thrombolytic treatment was not possible as the patient developed gross hematuria and dyspnea. Despite receiving full anti-coagulation and above treatments, the patient's left lower extremity progressed to venous gangrene. Consequently a left-above-the-knee amputation was performed on day four of admission. The patient underwent a right knee disarticulation for worsening venous gangrene on day eight of admission. Patient continued to have worsening respiratory failure and heart failure. Patient underwent terminal wean sixteen days after initial admission.

Discussion: Phlegmasia cerulea dolens is a rare, dangerous presentation of deep vein thrombosis. It is usually preceded by phlegmasia alba dolens which affects the deep venous system only. The typical consequences of deep venous thrombosis are pulmonary embolism. However, this case report reveals progression to PCD, which is an emergency with a high mortality and amputation rate. Early recognition has the greatest impact on outcome.

Mainstay of treatment is aggressive systemic anti-coagulation, fluids, bed rest, and elevation. If clinical cyanosis and pain progress, catheter directed thrombolytic therapy followed by endovascular intervention must be considered to prevent rapid progression to gangrene.

There have been case reports of PCD developing after inferior vena cava filters which emphasize the importance of careful anti-coagulation after filter placement.

HYPOTHERMIA

Kona Seng
Thomas Minahan, DO
Department of Emergency Medicine, ARMC

Hypothermia is a disease process that continues to challenge EM providers as well as public health officials. While it may present in various ways, its clinical course is predictable. There are currently no evidence based guidelines for treatment of hypothermia. Our case involves an 80 male who presented to the ED with a core temperature of 80 degrees F. We will discuss his ED course, evaluate rewarming strategies, discuss cardiac complications of hypothermia, and examine management pitfalls.

FIRST CASE OF WEST NILE VIRUS INFECTION IN SAN BERNARDINO

Sukhwinder Singh
Christopher Dalinkus DO
Kambiz Raoufi MD
Department of Internal Medicine, ARMC

Introduction: West Nile Virus (WNV) of the Flaviviridae family is known to be widely distributed in the world. We are presenting the first reported human case of WNV in San Bernardino County which occurred in July 2010.

Our case presentation is of a 58-year-old previously healthy female who presented with progressively worsening generalized weakness for two weeks prior to admission. She also experienced dysphasia, urinary incontinence, dysarthria, as well as constant intractable low back pain. Her neurological exam was normal except for a right facial droop and right upper extremity muscle weakness. CSF analysis revealed lymphocytic pleocytosis and elevated protein. All other immunologic and serologic markers were normal. Cosyntropin stimulation test, nerve conduction studies, as well as brain MRI were also normal. Patient's weakness and muscle strength continued to decline. One week after admission she experienced loss of deep tendon reflexes. Subsequently, a positive West Nile Virus DNA PCR was reported.

Conclusion: The diagnosis of WNV can be puzzling since it has many modes of presentation. Most patients are asymptomatic (20-40% of patients). Those with neurologic manifestations can have encephalitis, meningitis, flaccid paralysis or a mixed pattern. Thus, this report highlights the importance for clinicians to keep a high index of suspicion for WNV and its various presentations. Public awareness and preventive measures are instrumental in decreasing the spread of this dangerous virus. As WNV has a zoonotic host, public works should be aimed at safe removal of dead birds and decreasing mosquito pools in the county to minimize risk of viral transmission.

LAPAROSCOPIC EXCISION OF A PRE-PERITONEAL INCIDENTALOMA

Taylor Tang, MD
Samir Johna, MD
Department of General surgery, ARMC

Background: Dermoid cysts are a rare well-differentiated benign tumors derived from ectodermal cell origins. Usually caught incidentally, have the potential for mass effect, malignant degeneration and rupture. Dermoid cysts can often present a unique surgical challenge.

Case Report: 69 year old male brought to the ED after a motor-vehicle accident had a pre-peritoneal incidental mass discovered on imaging. Patient was asymptomatic from the mass, though it was expanding in size. Patient was advised to have the mass removed because of the possibility of malignant degeneration and rupture. Patient was taken for laparoscopic surgical excision of the mass.

Discussion: Dermoid cysts develop from embryonic migration of ectodermal tissue to aberrant locations or implantation of epidermal tissue. Dermoid cysts in the abdominal cavity are rare and only case reports exist characterizing these tumors. Rupture can result in a chemical granuloma when localized and can cause peritonitis when the rupture is throughout the entire abdomen. Rare reports of malignant degeneration are also reported in the literature. Surgical excision is the standard of care minimizing risk of rupture with removal.

AMELIORATION OF NEPHROPATHY WITH APOA-1 MIMETIC PEPTIDE IN APOE-DEFICIENT MICE

Nosratola D. Vaziri¹, HyunJu Kim¹, Hamid Moradi¹, Farbod Farmand¹, Kaveh Navab², Mohamad Navab², Susan Hama², Alan M. Fogelman², Yasmir Quiroz³ and Bernardo Rodriguez-Iturbe³

¹Division of Nephrology and Hypertension, University of California, Irvine, CA, USA, ²Division of Cardiology UC Los Angeles, Los Angeles, CA, USA and ³Centro de Investigaciones Biomédicas, Instituto Venezolano de Investigaciones Científicas (IVIC)-Zulia, Hospital Universitario and Universidad del Zulia, Maracaibo, Venezuela

Background. There is mounting evidence that dyslipidaemia may contribute to development and progression of renal disease. For instance, hyperlipidaemia in apolipoprotein E-deficient (apoE^{-/-}) mice is associated with glomerular inflammation, mesangial expansion and foam cell formation. ApoA-1 mimetic peptides are potent antioxidant and anti-inflammatory compounds which are highly effective in ameliorating atherosclerosis and inflammation in experimental animals. Given the central role of oxidative stress and inflammation in progression of renal disease, we hypothesized that apoA-1 mimetic peptide, D-4F, may attenuate renal lesions in apoE^{-/-} mice.

Methods. Twenty-five-month-old female apoE^{-/-} mice were treated with D-4F (300 µg/mL in drinking water) or placebo for 6 weeks. Kidneys were harvested and examined for histological and biochemical characteristics.

Results. Compared with the control mice, apoE^{-/-} mice showed significant proteinuria, tubulo-interstitial inflammation, mesangial expansion, foam cell formation and up-regulation of oxidative [NAD (P)H oxidase subunits] and inflammatory [NF-κB, MCP-1, PAI-1 and COX-2] pathways. D-4F administration lowered proteinuria, improved renal histology and reversed up-regulation of inflammatory and oxidative pathways with only minimal changes in plasma lipid levels.

Conclusions. The apoE^{-/-} mice develop proteinuria and glomerular and tubulo-interstitial injury which are associated with up-regulation of oxidative and inflammatory mediators in the kidney and are ameliorated by the administration of apoA-1 mimetic peptide. These observations point to the role of oxidative stress and inflammation in the pathogenesis of renal disease in hyperlipidaemic animals and perhaps humans.

CASE REPORT OF METHAMPHETAMINE-INDUCED MALIGNANT HYPERTENSION CAUSING THROMBOTIC MICRO-ANGIOPATHY

Dan Vo¹ D.O.
Rachna Bali¹ D.O.
Hoa Vu¹ M.D.
Hai Phan¹ M.D.
Department of Family Medicine, ARMC

Background

Thrombotic microangiopathy (TMA) is a histological diagnosis that is clinically characterized by microangiopathic hemolytic anemia, thrombocytopenia with purpura, and acute renal failure. Renal biopsy findings include advanced tubular atrophy, interstitial fibrosis with mild inflammatory changes, marked glomerular endothelial cell edema, microthrombi with capillary obliteration and advanced glomerulosclerosis. The causes of TMA are thrombotic thrombocytopenia purpura, hemolytic uremic syndrome, malignant hypertension, scleroderma crisis, pre-eclampsia, radiation, and drugs.

Our Case

We report first case of methamphetamine induced malignant hypertension causing TMA. Our patient had features of hemolytic anemia, thrombocytopenia, and acute renal failure with renal biopsy findings consistent with TMA. This is a case of a 23 year old Hispanic G3 P3 who presented to the emergency department with complaints of headache, blurry vision, epigastric pain, nausea and vomiting for 3 days. Her past medical history was significant for hypertension, methamphetamine abuse since her first pregnancy at age 16 and pre-eclampsia during all three pregnancies requiring cesarean section with each delivery. On admission she was found to have elevated blood pressure of 221/145, acute renal failure with Creatinine of 3.2 mg/dL (baseline Cr 0.9 two months prior) with proteinuria, anemia with hemoglobin of 9.3, thrombocytopenia with platelet count of 72, and schistocytes on peripheral smear. Her anemia improved with packed red blood cells transfusion where as the platelet count improved with supportive care without plasmapheresis. However her renal function deteriorated, thus requiring hemodialysis. Her urine drug screen was positive for methamphetamine.

Conclusion

In our patient, we speculate TMA as a consequence of uncontrolled hypertension which was worsened with methamphetamine abuse leading to malignant hypertension causing further renal damage. Methamphetamine toxicity is known to stimulate release of catecholamines resulting in activation of the central and peripheral adrenergic postsynaptic receptors leading to clinical features of tachycardia and hypertension. All other causes of TMA were excluded in the present case. For instance, our patient's antiphospholipid antibody was negative, no clinical signs of scleroderma were noted, no history of oral contraceptive pills or chemotherapy was gathered. Systemic vasculitis and lupus work-up were negative. She showed no clinical symptoms of diarrhea, fever, or neurological deficits. In addition, prompt resolution of thrombocytopenia and anemia without plasmapheresis and with a normal ADAMT13 excluded the likelihood of hemolytic uremic syndrome or thrombotic thrombocytopenia purpura. Her Coomb's test was negative and the coagulopathy panel including fibrinogen and d-dimer was within normal range. Thus, we postulate that methamphetamine most likely played a role in inducing malignant

THE EFFECT OF PRETREATMENT WITH GABAPENTIN ON THE DEVELOPMENT OF SYMPTOMATIC NEURITIS FOLLOWING RADIOFREQUENCY ABLATION OF LUMBAR MEDIAL BRANCH NERVES

Sean Welsh, M.D.
Susan Tarter, N.P.
Department of Family Medicine, ARMC

Object: The objective of this study was to evaluate the effect of pretreatment with gabapentin on the development of symptomatic neuritis within 1-2 weeks after radiofrequency ablation (RFA) of lumbar medial branch nerves.

Methods: Retrospective review of data at Arrowhead Regional Medical Center identified 21 patients who underwent successful radiofrequency ablation of lumbar medial branch nerves. All patients included in the study experienced significant pain relief from their RFA defined as greater than 80% improvement in subjective pain score reporting at least 1 month after their procedure.

Of these, 5 (23%) experienced symptomatic neuritis during the first two weeks after the procedure. Of the five who experienced postoperative neuritis, only 1 (20%) had been pretreated with gabapentin within 1 week prior to the RFA.

Out of the 16 patients (76%) who did not experience symptomatic neuritis, 6 (37%) had been pretreated with gabapentin within 1 week prior to their procedure, and 10 (62%) had not received gabapentin pretreatment prior to RFA. All patients who were pretreated with gabapentin were on a minimum dose of 300 mg by mouth with meals daily and a maximum dose of 1200 mg by mouth with meals daily for at least one week before the procedure.

Conclusions: Pretreatment with gabapentin is an effective means to reduce the incidence of symptomatic neuritis in the first two weeks following radiofrequency ablation of lumbar medial branch nerves. The data suggest that patients who are predisposed to neural inflammation may benefit most from this treatment paradigm.

VENTRICULAR TACHYCARDIA FROM CHAGAS DISEASE: CASE REPORT

Nathan Mjos, DO
James N. Elia, DO
Michael Neeki, DO
Steven Fitzmorris, MD
Department of Emergency Medicine, ARMC

Introduction:

First discovered in 1909 by the Brazilian physician Carlos Chagas, Chagas disease is mostly exclusive to the Americas. It is mainly found in the southern United States, Mexico and South America. It is caused by the flagellate protozoan *Trypanosoma cruzi* which is transmitted to humans and other mammals by insect vectors mainly the blood-sucking "kissing bug" species named *Triatominae*. The parasite is found in the feces of the insect and can also be transmitted by uncooked food contaminated with feces from the bugs, congenital/vertical transmission, blood transfusion and organ transplant. Initial symptoms usually are asymptomatic or benign with the acute infection phase presenting with mild local swelling at infection site and flu-like symptoms. In years it progresses to chronic disease causing serious cardiomyopathy and heart disease as well as gastrointestinal problems. Serum titers are helpful in the diagnosis of this disease.

Triatoma infestans

Case Report:

A 48 year old Hispanic male presented to the emergency department (ED) with a chief complaint of palpitations, shortness of breath, generalized abdominal pain and lightheadedness starting the same day about 8 hours prior to presentation but worsening in the last 2 hours. Patient stated that these symptoms had been intermittently present for the past 2 months. Patient was seen in a clinic where he was given recommendations for a more thorough work up but never followed up. Patient denied any history of coronary artery disease and his only past medical history was pertinent for hypertension and hypercholesterolemia. Patient presented in moderate respiratory distress, alert, oriented, and tachypnic on exam. His radial pulses were thready and cardiac auscultation revealed marked tachycardia. Patient was placed on a cardiac monitor which showed a wide complex tachycardia at 200 beats per minute (bpm). ECG was done (see figure 1) showing ventricular tachycardia at 206 bpm and a blood pressure was unobtainable. The patient was immediately prepared for emergent synchronized cardioversion. Just before medications were given, the patient started to vomit and had progressively deteriorating mental status prior to becoming apnic. At this time an ED code was initiated and patient remained in ventricular tachycardia but became pulseless. The patient was defibrillated multiple times throughout the ED course for a total number of 6 shocks. Patient regained pulses intermittently throughout defibrillations and then eventually converted to a normal sinus rhythm. Patient did remain hypotensive and was started on vasopressors. His initial troponin in the ED was elevated at 1.2. The patient eventually was stabilized and admitted to the ICU. Patient had an angiogram the next morning which showed severe left ventricular dysfunction with an ejection fraction of 20% which was unexplained by his mild to moderate coronary artery disease. The patient's cardiomyopathy was so severe that the likely cause was unknown at that time. Patient continued to have recurrent ventricular tachycardia for the next 2 days and was successfully cardioverted with each event. Since the patient had grown up and migrated from the southern part of Mexico, Chagas disease was considered in the differential diagnosis. In speaking with the pa-

ELECTRON MICROSCOPIC (EM) DEMONSTRATION AND EVALUATION OF IRREVERSIBLE ELECTROPORATION (IRE)-INDUCED NANOPORES ON HEPATOCYTE MEMBRANES: A PRELIMINARY DATA.

Lee, EW., Wong, D., Perez, A., Prikhodko, SV., Tran, C., Loh, CT., Kee ST.

UCLA Medical Center, Department of Radiology, Division of Interventional Radiology and Department of Material Science and Engineering, UCLA Department of Family Medicine, ARMC

Purpose:

To demonstrate, evaluate and verify the existence of IRE ablation induced nanopores on the hepatocytes plasma membrane.

Materials and Methods:

Upon ARC approval, six New Zealand Rabbits underwent IRE ablation of liver and selected ablated liver tissues were harvested, fixed and air-dried according to the EM protocol. A scanning electron microscopy (SEM, Nova 230 NanoSEM with 80 pico amps and 10kV acceleration) was used to visualize and verify IRE created nanopores. A total of 15 ablated tissues (n=15) were evaluated using NIH image and ImageScope. Corresponding H&E evaluation was performed to verify IRE-induced cell death.

Results:

In all 15 IRE-ablated tissues, SEM was able to demonstrate numerous, well-circumscribed, round, and concave shaped pore defects disturbing the hepatocyte plasma membranes. These pores were not seen in normal liver. The size of the nanopores was from 80 to 430 nano meters (nm) with the greatest frequency of pores in the lower 300 nm range. This is notably different from the nanopores created by reversible electroporation (RE).

Conclusion:

We have demonstrated that IRE induces irreversible nanopores on hepatocyte membranes using SEM. This study is the first scientific evaluation to demonstrate and validate IRE created nanopores which is the etiology of cell death caused by IRE ablation. The pore diameters are significantly larger than nanopores created by RE suggesting larger pores prevent intrinsic lipid-bilayer interactions from resealing the defects.

UTERINE FIBROID EMBOLIZATION: A REVIEW OF THE RADIOLOGICAL DIAGNOSIS, ANATOMY & TREATMENT OF LEIOMYOMA

Lee, EW, Poon, K., Gomes, AS, Hoffman, CH, McWilliams, J., Loh, CT, Kee, ST
UCLA Medical Center, Department of Radiology, Division of Interventional Radiology, UCLA Department of Family Medicine, ARMC

BACKGROUND:

Treatment of symptomatic leiomyomata, more commonly known as uterine fibroids, has historically defaulted to surgical resection of the tumor (myomectomy) or total excision of the uterus (hysterectomy). Uterine artery embolization, used for many years to control bleeding during childbirth and, recently, for arteriovenous malformations, offers a promising and effective alternative treatment for this pathology in individuals who want to retain fertility but do not want to go through invasive surgeries or deal with the side effects of pharmacological therapy. In 2004, the American College of Gynecology stated that "based on current evidence, it appears that uterine artery embolization, when performed by experienced physicians, provides good short-term relief of bulk-related symptoms and a reduction in menstrual flow." Meanwhile, uterine fibroid embolization (UFE) also offers a lower chance of tumor recurrence (10-15%) when compared to myomectomy (20-50%), is more cost effective when compared to hysterectomy, and provides a shorter post-op recovery than both modalities of care. From UCLA Interventional Radiology database, 46 UFE procedures were retrospectively selected for further analysis based on procedure type and imaging characteristics. Typical clinical symptoms included menorrhagia, cramps, abdominal fullness, urinary frequency, anemia, and constipation. These subjects were categorized based on leiomyoma subtype (intracavitary, submucosal, intramural, subserosal, and exophytic) via magnetic resonance images (MRI) and a single patient from each category was selected for presentation. Post-procedure was characterized by significant decreases in blood flow to the leiomyomata, relief of symptoms, and decreases in dominant fibroid volumes. These case-studies offer clinically representative examples of patients with symptomatic leiomyomata and demonstrate how different anatomical and pathological variants of the condition can be successfully diagnosed using MRI, treated with UFE, and followed up both clinically and with MRI.

PURPOSE/AIM

To provide a comprehensive review of the normal anatomy and anatomic variants encountered in uterine fibroid embolization. To provide a pictorial review of various radiological images of uterine fibroid embolization

SUMMARY

After reviewing this educational exhibit, radiologists should be able to: Recognize the different imaging presentations of uterine fibroids for which UFE is indicated. Recognize the different anatomical variants often seen in UFE procedures. Gain an in-depth knowledge on uterine fibroids and UFE that will allow for more efficient communication between clinicians leading to optimal patient management.

- Past Winners -

1st ANNUAL ARMC RESEARCH DAY 2006

1st Place

"Intraoperative Hepatic Radiofrequency Ablation of Metastatic Sarcoma"

Edward W. Lee, M.D., Ph.D.

(Transitional Medicine Program)

2nd Place

"A Prospective Study To Evaluate The Depth Of Sedation
In Patients Undergoing Procedural Sedation"

Jonathan Kelling, M.D.

(Transitional Medicine Program)

3rd Place

"Retrospective Study of Second Trimester Intrauterine Fetal Demise
(IUFD): Methods of Induction"

Lisa Barden, DO

(Department of OB/GYN)

- Past Winners -

2nd ANNUAL ARMC RESEARCH DAY 2007

1st Place

"Effectiveness of ARMC's "Quit Clinic" for Smoking Cessation"

Hansie Wong, MD

(Department of Family Medicine)

2nd Place

"Incidence of Abnormal Blood Gases Among Patients Undergoing
Elective Cesarean Section"

Nicole Adair, DO

(Department of OB/GYN)

3rd Place

"Utilization of the Rapid HIV Test in the Emergency Department"

Patricia Kahn, DO

(Department of Emergency Medicine)

- Past Winners -

3rd ANNUAL ARMC RESEARCH DAY 2008

1st Place

"Evaluation of Pre-Hospital and Emergency Department Systolic Blood Pressure as a Predictor of In-Hospital Mortality"

Maria "Angie" Loza, MD

(Transitional Medicine Program)

2nd Place

"A Retrospective Study of Maternal ICU Admission in a County Hospital Setting From 2004-2007 and Review of Literature"

Lauren Prewitt, DO

(Department of OB/GYN)

3rd Place

"The Effect of Breastfeeding on the Number of Sick Visits in the First Six Months of Life for Infants Born at ARMC"

Bichson Pham, DO & Camelia Wogu, MD

(Department of Family Medicine)

- Past Winners -

4th ANNUAL ARMC RESEARCH DAY 2009

1st Place

"Effects of Implementation of a Rapid Response Team
at Arrowhead Regional Medical Center"

Uma Devaki, MD

Mentor: Emily Ebert, MD, MPH
(Transitional Medicine Program)

2nd Place

"Protocol Development: Comparison of Continuous Versus Intermittent
Vancomycin Infusion for Methicillin-resistant Staphylococcal Infections"

Linda Lam, PharmD

Mentor: Andrew Lowe, PharmD
(Department of Pharmacy)

3rd Place

"Troponin Elevation in Severe Sepsis and Septic Shock"

Chiado Nguyen, DO

Mentor: Mohammad Aslam, MD
(Department of Internal Medicine)



- Past Winners -

5th ANNUAL ARMC RESEARCH DAY 2010

1st Place

"Are Healthcare Providers Clearly Communicating The Risks of Obesity and Benefits of Exercise and Diet to the Patient Population"

Kevin Felix, DO

Mentor: Aimee Flemmer, MD
(Department of Family Medicine)

2nd Place

"Radiographic Presentation and Patterns in Hospitalized Patients Infected with the Novel H1N1 Influenza Virus"

Scott Fujimoto, DO

Mentor: Andrew Song, MD
(Department of Medical Imaging)

3rd Place

"Bedside Ultrasound in the Surgical Assessment of Acute Biliary Disease"

Katie Huynh, DO and Ravi Shah, DO

Mentor: J. Vivian Davis, DO, JD, MBA
(Department of General Surgery)

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Traditional Program

ARMC Nursing Staff

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And

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