

American Medical Women's Association

99th Annual Meeting

Poster Session Abstract Booklet



American Medical **Women's** Association

The Vision and Voice of Women in Medicine since 1915

Assembled by Ekemini Akan, MD, Iliia Kritikou, MD,
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Case Studies

Medical Students

Doctor, I have a lump in my breast: Is it cancer or is it granulomatous mastitis?

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Poster number: 1

Background: Granulomatous mastitis (GM) is a rare inflammatory process of the breast. The cause is unknown, but thought to be autoimmune or secondary to tuberculosis exposure, sarcoidosis, and Wegener's granulomatosis. GM is often confused with cancer because of presentation, but is completely benign in nature. It usually presents as a unilateral hard lump in the breasts of young women. Mammography and ultrasound results are nonspecific solid or cystic masses that require biopsy for definite diagnosis.

Case: Patient is a 41yo female sent from a local prison presenting with multiple bilateral palpable masses and a recent history of rapid right breast mass growth. The patient has a prior history of breast cyst aspirations. Her family history was negative for breast cancer.

The mammogram showed scattered fibroglandular densities. Bilateral hyperdense, partially circumscribed and obscured breast masses were seen in the breasts. The sonographic images displayed bilateral simple cysts. In the right breast, a complicated cyst with thick septations and internal debris, corresponding to the rapidly growing mass. Two solid masses were seen in the left breast. Cyst aspiration was recommended of the complicated right breast cyst and core needle biopsy was recommended of the left solid masses. The pathology report showed noncaseating granulomas, multinucleated giant cells which lead to the diagnosis of GM.

Discussion: Most patients with GM are premenopausal women with prior pregnancies and history of breast-feeding. There may be a higher prevalence in lower educated and exposure to TB, but no definite common denominators have been identified.

The treatment for GM is controversial and include antibiotics, steroids, surgical resection, and waiting for spontaneous resolution.

Although GM is a very rare breast condition, it is important to know when to suspect this process. The diagnosis is made by core needle biopsy and a study of the pathology since imaging and presentation are vague.

Cleidocranial Dysplasia: A Case Report in Pediatric Orthopedics

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Poster number: 2

Cleidocranial dysplasia is a genetic condition caused by a mutation of the RUNX2 gene on chromosome 6 and characterized by multiple skeletal and dental anomalies. These anomalies can include delayed skull ossification, hypoplastic or aplastic clavicles, wide pubic symphysis, short stature, retention of deciduous teeth, impaction or delay in eruption of permanent teeth, and supernumerary teeth. As it relates to orthopedics, cleidocranial dysplasia has been linked to both coxa vera and a characteristic "chef's hat" appearance of the femoral head on radiographs, both of which have the potential to require surgical treatment. We present the case of a six year old male who was referred to the pediatric orthopedic division of an academic medical center by his primary care physician for a concern for fractured clavicles. We emphasize the potential orthopedic complications of cleidocranial dysplasia, and the importance for orthopedic surgeons and other health care providers to be aware of this condition, its varied presentations, and diagnosis.

Spinning-Induced Rhabdomyolysis and the Risk of Compartment Syndrome and Acute Kidney Injury

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Case Narrative: We present two cases of exercise-induced rhabdomyolysis following spinning classes, one of which was further complicated by acute kidney injury and acute compartment syndrome requiring bilateral fasciotomies of the anterior thighs. With vigorous hydration and urine pH monitoring, both patients exhibited good mobility, sensation, and renal function upon discharge.

Review of Relevant Literature: Exercise-induced rhabdomyolysis related to military training, marathon running, and other forms of strenuous exercise has been reported. Exertional rhabdomyolysis (ER) is the exercise-induced dissolution of skeletal muscle characterized the leakage of electrolytes, myoglobin, and other sarcoplasmic proteins into the circulation from injured or ischemic muscle cells. ER has been defined by a constellation of findings including exercise-associated muscle pain, swelling, dark urine, increased creatine phosphokinase (CPK) level to at least five times the upper limit of normal, and myoglobinuria.

Case Discussion in the Context of Current Literature: Only three cases of spinning-induced rhabdomyolysis have been reported in the English medical literature. However, none were complicated by compartment syndrome requiring surgical intervention or acute kidney injury.

Avenues for Future Study: Exertional rhabdomyolysis is likely under-reported with an estimated incidence of 26,000 cases per year. More research is needed regarding the prevalence of spinning-induced rhabdomyolysis and the factors that predispose individuals to exertional rhabdomyolysis and its complications.

A Novel Approach to Brain Death: Case Study of Israel's Cerebro-Respiratory Death Act

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Poster number: 4

Though brain death is strongly accepted in the medical community, it is sorely misunderstood by the public and in some cases wholly rejected. Despite objections to brain death, legislation dealing with alternative views to brain death is yet to be seen on an international level. Currently, the State of Israel is the only country that has actively included religious opinions about brain death into its legislation and is therefore significant to analyze for international recommendations. The Cerebro-Respiratory Death Act of 2008 is the first of its kind and carries great importance as a pioneering legislation in the realm of medical ethics. Work analyzing the complexities of this law has not yet been published.

This case study draws upon an extensive literature review of governmental, medical, news, statistical, and historical documents. The bulk of data information draws upon semi-structured interviews conducted both in English and Hebrew throughout Israel. Interviews were conducted with medical staff that included neurologists, neurosurgeons, anesthesiologists, internists, pulmonologists, transplant coordinators, and intensive care physicians. Interviews were also conducted in the Knesset, Israeli legislative body, and at medical ethics centers with clergy, politicians, hospital chaplains, historians, medical ethicists, and social workers.

Citing pertinent technical difficulties of the law, the work moves to conclude that such legislation ensures the proper respect of religious and cultural rejections to brain death. Furthermore, instating legislation

similar to Israel's Act has the potential to garner more support for brain death and, consequently, organ transplantations. As brain death cases often draw a great deal of public attention, the laws surrounding them must be strongly understood and analyzed by medical and governmental professionals. The project was accepted as an honors thesis for the Program in Science, Technology, and Society at Stanford University. Discussing this work at the AMWA conference will be timely, necessary, and informative.

Severe Hypocalcemia

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Poster number: 5

Background: Acute hypocalcaemia is a severe medical emergency that can lead to seizures and cardiac arrhythmias. Although treatment is uncomplicated and effective, non-compliance increases the potential for serious health consequences.

Case Report: A 35-year-old woman presented to the Emergency Department (ED) for a tonic-clonic seizure lasting under five minutes. Upon arrival, she was alert complaining of only a mild headache. Medical history included hyperparathyroidism and left kidney stones s/p nephrostomy tube. The patient could not remember the names of her medications, but admitted to not taking them as prescribed. Review of symptoms revealed several weeks of muscle twitching in the face and extremities. Physical exam was significant for diminished deep tendon reflexes in all extremities and abnormal facial tetany with positive Chvostek's and Trousseau's signs. EKG revealed sinus rhythm with a QTc of 552ms. Total calcium was 4.3mg/dL (8.5-10.5) with an ionized calcium of 0.57mmol/L (1.12-1.33). Urine dip was positive for nitrites, WBC esterase and trace blood. Initial diagnoses in the ED included (1) severe hypocalcaemia with secondary neurologic and cardiac findings and (2) urinary tract infection. The patient was placed on cardiac monitoring; treated with IV calcium chloride, magnesium sulfate, and ceftriaxone; and admitted for continued observation. Her hospital stay was uncomplicated. Since discharge the patient has had two hospital admissions for hypocalcaemic seizures. This case represents the unfortunate scenario of medical non-compliance. Recent support of mobile health interventions such as daily text messages in the management of chronic disease illustrates a feasible method for attempting to address non-compliance. These succinct messages can include education, medication reminders, or healthy living challenges addressing the patient's specific disease as well as his/her overall wellbeing. Perhaps this, paired with traditional patient education and understanding of reasons leading to non-compliance, could facilitate providers' ability to stimulate patients' intrinsic motivation to change.

Intraperitoneal Embryonal Rhabdomyosarcoma in Child with Unspecified Syndrome

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Poster number: 6

This case discusses a 3-year-old girl with phenotypic features of an unidentified genetic syndrome including: congenital bilateral cataracts, syndactyly of toes bilaterally, mild to moderate developmental delay, hypotonia at birth, and significant dysphagia until 14 months of age. She was originally diagnosed with Smith-Lemli-Opitz Syndrome based on her phenotypic features, but subsequent genetic and enzymatic tests were negative. Additional genetic tests are currently ongoing in order to gain more information about the patient's genetic syndrome. The patient presented to the emergency department after a three day history of constipation, increasing abdominal distention, pain and intermittent fever. She was found to have a large abdominal mass measuring 15 cm transverse x 11 cm AP x 14 cm craniocaudal on abdominal CT scan. The

mass was not definitively attached to any abdominal structures within the intraperitoneal space. After surgical removal the following day, the mass was determined to be spindle-cell embryonal rhabdomyosarcoma. Bone marrow biopsies revealed no metastatic disease. This case is significant, not only for a rare and undifferentiated genetic syndrome, but also for the unusual presentation of embryonal rhabdomyosarcoma. Intraperitoneal rhabdomyosarcoma is an uncommon finding. A previous study of children with rhabdomyosarcoma found the incidence of intraperitoneal involvement to be 11% over the course of the disease, however this includes both metastatic and primary disease.

More than Skin Deep: Paraneoplastic Dermatomyositis in Ovarian Cancer

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Poster number: 7

Dermatomyositis is an idiopathic process that has long been associated with malignancy especially in women. In this case, a 75 year-old African-American female presented to the emergency room with complaints of proximal muscle weakness and malaise. Two months prior, she had visited her primary care physician with urinary frequency and lower abdominal pain that resolved with trimethoprim-sulfamethoxazole and solifenacin. However, the patient developed a diffuse patchy rash, sores of the tongue and palate, and swollen facies. Upon admission, labs revealed a creatine kinase (CK) of 12,146 U/L and an aldolase of 21.4 U/L. Her weakness improved with intravenous fluids, and her CK trended down to CK 3664 U/L. While the differential included dermatomyositis and polymyositis, this response to fluids, coupled with her recent trimethoprim-sulfamethoxazole use, suggested a likely medication-induced rhabdomyolysis. She was discharged with tramadol and valsartan. At her clinic follow-up she complained of worsening weakness and new onset swelling. Labs demonstrated a CK of 886 U/L. Over the next four weeks, the patient continued to be monitored in clinic, where emphasis was placed on oral hydration. However, her CK remained elevated, and the patient demonstrated no signs of overall improvement. She ultimately returned to the hospital, seven weeks after her initial presentation and symptoms included a peri-orbital rash and elevation of CK to 974 U/L. This strongly suggested dermatomyositis, which we confirmed with muscle biopsy. Furthermore, computed tomography (CT) of the abdomen and pelvis showed findings highly suspicious for primary ovarian neoplasm bilaterally, which biopsy later confirmed. This case signifies the underlying connection between dermatomyositis and ovarian carcinoma, as well as, the importance of evaluating the patient's condition with all relevant clinical possibilities and of avoiding the tendency to become focused on the most prevalent diagnosis.

The Childhood Cancer Survivor: Unique Cardiovascular Risks

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Poster number: 8

Understanding long term consequences of childhood cancer treatment, the primary care of survivors presents a unique challenge. Improved pediatric cancer survival rates allow survival into adulthood. Long term complications of the initial cancer and the treatment consequences are varied with cardiovascular disease (CVD) a common threat. Up to 50% of survivors have cardiac abnormalities 10-20 years after initial treatment though the mechanisms are poorly understood and the extent of cardiac damage is agent and dose dependent.

A 29 yo ♀ presents with worsening dyspnea. Treated for acute lymphocytic leukemia at age 8 with

chemotherapy, bone marrow transplantation, and total body irradiation she developed spinal sarcoma at age 12. The undifferentiated sarcoma was treated surgically and with anthracyclines. She kept up with her preventive visits and was well until, at age of 29, she presented to urgent care for increased cough, shortness of breath, dyspnea on exertion (DOE), and interstitial edema. Presumed to have bronchitis, she improved minimally and a month later presented to her PCP with worsening symptoms of DOE and cough. Though her exam was unremarkable, her history and symptoms were suggestive of congestive heart failure (CHF). An echocardiogram demonstrated CHF with an ejection fraction of 15%. The suspected cause was anthracycline-induced cardiomyopathy.

Complications of initial cancer and its treatment, must be considered in all childhood cancer survivors. Anthracycline-induced cardiotoxicity is one of the most common causes of cardiovascular disease in cancer survivors, with both early and late complications. Up to 50% of pediatric cancers are currently treated with anthracyclines, and balancing the anticancer benefits with long-term deleterious effects is important as these drugs cause dose dependent irreversible and progressive cardiac damage. Cardiac monitoring and preventive measures combined with early recognition and treatment are the cornerstones of reducing cardiovascular complications in cancer survivors.

Against All Odds: Unexpected Late Survival After Presentation with Acute Type A Aortic Dissection and Cardiac Tamponade

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Poster number: 9

Acute type A aortic dissection complicated by cardiac tamponade portends a lethal prognosis. Tamponade is the most common cause of death in this population, with surgical therapy believed to be the only effective treatment. Because of the high risk of early mortality with acute type A aortic dissection, of the patients who do not undergo surgery, the majority does not survive to hospital discharge. To our knowledge, there are no reports of aortic dissection long-term survival when only medical treatment is sought in the presence of cardiac tamponade.

We report the case of an older woman who unexpectedly survived for more than one year after presentation with acute dissection and cardiac tamponade. The patient originally presented with acute chest pain and both clinical and echocardiographic evidence of dissection complicated by tamponade. After a discussion regarding the risks and benefits of surgical intervention in her individual case, the patient elected to forego surgery and chose palliative therapy instead. Hospice care was contacted, and the patient was discharged with the expectation that she would only survive a matter of days.

Surprisingly, she survived for more than one year, tolerating the tamponade physiology and progressively expanding pericardial effusion. Thirteen months after her initial presentation, she underwent palliative pericardial window surgery for progressive dyspnea. Now alive four years after initial presentation, we believe this patient may be one of the longest reported survivors following conservative management of acute type A aortic dissection. We theorize that this patient had an unexpectedly compliant pericardium that was able to accommodate the increasing pressure and prevent severe compression of her cardiac chambers. With only medical care and the subsequent palliative procedural management of her cardiac tamponade, this patient has remarkably been able to survive despite her lethal diagnosis.

Bilateral Cystine Staghorn Calculi and Ureteral Stones in a Teenage Male

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Poster number: 10

Background: Pediatric nephrolithiasis accounts for approximately 1 in 4250 hospital admissions yearly in the US. In the 1970s, it was concluded that pediatric nephrolithiasis was mainly a consequence of urinary tract infections from *Proteus*. A shift in epidemiology was then seen such that the primary cause is now metabolic, including stones formed from calcium oxalate, uric acid, magnesium, phosphorus, and cystine. For the 44% of cases that are metabolic, about 25% are bilateral. In an emergency setting, pediatric nephrolithiasis may initially be missed because children present differently than adults. The classic unilateral, colicky flank pain is only observed in 7% of cases. These children will most likely present with nonspecific abdominal pain, and only 14-33% have gross hematuria. Timely diagnosis and intervention are critical to alleviate patient suffering and prevent renal infection while maximally preserving renal function.

Case Presentation: A 14-year-old male with past medical history significant for Kawasaki Disease diagnosed 5 years prior, presented to the Emergency Department with a one-day history of episodic hematuria. He initially denied abdominal pain, back pain, nausea, vomiting, diarrhea, constipation, fever, chills, and penile discharge or pain. Upon examination, he was afebrile with stable vitals and no peritoneal signs, but was found to have minimal costovertebral angle tenderness. This later progressed to epigastric, right-upper quadrant, and right-lower quadrant tenderness to palpation. Although his BMP and PT were within normal limits, a urinalysis revealed cystinuria. An abdominal CT without contrast was obtained, showing bilateral staghorn renal calculi, as well as right ureteral calculi. He underwent an uncomplicated right ureteral double-J stent for acute management, and later left-percutaneous nephrolithotomy and right ureteroscopy. This case demonstrates a very unique, serious presentation and treatment of renal and ureteral calculi with an initially, relatively benign exam.

Defiant Behavior in Adolescence? No, Difficulty in Diagnosis: The Mitochondrial Disease Dilemma

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Mitochondrial diseases are complex genetic disorders that are poorly understood. These disorders often present with seemingly unrelated symptoms and have variable age of onset, making them difficult to recognize and diagnose.

Case: A 13-year-old female with ADHD, oppositional defiant disorder, and an unstable home environment presented with severe headache, emesis, phonophobia, blurry vision, and mild confusion. Head CT, EKG, BMP, urinalysis, and Kernig's sign were all negative; thus differential diagnoses included migraine, tension headache, and potentially attention-seeking behavior. Her symptoms improved overnight and she was discharged.

Later that day, she returned with severe headache, neck pain, left-sided muscle weakness, bilateral ptosis, dysarthria, and right gaze preference. Her symptoms were suggestive of stroke; however, an MRI revealed a right cortical lesion consistent with infection or vasculitis. New symptoms arose over the next week, including hallucinations, partial focal seizure, right eye exotropia, and eventually a mental status decline and inability to follow commands. GCS was 7-8.

She underwent an extensive infectious, rheumatologic, neurologic, hematologic, and metabolic work-up. Spectroscopy showed a lactate peak, which can be seen in mitochondrial disorders. Muscle biopsy and genetic testing confirmed her diagnosis of complex mitochondrial disease.

This case exemplifies the difficulty in diagnosis of mitochondrial diseases. Varying disease severities, age of onset and wide-ranging symptoms result from mitochondrial heteroplasmy, which causes symptoms

when dysfunctional mitochondria exceed a threshold value. The threshold effect can be organ specific, preferentially affecting organs with high energy demands such as the brain, heart and muscle. In such cases, it is helpful to obtain spectroscopy along with MRI. Because mitochondrial diseases are complex, it may be difficult for physicians to recognize. Therefore, it is important for physicians to consider mitochondrial disorders when symptoms seem disjointed.

Coping With Changing Roles: When Doctors Become Patients

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Poster number: 12

Physicians frequently find it difficult to accept the role of a patient when diagnosed with a chronic illness. Like their patients, physicians experience anxiety about the outcome of their illness, worry about the impact on their career, and guilt about burdening their colleagues and families.

CC, a 53-year-old female physician, first noticed difficulty playing the clarinet in 2000. In 2006, she had an episode of falling and slurred speech, which was diagnosed as a TIA. Her strength continued to decline and in 2010, lumbar puncture showed oligoclonal bands and MRI revealed white matter lesions, leading to a diagnosis of multiple sclerosis.

This case demonstrates the impact of a medical diagnosis on a physician's life. Modifying activities to accommodate for symptoms is a difficult but essential factor in coping with a chronic disease. These modifications can take place in the work environment, personal life, and spiritual realm. Changing the work environment includes down-sizing a medical practice, delegating tasks, and informing and educating colleagues about one's illness. Alterations in one's personal life involve limited work hours, exercise, adequate sleep, relaxation techniques, talking to a counselor or psychologist about emotional needs, joining a support group, reaching out to family and friends, treating oneself every so often, and finding humor in life. Spiritual changes include turning to one's faith during difficult times, meditating, and being patient with oneself.

Though no longer performing surgical procedures, CC's knowledge of women's health has allowed her to continue her work as an OB/GYN. Maintaining focus on her abilities rather than disabilities has allowed CC to acknowledge, accept, and adapt to her diagnosis of multiple sclerosis and decrease its impact on daily life. Though we feel invincible at times, we must understand the need to reach out for help and adapt to change as our lives and careers evolve.

You Are Bursting My Bubble: Ovarian Cysts

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Case: 20-year-old G0P0 female with a past medical history significant for treatment of a sexually transmitted infection presented with exacerbation of left-lower quadrant pain. Intermittent cramping began 5 months prior, following Mirena IUD placement. The pain had escalated recently to 12/10, which the patient described as non-radiating, sharp, and stabbing. These episodes lasted 20 minutes and resolved with 600mg Motrin. No pain was reported with intercourse; increase in discharge was denied. Per patient report, she was last sexually active one month prior to presentation.

All other review of systems was negative, including cardiac, pulmonary, and gastrointestinal complaints. Physical exam was significant for left-lower quadrant and right-lower quadrant abdominal tenderness, without rebound tenderness or guarding. No abnormalities were noted upon visualization of external genitalia. No adnexal or cervical motion tenderness was endorsed, and adnexa were free of masses.

A urinalysis was obtained, the results of which were within normal limits. A urine pregnancy test was also negative. The cervical sample was positive for chlamydia, for which the patient was treated with 1g PO azithromycin. Further workup for left-lower quadrant pain included a transvaginal ultrasound, which demonstrated bilateral ovarian lesions consistent with hemorrhagic cysts. At the 2-month follow up visit, the patient was symptom free.

Discussion: There are multiple etiologies for ovarian cysts in non-pregnant females. These can be classified as functional, the category into which hemorrhagic cysts fall, and non-functional cysts. Ordinarily, functional cysts are asymptomatic and resolve within three months without intervention. However, symptoms can arise due to complications of the ovarian cyst. These complications include ovarian torsion, peritonitis secondary to cystic rupture, and compression of adjacent structures due to mass effect. For a patient with a hemorrhagic cyst, mass effect and rupture leading to peritoneal irritation are the most probable complications to arise.

Legal guardianship in Adults with Eating Disorders

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Poster number: 14

39 yo female presented for hypoglycemia, hypotension, and syncope related to severe anorexia nervosa. While shopping, the patient became lightheaded and lost consciousness. Her glucose was 20 mg/dL and systolic blood pressure 70.

After medical stabilization she transferred to an inpatient psychiatry unit where she was compliant with a bright affect but superficial throughout the hospitalization with little to no insight into the severity of her illness. After 14 days, with a wt. of 38.1kg, BMI of 12.2, she was discharged from the hospital due to insurance refusal of continued inpatient treatment.

During previous hospitalizations providers prompted the patient's family to seek guardianship given the severity of her anorexia nervosa, which was initially granted to her husband. However, due to separation from her husband, guardianship was then granted to her brother, which caused a severe strain on their relationship and financial hardship.

Determining the plan of care for adults with mental illness, including anorexia nervosa is difficult. Guardianship can play a key role in the patient's care and recovery but is seldom used for adults with eating disorders. Severe malnutrition does affect the ability to make decisions but when is it severe enough that legal guardianship should be considered? In this case, the patient suffered severe, life threatening medical problems and was incompetent to make decisions, leading to obtainment of legal guardianship.

Whether the patient should receive outpatient care or inpatient care depends on several factors including the severity of disease, patient's denial and resistance to care, rapid or persistent decline in oral intake, decline in weight despite outpatient or partial hospital intervention, other stressors in the patient's life, co-existing psychiatric problems, and patient's denial and resistance to care. We advocate for early intervention and use of legal guardianship in more cases of adult severe malnutrition due to anorexia nervosa.

When It's Not Just Sinusitis: Primary Osteogenic Sarcoma of the Sphenoid Sinus

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Poster number: 15

Objective: Describe an uncommon cancer to encourage a thorough differential diagnosis and evaluation

A previously healthy 21 year old college student complained of severe facial pain without fever. Diagnosed with sinusitis she received antibiotics, but the pain continued to worsen requiring Diluadid and IV antibiotics. A Computed Tomogram (CT) noted an opacity in the right sphenoid sinus that appeared to erode the surrounding bone. A subsequent biopsy demonstrated the opacity to be a primary osteogenic sarcoma. Surgical resection of the tumor was followed by chemotherapy and radiation. She was monitored with frequent clinic visits routine CTs and MRIs and lived in remission for several years. Seven years later, she presented to the ED with left-sided blurry vision, retroorbital pain, and headache. Imaging indicated local recurrence involving the clivus, paranasal sinuses, optic chiasm, and internal carotid arteries. Biopsy confirmed a high grade osteosarcoma. Due to the involved anatomy, radiation therapy was selected. Monthly endoscopy with debridement was a further component of her treatment. Over time she suffered numerous complications including a pontine CVA, neuronal necrosis, pancreatitis, avascular necrosis of the right shoulder, stage IV kidney disease, bilateral conductive hearing loss, and retrograde amnesia. During her final hospitalization she and her family decided to make her DNR. Comfort measures were put in place until her death, nine years after her initial diagnosis.

Conclusion: Osteogenic sarcoma merits consideration when generating a differential diagnosis of headache, nasal obstruction, pain, or related symptoms. Appropriate imaging and consultation are necessary in diagnosing uncommon conditions. Overall, the prognosis of such cancer is poor despite multiple faceted and aggressive therapies. Due to the rarity of primary skull base osteosarcomas data are limited. Additional reporting would be useful to assist in diagnosing, treating, and assessing epidemiology primary osteosarcomas of the sinuses.

“My stomach hurts! When should H Pylori testing be done?”

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Poster number: 16

Though current guidelines call for empiric treatment of gastroesophageal reflux disease (GERD) with a proton pump inhibitor for 8 weeks before considering further evaluation, it is important to consider immigration and travel status as *Helicobacter pylori* (*H.Pylori*) can be a contributing factor.

H. pylori is a ubiquitous, chronic infection which is common in underdeveloped countries. It is linked with peptic ulcer disease, GERD, gastroduodenal ulceration, and possibly cancer.

A 19 year old woman, otherwise healthy native of El Salvador, complained of sharp midepigastic pain associated with nausea for two months. The pain occurred with all foods but she denied vomiting, constipation, diarrhea or weight loss. The physical exam was unremarkable and she was diagnosed clinically with GERD and tested for *H. pylori*.

The most cost effective recommendation for management of GERD is a proton pump inhibitor (PPI) course for 8 weeks. The patient presented with new symptoms and no previous treatment of GERD but because of her immigrant status, she was tested for *H. pylori* and was positive. Recognizing her immigrant status and the increased incidence of *H. pylori* in developing countries, testing at presentation is cost effective. In

immigrant populations, the positive predictive value (PPV) of the antibody test for H. pylori is sufficient to make the test diagnostic and initiating treatment decreases the need for repeat office visits and shortens the duration of symptoms. Studies show that using empirical PPI therapy is cost effective in populations where the H. pylori prevalence is below 10% and also that the PPV of antibody testing is low in these populations. However, populations where H. pylori prevalence is over 10% (immigrant populations), serological or noninvasive H. pylori test-and-treat strategies are more cost effective and the PPV of the test is acceptable for diagnosis.

Deep Vein ... Leiomyosis?!

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Poster number: 17

Case: The patient is 35 year old female who presented with right lower extremity warmth, erythema and mild discomfort. She denied trauma to the leg. Ultrasound performance demonstrated a blood clot extending into her right external iliac vein. The patient was on oral contraceptive pills (OCP) but had no history of blood clots. Her OCPs were discontinued and she was started on anticoagulation, after which her symptoms improved. During the patient's workup a magnetic resonance angiography (MRA) indicated an 18 week-sized uterus containing a large uterine fibroid compressing her right iliac vein. The patient had a total abdominal hysterectomy and was anticoagulated for 3 months. Follow-up visits indicate the patient is doing well.

Background: Deep-vein thrombosis (DVT) most often occurs in the lower extremities or arms. The annual incidence of DVT is 80 in 100,000. There are many causes of DVT and most cases are multifactorial. The initial step for evaluation should be estimation of pretest probability of VTE. Intermediate to high pretest probability of lower extremity DVT should be followed with doppler ultrasound. Patients with an intermediate to high pretest probability for PE need diagnostic imaging studies such as ventilation-perfusion scan, multidetector helical CT or pulmonary angiography. Treatment for DVT consists of anticoagulation for a total of 3-6 months.

Discussion: The differential diagnosis for DVT is vast. Though doppler ultrasound is the gold standard for diagnosing a DVT, duplex ultrasound is the initial investigation of choice in nearly all patients with suspected DVT. Due to limitations of ultrasonography, other techniques (i.e. MRA and CTA) may be employed. These techniques can aid in identification of an etiology for a DVT in patients like ours who have few, if any risk factors for DVT. A fibroid was found to be the etiology of her symptoms, discovered through the use of MRA.

in-Training, the online magazine for medical students: A healthcare management case study

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Poster number: 18

Research suggests that the socialized hierarchy and 'hidden curriculum' of medical education promote student burnout and sap medical students of their optimism for the profession of medicine (Stewart 1995; Stewart 2000; Wear 1997). It is imperative that medical students become empowered to communicate with and seek support from their peers and to advocate for improvements in medical education. Historically, the geographic and ideological isolation of medical schools has made such communication unfeasible. To overcome these barriers, we created a dedicated student-written, peer-edited publication that promotes

community building among medical students worldwide through self-reflection, communication and collaboration.

in-Training is the online magazine for medical students, founded in April 2012 as a virtual community for students to reflect on their experiences and share their passions with their colleagues. To create a sustainable editorial process within this organizational culture, in-Training was founded on the core health care management principles of leadership development, governance modeling, and information management (Stefl 2008). We propose that this framework is optimal for the development of this niche as it promotes the authenticity and independence of the medical student voice.

In 14 months, 157 articles from 74 writers at 38 institutions across the United States, Canada and India have been published on in-Training - an indication that medical students are eager to share their experiences with the larger medical community in this previously unrealized forum. The use of in-Training provides for the development of connections between medical students with similar interests, and sets the stage for collaborations among medical students that surmount global boundaries. Reading and contributing to in-Training facilitates the spread of innovative ideas in improving both medical education and the health care system. To ensure sustainability of the organization, organic enhancements will be made to the publication that reflect the evolving needs of the medical student body.

Hyperlipidemia Secondary to Hypothyroidism

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Poster number: 19

Case: 88 year old male presented to the PCP clinic for his regularly scheduled 6 month checkup. Patient was 62.6kg (Ht. 178cm; BMI 19.8) at time of visit. He has a past medical history of hypertension, benign prostatic hyperplasia, actinic keratosis, and chest pain with a negative angiogram in 1995. He is currently on 25mg of hydrochlorothiazide for blood pressure control and fluorouracil as needed for actinic keratosis. He had no complaints at this checkup with no change in weight, energy, sleep habits, or appetite. As he has for many years, he continues to line dance several times a week.

In June 2013, all lipid levels were elevated (cholesterol 312, triglycerides 247, LDL 240, HDL 23). Previously, in January 2011 all were within normal limits (cholesterol 197, triglycerides 128, LDL 140, HDL 31). Treatment was not initiated for hyperlipidemia in June 2013 and lipid levels were measured again in December 2013. In December 2013, his lipid levels continued to rise (cholesterol 430, triglycerides 326, LDL 340, HDL 25). At this time a CMP, liver panel, and CBC were within normal limits. His TSH was 58.74 and free T4 was 0.63. He has no family history of hypothyroidism. He was started on 50µg of levothyroxine daily for 2 weeks increasing to 100µg daily thereafter.

Hypothyroidism is an important consideration when there is an unexplained or large increase in lipid levels. As in this case, hypothyroidism can cause hyperlipidemia even without other hypothyroid symptoms. One consideration when treating hyperlipidemia secondary to hypothyroidism is whether or not to treat the hyperlipidemia with a lipid-lowering agent until the patient becomes euthyroid. According to current literature, the risk of using statins in hypothyroid patients outweighs the benefits as the risk for statin induced myositis is increased in a hypothyroid state.

A Case of Methotrexate Induced Skin Necrosis

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Poster number: 20

Methotrexate (MTX) is a well known anti-metabolite used for the treatment of many disease processes. While cumulative dose related hepatotoxicity has been well established, it is also known that high MTX doses can cause an acute toxicity resulting in rare extensive cutaneous manifestations. On occasion, these occurrences of widespread skin necrosis have occurred while on normal therapeutic doses, though rarely reported in the literature. We present a case of such acute MTX toxicity after an administration of a normal therapeutic dose of medication.

An 82-year-old female presented with a 5-day history of widespread sloughing of her skin after taking her normal 15mg single dose of oral methotrexate (MTX) for a disease flare. Her psoriasis lesions became painful and spread outside of her usual locations, and she experienced severe GI symptoms. She was admitted to the hospital and found to be hypotensive, with acute renal failure (creatinine of 4.9) and a developing pancytopenia (white blood cell count of 0.8, and hemoglobin of 6.1). Physical exam and punch biopsies revealed extensive sloughing of the skin with scattered purpura and ecchymosis, as well as large denuded and weeping areas across the trunk and extremities which suggested cutaneous necrosis secondary to methotrexate toxicity. The patient unfortunately succumbed to her condition shortly after being seen.

It remains unclear what incited her MTX toxicity, as she had no reported underlying comorbidities or appreciable medication interactions as risk factors. We hypothesize the MTX toxicity may have been exacerbated by acute dehydration as evidenced by her acute renal failure upon admission. This highlights the importance of physician awareness and caution of the potential dangers of MTX therapy even patients with previous MTX use.

Leave No Stone Unturned- Raising Awareness for Pediatric Gallstone Pancreatitis

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Poster number: 21

Background: Biliary pancreatitis is a leading cause of acute pancreatitis, comprising 12-30% of all pediatric cases. Causes of biliary pancreatitis include gallstones (11.8% - 55%), microlithiasis and structural defects. Although previously considered a rarity, pediatric gallstone disease is being diagnosed more commonly, especially among adolescents, due to widespread ease of use of ultrasonography and secondarily to an increase in obesity in the general population.

Case: A nineteen year-old obese Hispanic female presented with acute right upper abdominal pain for four days. She was diagnosed in the emergency department with gastroesophageal reflux disease but later returned to the hospital due to non-resolution of her symptoms. On admission, she had mild jaundice. Total bilirubin, AST, ALT, and lipase were elevated. Abdominal ultrasound showed dilation of the common bile duct and a gallstone confirming a diagnosis of acute gallstone pancreatitis. In the following days she had clinical improvement of abdominal pain and resolution of her labs. She then underwent a successful elective interval laparoscopic cholecystectomy.

Discussion: The case study demonstrates risk factors for gallstones (and gallstone pancreatitis) in a pediatric patient including obesity, postpubertal female gender and Hispanic ethnicity. Other predisposing factors include Native American ethnicity, pregnancy, use of oral contraceptives and use of ceftriaxone. The first presentation of gallstone disease in children has a high rate of complications (25.1 - 58.0%) including pancreatitis which has a mortality rate of 4 - 20%. Adolescents, due to increased incidence of gallstone disease, have up to 79.3% more comorbidities than other pediatric age groups. Awareness of risk factors and a heightened index of suspicion is necessary because of the increasing prevalence and potential long term complications of gallstone pancreatitis in the pediatric population.

Original Research

Medical Students

Basic Science

Role of endothelial miRNAs in microvascular plasticity following spinal cord injury (SCI)

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Poster number: 22

Spinal cord injury (SCI) is a devastating and potentially life-threatening disease process that does not have a well-defined clinical course of treatment. Primary trauma to spinal tissue causes immediate tissue destruction and vascular disruption leading to a robust inflammatory cascade, contributing to chronic loss of function. A temporally specific adaptive angiogenic response occurs in/around the injury site over the first week post-SCI, but little is known of the molecular regulation of this response. Micro-RNAs (miRNAs) are small, non-coding RNAs that robustly regulate target gene expression. miRNAs have received significant attention as a putative therapeutic target as they have been shown to potentially regulate pathogenesis in a number of disorders that have a vascular component, including cancer. The purpose of the current study was to determine if miRNAs are involved in acute microvascular dysfunction post-SCI. Adult female Sprague-Dawley rats were subjected to an acute focal ischemic SCI of the lumbar spinal cord. 24 hours post-SCI, microvessels were isolated from ischemic spinal tissue and screened for expression of the 653 most abundantly expressed and best characterized miRNA sequences using a focused PCR array. Of these screened, a small subset of miRNAs (23a, 504, 3570, 129, and 423) were significantly expressed in spinal microvascular endothelial cells following ischemic SCI. Further, treatment of SCI rats with a specific antagomir designed to inhibit miR-126, a miRNA shown to promote angiogenesis in tumors, blocked acute angiogenesis within the injury epicenter 2-5 days following traumatic SCI. Current efforts are focused on understanding the role(s) of specific miRNAs on acute microvascular dysfunction following traumatic SCI. These results suggest that miRNAs are regulators of microvascular pathology post-SCI and may represent novel therapeutic targets for regulating vascular-mediated secondary injury cascades. This work was supported the Kentucky Spinal Cord and Head Injury Research Trust (RLB; Grant # 9-1A), RR15576, and GM103507.

JNK and FAK as Targets for Inhibition in Gain-of-Function Shp2-Induced Myeloproliferative Disorder

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Poster number: 23

Juvenile myelomonocytic leukemia (JMML) is a neoplasm of early childhood. 35% of JMML cases feature somatic gain-of-function (GOF) mutations in the tyrosine phosphatase PTPN11 (Shp2), an activator of Ras. While Ras hyperactivation in GM-CSF hypersensitivity is widely recognized, phosphoinositide-3-kinase (PI3K) is less established as a driver of JMML transformation and progression. To better understand PI3K activation and mechanism, we investigated FAK and JNK as potential PI3K effectors. Firstly, observing that GOF Shp2 cells have upregulated Focal Adhesion Kinase (FAK), we hypothesized that FAK promotes PI3K activation in GOF Shp2 cells. We investigated if pharmacologic inhibition or genetic disruption of FAK corrected the hyperproliferative phenotype. Treating with the FAK inhibitor F-14 significantly reduced proliferation of GOF Shp2 cells. Secondly, previous studies have shown that 1) the PI3K catalytic subunit p110 δ is a selectively required mediator of hematopoietic hypersensitivity to GM-CSF, 2) GOF Shp2 cells have increased activation of JNK and c-Jun, and 3) JMML patient samples exhibit elevated levels of c-JUN. Thus, we hypothesized that p110 δ signals to JNK in GOF Shp2 cells, promoting c-Jun activation and myeloproliferation. We treated GOF Shp2 cells with the specific p110 δ inhibitor, GS-9820, and found dose dependent reduction of phospho-JNK, similar to the reduction seen in phospho-Akt and phospho-Erk. Besides activating the canonical Akt pathway, PI3K can also exert positive feedback on the

Ras-MEK-Erk pathway; therefore, we evaluated whether p110d or JNK inhibition adds to or is redundant with MEK inhibition. Consistent with the notion that p110d-stimulated JNK cooperates with MEK, we found that pharmacologic inhibition of p110d or JNK adds to MEK inhibition in reducing Erk and Akt activation. This illuminates a novel mechanism of p110d regulation of the Jnk-c-Jun signaling pathway in GOF Shp2-induced malignancy. Our findings indicate a central role for PI3K activation in JMML and implicate JNK and FAK as disease-drivers.

Carotid Atherosclerosis: Biomarkers to Identify Patients at Risk for Stroke

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Poster number: 24

Introduction: Carotid atherosclerosis is an inflammatory disease resulting in plaque accumulation, blood flow reduction and potential distal embolization and stroke—the third leading cause of death in women. The immune system’s involvement in the pathobiology of carotid atherosclerosis remains poorly understood. Immune signaling relies on soluble chemokines, cytokines and subsequent signal transduction pathways that can skew the immune system into pro- or anti-inflammatory states. Activated leukocytes release tissue-damaging products that contribute to plaque instability, the primary mechanism of distal embolization from carotid artery plaques, leading to transient ischemic attacks and stroke. The long-term goal of our research is to identify immune biomarkers in peripheral blood that can prospectively detect patients at risk for plaque instability.

Methods: We examined the gene expression of pro-inflammatory and anti-inflammatory immune molecules involved in neutrophil and macrophage activation. These markers include: IRAK-3, GSK3a, STAT1, STAT6, TGF- β , CXCL12, and CXCR4. Expression was examined in peripheral blood and atherosclerotic plaque of ten symptomatic and ten asymptomatic patients with carotid atherosclerosis. Gene expression was measured by qRT-PCR, using GAPDH as the housekeeping gene. Data were analyzed using the delta CT method.

Results: Our results demonstrated that expression of these regulatory molecules was higher in blood than plaque. The chemokine CXCL12 and its receptor CXCR4 were reduced in the peripheral blood of patients with symptomatic disease compared to asymptomatic patients. There were no significant differences between asymptomatic and symptomatic peripheral blood for any other regulatory molecules we studied.

Conclusion: Previous studies suggest CXCL12 and CXCR4 are involved in endothelial stability via recruitment of endothelial progenitor cells. CXCL12 and CXCR4 expression may therefore contribute to plaque stability and/or endothelial healing in patients with carotid atherosclerosis. If confirmed in future prospective studies, our results suggest a possible role for differential expression of CXCL12 and CXCR4 in patients with symptomatic carotid atherosclerosis.

Development of an assay system to study Id1, Id2, and Twist promoter activities

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Poster number: 25

The helix-loop-helix proteins Id1 and Id2 and the basic HLH transcription factor Twist contribute to the regulation of cell growth and differentiation. Abnormal levels of their expression have been correlated with different cancers, and understanding the regulation of their expression may provide insight into their roles

in normal and deregulated cell growth and development. This project aimed to develop a luciferase reporter assay system to study transcriptional regulation of Id1, Id2, and Twist in various cell lines. Upstream regions for each gene were selected for cloning based on sequences conserved across several species, and were cloned into a luciferase reporter vector. Id1, Id2, and Twist promoter activity was compared to mRNA accumulation from the corresponding endogenous genes in human breast cancer cell lines BT 549, MCF7, and MDA MB231, and human embryonic kidney cell line HEK 293. Id1 promoter activity was observed in all cell lines, and Id1 mRNA accumulation was observed in all cell lines except HEK 293. Id2 promoter activity was observed in all cell lines, and Id2 mRNA accumulation was observed in MCF7 and HEK 293. Twist promoter activity was observed only in MDA MB231, and Twist mRNA accumulation was at low levels in BT 549 and HEK 293. Thus, promoter activity and mRNA accumulation were congruent for only some genes in some cell lines. Additional regulatory sequences outside of the cloned regions may be required in some cell lines or regulatory conditions, or transcription vs. degradation rates may differ in different lines. The reporter constructs can be used for studies to determine the contribution of specific sequences and their binding proteins to differences in promoter activity between normal and abnormal cell lines. Such studies should provide insight into the potential roles of these genes in both normal and deregulated cell growth and development.

Examination of Mutant Strains of *Salmonella typhimurium* Over-expressing Potential Cancer Targeting and Invasion Phenotype genes in PC-3M Prostate Tumors via Invasion Assays

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Poster number: 26

Salmonella typhimurium has been receiving increased attention in cancer therapy as a therapeutic gene delivery vector that can locally produce therapeutic agents and mediate tumor destruction. However, most strains used for cancer gene therapy have been initially selected for avirulence creating a need for mutant strains that are avirulent yet more efficient in tumor targeting. Previously, Arrach et al. discovered 40 potential gene promoters that were preferentially expressed in tumor tissue using in vivo nude mouse tumor models. We hypothesize that due to the preferential expression of these gene promoters, that these gene products are responsible for tumor-targeting of *Salmonella* in tumors. Amongst various gene promoters found by Arrach et al., we also hypothesize that certain gene products of promoters from *sifA* and *STM3120* would be a major player in the bacterial-gene tumor targeting ability. Our investigative study will test whether overexpression of the downstream gene products of these upregulated promoters increase tumor attachment or invasion rates to the PC-3M human prostate tumor cell line. Our investigative study measures *Salmonella* invasion of PC-3M utilizing a gentamycin-excluded intracellular invasion assay as well as utilizing flow cytometry to quantify bacteria-associated cancer cells. We aim to select and confirm the specific *Salmonella* gene products that are responsible for molecular tumor-targeting and invasion mechanisms in human prostate tumor cell lines, which would be a great discovery in the advancement of bacteria cancer gene therapy.

Desmoglein-2 activates mitogenic signaling by modulating scaffolding proteins in lipid rafts

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Poster number: 27

Lipid rafts are highly dynamic, detergent-resistant membrane microdomains densely packed with cholesterol, sphingolipids and scaffolding proteins. One such protein, caveolin, regulates cell

communication by compartmentalizing and interacting with signaling proteins. Alterations in lipid raft microenvironment can initiate signaling pathways affecting cellular function and behavior. We previously showed that the desmosomal cadherin Desmoglein-2 (Dsg2) associates with Caveolin-1 (Cav-1), providing a mechanism for regulating mitogenic signaling and contributing to malignant transformation and skin tumor formation. Here we show evidence that Dsg2 activates cell signaling by modulating lipid rafts. Knockdown of Dsg2 by shRNA in HaCaT cells did not alter the total level of Cav-1 but instead, increased Cav-1 mobilization into membrane raft fractions. Cav-1 is a negative regulator of the proto-oncogene Src and the Ras-p42/44 mitogen-activated kinase cascade. In the absence of Dsg2, we observed an increase in Src localization into lipid rafts with a concomitant reduction in activated Src. Disruption of lipid rafts by filipin III or MBCD shifted Cav-1 to the non-raft fractions and activated several signaling pathways, including Src, Ras/MEK/Erk, and Stat3. In the absence of Dsg2, more Cav-1 was retained in the raft fractions after MBCD treatment and activation of these signaling pathways was attenuated. Interestingly, Dsg2-expressing cells were more susceptible to disruption by these cholesterol-chelating agents. Taken together, these results suggest that Dsg2 may play an important role in regulating lipid raft composition and dynamics, thereby providing a mechanism for regulating cell signaling and survival.

Inhibiting Ovarian Cancer Invasiveness Using Novel Drug Imipramine Blue

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Poster number: 28

Background/Objective: Production of reactive oxygen species (ROS) is induced in the cancer microenvironment by abnormal cellular metabolism or inflammation and plays a role in tumor initiation and progression. Generation of ROS has been linked to ovarian cancer (OC) metastasis. Imipramine blue (IB), a novel inhibitor of NADPH oxidase, blocks intracellular ROS production and could exert anti-tumor activity. We hypothesized that IB blocks motility and invasiveness of OC cells through ROS inhibition.

Methods: Three OC cell lines, SKOV3, IGROV1, and OVCAR were used to evaluate the effects of IB on cell proliferation, migration, and invasiveness. Cell migration and invasion were measured using the wound-healing and the matrigel transwell assays, respectively. Cell proliferation was assayed with the CCK-8 assay and ROS production was quantified using a hydrogen peroxidase assay. Quantitative real time-PCR array for 84 genes involved in invasion and metastasis evaluated gene expression changes after IB treatment. RT-PCR and Western blot analysis validated key findings.

Results: Here we show that IB decreased the production of ROS by up to 30% in OC cell lines, consistent with its role as a NADPH oxidase inhibitor. IB decreased migration rate by 60% ($p < 0.01$) and invasion through matrigel up to 3-fold ($p < 0.001$) in SKOV3 and IGROV cells in the absence of cellular toxicity. In addition, cell proliferation was decreased by 30-50% with an associated decrease in cyclin D1 and MAPK activation. Several genes linked to cell invasiveness, including AKT, versicans, and ERBB3 were also down-regulated by IB treatment.

Conclusions: Our results indicate that by inhibiting ROS, IB blocks migration and invasiveness of OC cells through a mechanism involving AKT inactivation and versican down regulation. Further evaluation of IB as an anti-cancer agent is warranted.

Assessing the ZSD Rat as a Pre-clinical Model to Study the Effect of Diabetes on Bone

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Poster number: 29

People suffering from type 2 diabetes mellitus are prone to bone fractures. Currently, dual energy x-ray absorptiometry (DXA) scans of skeletal sites prone to fracture (e.g., femoral neck) is used to measure areal bone mineral density (BMD) to assess fracture risk. This method is not suited for diabetics because diabetics have otherwise normal BMD, but are more likely to sustain fractures than age-matched non-diabetics. To develop better fracture assessment tools and to understand the cause of low fracture resistance associated with diabetes, there needs to be a pre-clinical rodent model of diabetes in which there is a difference in fracture resistance. One potential model is Zucker Diabetic Sprague Dawley (ZDSD) rat that develops hyperglycemia. In the ZDSD rat, bone toughness decreases with the duration of diabetes, but not bone strength. Male ZDSD and non-diabetic control (CD) rats were fed the special high-fat diets starting at 16 weeks of age. There were 3 time points for each group or strain: 16 WKS (baseline), 22 WKS (6 week of diabetes) and 29WKS (13 weeks of diabetes). After euthanasia, the bones were imaged using μ CT and the structural properties were evaluated. Biomechanics was used to estimate bone toughness and strength. The toughness of the diabetic rat bones decreased with duration of diabetes and was lower than non-diabetic rat bones 29 WKS age. There was no change in bone strength with duration, although tissue mineral density increased with age in both the ZDSD and CD rats. One limitation may be only using the CD rat as a control and not the ZDFfa/+ rat, which is the other parental strain to generate the ZDSD rats. Future research could analyze the phenotype of ZDFfa/+ rat bones as another control to compare results. In conclusion, the duration of diabetes does decrease toughness, but not strength.

Amyloid-beta plaque detection in a mouse model of Alzheimer's disease

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Poster number: 30

Alzheimer's disease (AD) is a form of dementia that diminishes cognitive skills and memory. One of the major features of AD is formation of amyloid-beta plaques. The hormone melatonin has been found to reduce the formation of amyloid-beta plaques in various in-vitro and in-vivo models. We previously reported that long term melatonin administration to a mouse model of AD can provide protection from AD progression as assessed behaviorally and in terms of brain pathology. The goal of this project was to develop reliable in-house techniques to detect amyloid-beta plaques in the AD mouse model. These techniques will be used in our larger study that aims to define the mechanisms through which melatonin works. Staining techniques that were tested include Congo Red histochemistry and immunohistochemistry (IHC) with both infrared fluorescence and HRP-conjugated antibodies against the amyloid-beta plaques. We determined that the commercial anti-amyloid beta antibody is functional, i.e. the images are suitable for quantification and reproducible for publication. After assessing the benefits and drawbacks to each method, we found the fluorescence technique to be the most sensitive of the three techniques and to yield the clearest images. We were also satisfied with the Congo Red and HRP staining. We determined that at 4 months of age, the cortices and hippocampi of AD animals do not yet exhibit the characteristic plaques of AD. Plaques accumulate with age and it is known that accumulation begins in the entorhinal cortex and hippocampus, and then progresses to the frontal cortices. Thus, the effects of AD are seen later in life. This is why we then worked with tissues from AD animals that were 12 months old. Melatonin been shown to be safe for human administration. Thus, a critical barrier to clinical trials (e.g. safety) has already been bridged making melatonin a potential treatment for AD.

Comparison of Human Platelet Lysate and Fetal Bovine Serum Containing Media for Optimal Culture Conditions of Endothelial Colony-Forming Cell

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Therapeutic vascularization remains a challenge in tissue repair strategies. Patients suffering from the consequences of vascular diseases such as peripheral vascular disease would benefit greatly from a cell therapy with angiogenic capabilities. Human endothelial colony-forming cells (ECFC) are cells which have been shown to be a potential solution, as they are highly proliferative and possess in vivo vessel-forming capacity. Advancements in therapies harnessing ECFCs are currently hindered by the use of fetal bovine serum (FBS) in culture. Several novel culture media formulations lacking xenogeneic compounds have been developed and demonstrated to yield ECFCs with similar phenotypic and functional characteristics as those cells cultured in traditional FBS-containing media. Of these formulations, human platelet lysate (HPL) developed by the Strunk research group in Austria has emerged as a promising substitute for FBS; however, the high cost and limited availability of HPL has constrained extensive ECFC studies. Consequently, a local company has developed a new HPL formulation. In our project, we compared media containing the local HPL to standard endothelial cell culture media supplemented with FBS and media supplemented with Strunk lysate to identify optimal culture condition for ECFCs. We found no significant differences in ECFC morphology, proliferation, colony formation, surface phenotype, and in vitro cord-forming ability; although, a slight reduction of CD34 expression was noted in the local lysate cultured ECFCs. Further in vivo vessel forming assays will need to be performed before validation of local lysate cultured ECFCs is complete and easy and affordable access to HPL is available for future cell studies.

Regulation of Growth Factor Dependent Tumor Cell Proliferation by Extracellular Matrix Mechanics

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Poster number: 32

The rapid progression of glioblastoma multiforme (GBM), the most common and lethal primary brain tumor, is driven by the diffuse infiltration of tumor cells into the brain. Recent genome sequencing efforts have revealed that many GBM tumors share lesions in the epidermal growth factor receptor (EGFR) pathway, which strongly promotes migration and proliferation. Previously, our laboratory has demonstrated that stiffening the extracellular matrix (ECM) can amplify the proliferation rate of human GBM tumor cells by more than a factor of five (Ulrich et al, Cancer Res 2009), raising the possibility that mechanical inputs can cross-talk with mitogenic signaling pathways to promote GBM tumor growth. The objective of this study was to directly explore this hypothesis by investigating the extent to which ECM biomechanics can regulate GBM cell cycle progression, chemotherapeutic sensitivity, and growth factor receptor (EGFR)-dependent signaling. We find that human glioma cells cultured on soft (80 Pa) fibronectin-coated polyacrylamide gels are more likely to be in G0/G1 and less likely to be in S phase of the cell cycle than cells cultured on stiff (119kPa) ECMs. Western Blot reveals that the expression and phosphorylation of EGFR and its downstream effectors, including Akt and PI3 kinase, depend strongly on ECM rigidity, with EGFR phosphorylation rising with increasing ECM stiffness. Furthermore, EGFR organization is highly rigidity-dependent, with EGFR co-clustering with focal adhesions on stiff substrates and receding into a diffuse distribution as matrix rigidity falls to physiological levels, suggesting that ECM stiffness may promote proliferation by spatially amplifying EGFR signaling. Together, these results support a model in which ECM stiffening acts through mechanotransductive pathways to trigger EGFR-based mitogenic signaling that promotes proliferation.

Alterations in O-GlcNAc with Alzheimer's Disease

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Background: O-linked-N-acetylglucosamine (O-GlcNAc) expression may be related to the pathophysiology of Alzheimer's disease (AD). Previous studies have shown altered levels of O-GlcNAc expression in aging and AD, but with conflicting findings. Griffith et al. found an increase in O-GlcNAc in AD in several brain regions including hippocampus.(1) However, Liu et al. reported a decrease in O-GlcNAc in AD in frontal cortex.(2) Previously, we have shown that increasing O-GlcNAc expression in rats causes deficits in hippocampal dependent learning. Therefore, we investigated if O-GlcNAc expression changes with AD, using post-mortem human hippocampus. Additionally, using AD transgenic mouse models, we explored whether elevated amyloid beta (A β) or tau affects O-GlcNAc expression.

Methods: We used immunohistochemistry staining to measure O-GlcNAc levels by analyzing staining intensity in 8 brains from humans with AD and 8 age-matched controls. Immunohistochemistry staining was also used to analyze the mouse transgenic models.

Results: O-GlcNAc levels were increased in the AD post-mortem human hippocampus compared to age-matched controls. However, in mouse models which overexpressed A β plaques, O-GlcNAc levels were unchanged, and in mouse models which overexpressed tau, O-GlcNAc levels were decreased.

Conclusions: These findings implicate that increased A β and tau are not the cause of the elevation in O-GlcNAc expression that occurs in humans with AD. Future investigations should explore whether glucose metabolism could be underlying the O-GlcNAc increase found in AD.

References:

1. L.S. Griffith, B. Schmitz, O-Linked N-Acetylglucosamine Is Upregulated in Alzheimer Brains. *Biochemical and Biophysical Research Communications*, 1995 Aug 15; 213 (2): 424-31.
2. Liu et al., Reduced O-GlcNAcylation links lower brain glucose metabolism and tau pathology in Alzheimer's disease. *Brain* (2009) 132 (7): 1820-1832.

The research was supported by the AFAR MSTAR Program, the NIH, NINDS, and the Department of Cell, Developmental and Integrative Biology and Department of Neurobiology at the University of Alabama at Birmingham.

Induction of Tregs in Chimeric Antigen Receptor (CAR)-Transduced T cells: Role of Costimulation and Tumor-Secreted TGF- β

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Abstract has been removed at the request of the authors.

Clinical and Translational Research

Textural analysis of echo-planar diffusion-weighted imaging improves preoperative characterization of suspected thyroid tumors

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Background: Fine needle aspirate cytology (FNAC) fails to diagnose a significant proportion of malignant thyroid nodules, so many patients undergo diagnostic lobectomy. If malignant nodules could be definitively identified, patients would only need one definitive procedure. The purpose of this study was to assess whether textural analysis (TA) could improve accuracy, sensitivity, and specificity of diffusion-weighted magnetic resonance imaging (DW-MRI) of thyroid nodules.

Methods: DW-MRI images were obtained at 3 Tesla with a diffusion-weighted dual-spin-echo echo-planar imaging (DW-EPI) sequence (echo time (TE) = 81 ms; relaxation time (TR) = 2200 ms; field of view (FOV) 22 cm; matrix 128 x 128; 16 averages; slice thickness 5 mm; spacing 1 mm; b-values of 0 and 500 s/mm²). An experienced consultant neuroradiologist blinded to the clinical data drew regions of interest (ROIs) around the lesions.

Textural analysis and linear discriminant analysis (LDA) using MaZda and b11 (Technical University of Łódź, Wólczańska, Poland) gave >300 texture parameters; feature reduction selected 30 that best distinguished the benign and malignant ROIs. The resultant most discriminant factor 1 (MDF1) values gave sensitivity and specificity values and ROC curves (GraphPad Prism, San Diego, California, USA).

Results: Textural analysis gave a sensitivity of 87% and specificity of 100% with a cut-off MDF1 value of -0.0331. 83/87 slices of the training set were correctly classified. Selecting the highest scoring slices per patient, on the basis of MDF1, achieved 100% specificity and 92% sensitivity, with 18/20 nodules correctly classified. When tested on another set of DW-EPI slices of benign and malignant nodules, 10/14 slices and 5/6 nodules were correctly classified.

Conclusions: Textural analysis classifies DW-EPI images of thyroid nodules with high sensitivity and specificity. A large prospective study is needed to fully prove this model.

Fast resting non-contrast MRI perfusion can detect myocardial ischemia with moderate sensitivity and specificity

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Poster number: 36

Introduction: Arterial spin labeling (ASL) is a less extensively explored method to observe myocardial perfusion. Before ASL, the radioactive contrast agent gadolinium was used to determine tissue perfusion. ASL uses magnetically labeled water, which can be used repeatedly without causing adverse effects, unlike using a radiotracer. Patients with renal insufficiency cannot receive any radiotracer, which makes ASL a monumental development for those patients & others who have conditions that prevent them from receiving contrast. Previous projects explored cerebral blood flow using ASL. In cardiology, first pass perfusion is the gold standard to detect ischemia. The current project explores the use of ASL to identify poor perfusion throughout myocardium. ASL can be performed on patients with kidney failure, unlike first pass perfusion. ASL could greatly enhance the evaluation of transient ischemic attacks. We hypothesize

that ASL perfusion MRIs can be used in a cardiological clinical setting to diagnose coronary artery stenosis & myocardial ischemia.

Methods: 14 patients with suspected myocardial ischemia were prospectively scanned. The imaging protocol included 3-slice pre-contrast ASL imaging & 3-slice first-pass perfusion imaging. Custom-made software was used to create ASL map. Reviewers indicated presence/absence of ischemia in each segment of ASL & first-pass perfusion images. Sensitivity & specificity of the detection of myocardial ischemia were calculated.

Results: Most patients had evidence of myocardial ischemia as detected by first-pass perfusion. Sensitivity, specificity, positive predictive value, & negative predictive values were 63%, 76%, 60%, & 78%, respectively.

Conclusions: To our best knowledge, this is the first time a fast non-contrast ASL method was evaluated in patients with myocardial ischemia. While sensitivity is relatively low, the relatively high specificity may permit this method as a screening tool for suspected myocardial ischemia. Advancement in ASL technique is needed to improve spatial resolution & motion correction.

Discovering the Significance of AA Association with Eczema Visualized through Proscope HR Imaging

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Poster number: 37

The average person typically sheds about 100 hairs per day, but 2% of the population has Alopecia Areata (AA) a common inherited autoimmune disease. Eczema (Atopic Dermatitis, AD) also is a commonly inherited skin disease that may occur in patients with AA. Focused research aimed to identify patients in the Vanderbilt Dermatology Hair Loss Clinic with coexisting eczema and AA, while comparing this subset with patients having another autoimmune disease, thyroiditis. FLG gene mutations predispose AA and eczema patients to environmental triggers due to a leaky barrier. Furthermore may increase AA risk to develop other autoimmune diseases. A Proscope HR®, a mobile 30X microscope, was used to detect diagnostic features of AA such as exclamation hairs, inflammation, and yellow dots during scalp and skin examination. Medical records of new and established patients were reviewed to evaluate the patient's diagnoses and treatment. More than 50% of AA patients (36/65) were found to have coexisting eczema, while 32% (21/65) had a combination of AA and thyroiditis. The Proscope HR® was clinically useful to document presence of AA, while also visually motivating patients to become more educated about AA and eczema. This project demonstrated AA patients are at a greater risk for possessing coexisting atopic and autoimmune diseases. A documented patient population has been obtained to continue studies of eczema, AA and other autoimmune diseases in future research projects.

Inpatient Rehabilitation Unit Art Therapy Stress Management

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Poster number: 38

Current data is underwhelming for the use of art therapy as a modality for managing stress and emotion for physical rehabilitation patients. Much of the existing literature discusses the importance of art therapy in mental institutions and for the mentally ill. Learning more about this prevalence of stress and physical

rehabilitation patient stress management techniques will aid Inpatient Rehabilitation Units (IPRs) in addressing the issues. This research sought to identify the needs of IPRs with regard to emotional care as well as identify if art therapy was a viable option to aid patients in managing their emotions while undergoing physical rehabilitation. The study employed an electronic needs-assessment survey directed at all individuals working within the IPR unit. There were two primary aims of the survey: understanding the stress level and management techniques for patients in the IPR and identifying if art therapy would be a feasible stress management technique. Results showed, on average, IPR staff spent over 30 minutes with individual patients and most reported observing a moderate degree of stress in their patients. 80% of the staff that responded spoke with patients about emotional well being. Participants reported success with managing emotions with techniques including encouragement, staying positive, active listening, pain management education, board games, social work, distractions, anxiety medication, books, and magazines. A variety of additional available stress management options were reported as well. 60% of respondents supported the idea of art therapy as a stress management technique for the IPR. In conclusion, the present study identified current practices for IPR patient stress management during an often-grueling rehabilitation period. Additionally, the results suggest that IPR staff would support a pilot art therapy program.

Exhaled Concentrations of Acetone and Pentane Track with Weight Loss in Response to Diuretic Therapy in ADHF Patients

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Background: While breath testing has revolutionized the diagnosis of disease states of the lung and gut, it has been underexplored as a potential diagnostic tool for heart failure (HF). Previous studies have shown that concentrations of certain volatile organic compounds (VOCs) are elevated in the exhaled breath of HF patients. However, the relationship between exhaled VOC levels and HF severity is not well-established.

Objective: In this study, we explored the relationship of exhaled acetone and pentane levels with clinical indices of HF severity and weight loss after diuresis in patients admitted with ADHF.

Methods: All patients admitted to Cleveland Clinic with ADHF and hypervolemia between 7/2012-7/2013 were enrolled in this single-center, prospective cohort study. Acetone and pentane levels were measured within 24 hours of admission and after 48 hours of diuresis. Samples were collected in Mylar® bags and analyzed using SIFT-MS. Weight loss between samples was used as a marker of diuretic response. Median weight loss was determined and the population was split into those who lost at least the median weight loss and those who lost less. Comparisons were analyzed with Wilcoxon/Kraskal-Wallis tests and Spearman's rank correlation calculations.

Results: In our study cohort (n=55 age 65±12 years, LVEF 37±18%, median admission NT-proBNP 4,197 pg/mL, PCWP 27±6 mmHg), admission acetone levels correlated with lower LVEF (r= -0.27, p=0.011). Greater weight loss correlated with a greater reduction in acetone (r= -0.397, p=0.003) and pentane levels (r= -0.308, p=0.022). Patients with above-median weight loss (≥4.5 kg), demonstrated a significantly greater percentage reduction in acetone (59% reduction vs 7% increase, p

Medication non-adherence: Can we identify the highest risk patients before they leave the hospital?

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Poster number: 40

Though we spent nearly \$357 billion on prescription medications in 2012, nearly half of all patients do not take their medications as prescribed. Many barriers to medication adherence are modifiable. A simple educational session addressing a patient's health status improves his or her tendency to take medications [ii,iii]. Reminders, follow-up, and other structural support from health care providers also result in higher adherence. Identifying patients at baseline at the highest risk for non-adherence and risk factors specific to the individual enable personalized care and efficient resource allocation.

Improving allocation of health care resources is a moving target for many providers. Instead of providing all patients the same costly resources, the highest risk patients can be targeted for specifically applicable interventions. Patient outcomes improve with personalized care. Individualized recommendations can be used to decrease re-hospitalization rates, improve chronic disease management, and prevent the development of complications, which cost nearly \$300 billion in nonadherence-related care alone in 2012.

This predictive risk model specifically focuses on patients with acute myocardial infarction at baseline. These patient's clinical data is used to determine whether he or she at highest risk of nonadherence to two or more cardiovascular medications within one month of discharge. The predictive model is used to:

- 1 Determine which individuals are at highest risk for nonadherence,
- 2 Determine characteristic patterns of patients in the high risk group, and
- 3 Determine the risk factors specific to a high-risk individual,

This model is intended to be used to analyze clinical data available from EHRs (electronic health records) to deliver improved resource allocation and personalized chronic disease management. Both goals lower the cost of care while improving quality and patient outcomes.

The Epidemiological Pilot Analysis of Epilepsy Patients in a Community Clinic Aims to Inform Effective Care.

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Poster number: 41

Introduction: Epilepsy is a common neurologic disorder with varied, population-specific clinical characteristics and demands on healthcare systems. We sought to identify the unique demographic and clinical features of the adult epilepsy patients seen at the Ben Taub General Hospital Neurology Clinic (BTGHNC) in order to inform healthcare allocation and research initiatives aimed at this unique community.

Methods: Out of almost 5,000 patients followed at the BTGHNC between 2007 and 2012, we analyzed a representative pilot cohort of 221 individuals treated between June 30 and August 1, 2012, via in-depth chart review.

Results: Women represented 59% of patients, and more than two-thirds of the cohort was from Latin America, mostly of Mexican origin (35%). Lesional, symptomatic localization-related epilepsy was present in 54% of cases. Epilepsy was most often complicated by chronic headaches; depression, anxiety, and illicit substance and alcohol abuse were the leading causes. Medical comorbidities occurred in 41% of patients, and hypertension and type II diabetes were the most prevalent. Reproductive issues were common in female patients.

Conclusions: Our pilot epidemiological survey of the BTGHNC epilepsy cohort revealed several important demographic and clinical data points. The ethnic character of this cohort highlights the need for culturally competent care. Understanding the epilepsy etiology and the frequently associated neuro-psychiatric and medical comorbidities is important for effective interdisciplinary communication and for planning diagnostic and treatment plans that incorporate allied social and health support services.

Contemporary Outcomes after Pericardial Window Surgery: Impact of Surgical Technique

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Poster number: 42

Introduction: For patients with a large pericardial effusion, a pericardial window procedure provides for direct tissue biopsy, complete fluid drainage, and eliminates the risk of cardiac tamponade. The purpose of this study was to evaluate the outcomes associated with pericardial window operations performed via either subxyphoid or left anterior mini-thoracotomy incisions, and to compare the pain response associated with each technique and efficacy in terms of completely draining and preventing the development of a recurrent pericardial effusion.

Methods: A retrospective chart review was performed at a single center to identify all patients who underwent a pericardial window operation. Perioperative data was collected, with a focus on surgical technique, preoperative comorbidities, effusion etiology, presence of cardiac tamponade, and amount of fluid drained. Postoperative data were recorded including time to extubation, narcotic requirements over 48 hours, as well as the development of a recurrent pericardial effusion and the need for repeat surgery.

Results: Between April 2002 and July 2013, 164 patients with clinical and echocardiographic evidence of a pericardial effusion underwent either a subxyphoid (n=127) or left anterior thoracotomy (n=37) pericardial window procedure, with the incision choice based on surgeon preference. Patients (mean age 72.9 years, 59% female) had a high incidence of previous malignancy (49%) and atrial fibrillation. Echocardiographic or clinical evidence of cardiac tamponade was present in 46% of patients, and 13% of patients had previously undergone unsuccessful pericardiocentesis.

There was no difference in the amount of fluid drained in the operating room with either pericardial window technique (subxyphoid versus thoracotomy, 507±305 mL versus 535±295 mL, P=0.63), or in the time to extubation following surgery (subxyphoid versus thoracotomy, 3.6±10.1 hours versus 7.6±17.2 hours, P=0.12). Patients who were treated with the subxyphoid technique had less pain after surgery compared to thoracotomy patients (intravenous morphine equivalents within 48 hours: subxyphoid versus thoracotomy, 32±40 mg versus 73±80 mg, P=0.001). Postoperatively, there was no difference in the rate of recurrent moderate or large pericardial effusions with either technique (subxyphoid versus thoracotomy, 10% versus 13%, P=0.74), or in the need for a repeat pericardial window procedure (subxyphoid versus thoracotomy, 4% versus 8%, P=0.38).

Conclusion: Pericardial window surgery is an effective technique for the drainage of a large pericardial effusion and prevents cardiac tamponade. Compared to the thoracotomy technique, a window performed via a subxyphoid incision leads to less postoperative pain. In contrast, if a drainage tube is placed in the pericardial cavity at the time of surgery, the thoracotomy operation may lead to less effusion recurrence and the need for fewer repeat procedures.

Assessment of the Chicken Egg Membrane as a Stimulator of Wound Healing

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Poster number: 43

Egg membranes are widely used in Ecuador, Ukraine, and areas of the southeastern United States as a home remedy for lacerations, abrasions, burns, and conjunctivitis. Although egg membranes were once used in western medicine to prevent meningeal adhesions as well as in ophthalmic settings, there is little clinical research available. No randomized trials were found in the literature to determine the risks, safety, or efficacy of the modern Ecuadorian home application. Here, we examined the effects of applying chicken-egg membranes as a wound dressing on the rate of healing of circular excision wounds in two sample groups. Compared to the untreated control group there was a significantly faster rate of healing between the egg-membrane group between day 0 and 5. The control wounds show a biphasic rate of healing consistent with control models in the literature; they heal slowly from day 0-5 and rapidly from day 5-8. These findings suggest possible future application of chicken egg membranes in the wound care arena.

Management of Complex Abdominal Wounds, Is there a straightforward solution?

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Poster number: 44

Introduction: Complex abdominal wounds are difficult challenges to surgeons who treat them. Patient comorbidities such as obesity, smoking, multiple surgeries, cancer/radiation, fistulas, and abdominal wall hernias contribute to the wound healing abnormalities that lead to a chronic wound. Multiple plastic surgery techniques can be used to heal these wounds including negative pressure therapy, skin grafting, local tissue re-arrangement and wound healing adjuncts. However, there is no definable protocol for management of these difficult wounds and complex patients.

Methods: We performed a retrospective chart review of 150 patients who were treated at the Center for Wound Healing for complex abdominal wounds from 2005-2011. We defined complex abdominal wounds as post-surgical wounds that required more than one intervention prior to closure. We determined the etiology of the wounds, treatment methods, timing, number of surgical procedures, complication rates, and length of hospital stay from 2005-2011. We used the 2009 Medicare reimbursement rates to estimate the healthcare costs for these patients while they were inpatients.

Results: Ninety four (62.7%) patients were managed with negative pressure wound vac therapy, 16 (10.7%) patients were closed with a split thickness skin graft, 39 (26%) patients were treated with Alloderm or Strattice, and 10 (6.7%) patients were closed with a flap. Each patient underwent an average of 2.58 surgical procedures including their closure procedure. Of the 150 patients, 35 (23.3%) patients were diabetics, the average BMI was 30 kg/m², 68 (45.3%) patients had hypertension, 12 (8%) patients had end stage renal disease, and the average length of stay per patient was 33.75 days.

Conclusions: Complex abdominal wounds are well-managed in a comprehensive wound center. We are suggesting a protocol for management of these wounds that has improved outcomes and decreases the time spent as an inpatient, thus decreasing costs to the hospital system.

Spectral-domain optical coherence tomography features of choroidal rupture

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Poster number: 45

Purpose: To date, no studies have compared choroidal rupture findings on slit-lamp biomicroscopy with features on spectral domain optical coherence tomography (SD-OCT). We aimed to evaluate chorioretinal anatomy using SD-OCT, longitudinally follow macular changes with SD-OCT, and compare SD-OCT findings with features seen on slit-lamp biomicroscopy.

Methods: We conducted a retrospective chart review of patients with choroidal rupture from 2011-2013. Patient history, visual acuity, anterior and posterior segment features on slit-lamp biomicroscopy and indirect ophthalmoscopy, and SD-OCT were recorded.

Results: Five eyes of five patients diagnosed with traumatic, indirect choroidal rupture seen on slit-lamp biomicroscopy were included in the study. SD-OCT demonstrated disruption of the retinal pigment epithelium (RPE)-Bruch's membrane complex in all five eyes. Varying degrees of sub-retinal fluid, hyperreflectivity of the RPE-Bruch's membrane complex and inner-segment/outer-segment junction, and fibrosis or scar formation were demonstrated on SD-OCT for four of five eyes, but SD-OCT for only one eye showed true disruption of choroid.

Conclusion: SD-OCT reveals that most lesions labeled as choroidal rupture on slit-lamp biomicroscopy have little involvement of the choroid. Further subclassification of choroidal rupture may be warranted and may include 1) eyes with loss or disruption of the choroid, true choroidal rupture, and 2) eyes with disruption of the RPE-Bruch's membrane complex, or pseudochoroidal rupture.

Necessity of Primary Care Visits for Acute Respiratory Infections

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Poster number: 46

Background: Acute respiratory infections (ARIs) are the most common reason for seeking ambulatory care in the United States. With hundreds of millions of visits annually for ARIs, it is important to understand whether these visits are necessary. We performed a retrospective chart review to measure the proportion of primary care ARI visits that did not require an office visit.

Methods: We randomly selected 500 visits from 58,398 ARI visits, based on ICD-9 diagnosis codes, from May 2011 to May 2012. We separated information that could be gathered without an office visit (e.g., history of present illness [HPI], past medical history, etc.) from information that required an office visit (e.g., physical exam findings, testing, etc.). Reviewing non-visit-requiring information, we identified the diagnosis (the "HPI diagnosis") and whether or not office visit was necessary. Independently, we reviewed the visit-requiring information to determine the clinician's diagnosis and subsequently compared the HPI diagnosis to the clinician's diagnosis.

Results: Of the 500 randomly selected primary care visits, 439 were new ARI visits. We determined that 72% (316/439) of visits did not require an office visit, most commonly for non-specific upper respiratory infections (39%), sinusitis (24%), and bronchitis (22%). The HPI diagnosis was an exact match for the clinician's diagnosis in 67% (213/316) of visits. Including visits for which the HPI diagnosis and the clinician's diagnosis was not an exact match, 87% (276/316) could be managed without an office visit. For the 28% (123/439) of visits we determined required an office visit, the HPI diagnosis matched the clinician's diagnosis for 77% (95/123) of visits.

Discussion: Our results suggest that over 2/3 of primary care ARI visits are not necessary for appropriate management. Better pre-visit triage and phone or internet-based management of ARIs may reduce the burden of ARI office visits on our health care system.

Physicians use perfusion imaging to aid in diagnosis and treatment decisions for acute ischemic stroke

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Poster number: 47

Stroke causes major mortality and disability, with the majority of strokes being ischemic. Stroke imaging focuses on the detection of ischemic stroke to allow for timely treatment. Recently, perfusion imaging has been utilized to provide visualization of at risk ischemic tissue that would benefit from treatment of revascularization. However, current research differs in recommendations on the use of perfusion in the acute stroke setting. We examined the use of perfusion imaging for acute ischemic strokes at a community hospital to determine if perfusion imaging helped to guide diagnosis and treatment. We conducted a retrospective review for patients who received perfusion imaging or treatment for ischemic stroke over a three-year period. Charts were reviewed to determine the progression of diagnosis, treatment or lack of, complications of treatment, and whether the results of imaging played a role in treatment plan. Our results show that the majority of patients had treatment that was influenced by perfusion imaging. This was most evident in our population of patients that received intra-arterial therapy in that 95% of these patients received treatment based on the results of perfusion imaging. We also saw a large impact to not treat patients who had completed strokes on perfusion imaging, thus preventing unnecessary treatment and complications. In addition, our intra-arterial patients were found to have a significantly longer time to treat than intravenously treated patients, extending beyond the three-hour treatment window. In conclusion, perfusion imaging can be used in the real world setting as a tool to guide patient diagnosis and treatment and can also be used to select patients to receive intra-arterial treatment outside the standard intravenous time window.

The Nature of Testosterone and Vitamin D in Lung Transplantation

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Introduction: Lung transplantation is an acceptable therapeutic option for patients with advanced lung disease, with patients requiring long-term use of a steroid-based immunosuppressive regimen following transplantation. The effect of lung transplantation on testosterone and vitamin D levels has not been well-studied. Our aim is to describe the effect of advanced lung disease and lung transplantation on testosterone and vitamin D levels. We hypothesized that testosterone and vitamin D levels were significantly lower in patients with advanced lung disease and in lung transplant recipients.

Methods: A cross-sectional analysis was conducted on 24 patients (15 males, 9 females) with advanced lung disease who underwent lung transplantation at The University of Texas Medical Branch (UTMB) from March 2008 to the May 2012. Age, gender, body mass index, six-minute walk distance, resting and exercise oxygen saturations, albumin, bone mineral density, 25-hydroxyvitamin D, and testosterone were obtained pre-transplant and post-transplant in these patients. For the control group, data extracted from the literature were reviewed for testosterone levels in patients with severe chronic obstructive pulmonary disease. Based upon the severity of their symptoms, these patients were categorized by the Global Initiative for Chronic Lung Disease into GOLD 0-4. UTMB lung recipients were compared to GOLD 3 and GOLD 4, groups with severe and very severe chronic obstructive pulmonary disease. Continuous data were expressed

as mean \pm standard deviation (range) and were compared before and after transplant by a Mann-Whitney test.

Results: There was a significant increase in six-minute walk distance ($p < 0.0001$), resting oxygen saturation ($p < 0.0001$), and exercise oxygen saturation ($p < 0.0001$) before and after transplant. There was no significant change in body mass index, albumin, and bone mineral density t-scores before and after transplant. Despite the decline in testosterone levels before and after transplant in the males, it was not statistically significant. Testosterone levels in the females could not be adequately analyzed due to the low numbers of obtained values. 25-hydroxyvitamin D showed a trend of increasing levels before and after transplant.

Conclusions: Lung transplantation improves lung function in recipients. Post-transplant patients receive more sunlight exposure, better nutrition, and supplements, accounting for the trend of increasing vitamin D levels. Testosterone and vitamin D therapy can improve management and treatment of lung transplant recipients.

Health Information Exchange (HIE) utilization trends in an emergency department setting

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Poster number: 49

A key dimension of the Health Information Technology for Economic and Clinical Health (HITECH) Act involves implementation and expansion of Regional Health Information Organizations (RHIOs). The Healthcare Information Exchange of New York (HIXNY) is a RHIO which has established an interoperable platform to facilitate sharing of electronic medical information among health plans, hospitals, and medical practices in Upstate New York. HIXNY was implemented in the Albany Medical Center Emergency Department in 01/2012 and the first cohort of Emergency Medicine resident physicians was trained to use HIXNY in 08/2012. The ED remains the only AMC department to have implemented HIXNY to date. Studies have identified the ED as exhibiting the highest demand for and utilization of healthcare information exchanges; thus, the AMC ED is focal area of interest for assessing HIXNY impact. HIXNY data will be extracted for the study period 08/01/2012-07/01/2013 and cross-referenced with internal records to extrapolate trends correlating: a) provider and healthcare system-related variables with b) patient health and outcome-related variables. This cross-sectional retrospective study characterizes patterns of HIXNY utilization in terms of: (i) proportion of ED visits for which the HIXNY database is queried (ii) circumstances under which the database is queried (iii) specific patient populations, conditions, and presentations for which the database is queried (iv) by whom and how the database is queried (v) specific data types queried and respective query frequency (vi) quality and utility of the records queried (i.e. quantitative measure of the volumes and types of organizations contributing to a given record; provider assessment of push vs. pull factor utility). This study ultimately aims to assess the impact(s) of HIXNY implementation on provider utilization and application of the database, and thus improvements in quality and efficiency of patient care.

A Comparative Study of Outcomes for Endoscopic Diverticulotomy versus External Diverticulectomy

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Poster number: 50

Objectives: Current literature on the treatment of Zenker's Diverticulum (ZD) heavily favors the use of various endoscopic procedures over external surgical techniques for patients, who are generally elderly, arguing that endoscopic approaches reduce intraoperative time and anesthesia, length of hospital stay, and days until oral diet is restarted. However, such techniques often have higher symptomatic recurrence rates and require further interventions. Because of our experience with both endoscopic diverticulotomy (ENDO) and external diverticulectomy (EXT) using the GIA-stapler, we sought to compare these two procedures in terms of in-hospital parameters, complications, return to normal diet, and rates of symptom recurrence.

Study Design, Setting, Subjects and Methods: In this study, we retrospectively analyzed 67 patients seen at Brigham and Women's Hospital between 1990 and 2012 with a documented diagnosis of Zenker's diverticulum who underwent either an endoscopic Zenker's procedure (36) or an external stapler-assisted diverticulectomy with cricopharyngeal myotomy (31).

Results: Although the external stapler-assisted procedure for ZD does carry a longer intra-operative time and a slightly longer hospital stay than the endoscopic approach, it provides similar days until initiation of an oral diet and a slightly lower incidence of post-operative complications. Further, it is superior to the endoscopic approach when one considers its much lower rate of symptomatic recurrence and need for revision procedures.

Conclusion: We argue that the external stapler-assisted diverticulectomy with cricopharyngeal myotomy should be considered as a viable treatment in patients who need definitive, single-session treatment for ZD, especially to prevent life-threatening aspiration and pneumonia.

Commercial Weight Loss Programs - Which Ones Work? A Systematic Review

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Background: Commercial weight loss programs are popular among overweight adults, yet a 2005 review found little evidence to support their effectiveness. New studies have since tested these programs. We aimed to determine the weight loss benefits among popular commercial weight loss programs.

Methods: We selected 5 programs based on expert recommendations and Internet popularity. We searched MEDLINE from 1/2002-6/2013. We included randomized controlled trials (RCTs) among adults that were ≥ 12 weeks and compared a commercial program to usual care (UC) or lifestyle counseling. We also included trials from the prior review that met these criteria. Paired investigators screened results to assess eligibility, then abstracted data on study design, population characteristics, and weight. We synthesized data qualitatively by program.

Results: Overall, we included 27 RCTs.

Weight Watchers (WW): As compared to UC, WW groups had 2.2-10% greater mean percent weight loss at all time points (8 RCTs). There were inconsistent effects when comparing WW to counseling (2 RCTs).

Atkins: As compared to counseling, Atkins groups had 0.8-6.2% greater mean percent weight loss at 3-6 months (6 RCTs); however, there were no significant between group differences at 12 months or beyond.

Jenny Craig (JC): One RCT compared JC to UC, where JC resulted in 7.5% and 6.4% greater mean percent weight loss at 6 and 12 months, respectively.

Slim-Fast (SF): As compared to UC, SF groups had 6.3-9.7% greater mean percent weight loss at 3-6 months (4 RCTs). There were inconsistent effects when comparing SF to counseling (3 RCTs).

Nutrisystem: One RCT compared Nutrisystem to UC, where Nutrisystem resulted in 6.8% greater mean percent weight loss at 6 months.

Conclusions: While commercial weight loss programs can help patients lose weight, these programs may

not be superior to counseling. Clinicians may consider these programs when clinic-based options are unavailable.

Global Health

Service Work and Nutritional Education in Santa Marta, Colombia

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Poster number: 52

Fundación Mariposas Amarillas is a small grassroots organization that helps disadvantaged children and families in the city of Santa Marta, Colombia. The foundation is dedicated to providing educational, recreational, and health resources in two marginalized barrios, neighborhoods, of Santa Marta: Barrio Oasis and Barrio Fundadores. During the summer of 2012, I volunteered for ten weeks teaching at an afterschool program in Oasis and created community nutritional workshops and puppet shows.

The Caribbean region of Colombia, where Santa Marta is located, has the highest percentage of malnutrition in Colombia. Fourteen percent of this population suffers from chronic malnutrition with a food insecurity of fifty two percent. The area has a higher infant mortality than the rest of the country.

By partnering with a social worker that was conducting a community needs assessment I was able to collect data related to the diet, income and food access of the two barrios. This information was collected during door to door interviews. Based on information found at MyPlate.gov I designed a workshop explaining the benefits of nutrition, the ideal amounts of each food group, and the health risks of unhealthy eating. Food was locally purchased and prepared into a nutritious meal for a family of six with the total ingredients costing less than a dollar. Samples were given out during the presentation. I translated a story about nutrition and adapted it into a puppet show for the children.

The impact of the nutritional workshops and puppet shows cannot be accessed long term. Maintenance of proper diet requires knowledge about healthy foods and implementing life style modification. The information provided was tailored to each neighborhood and within reasonable expectations for the financial situations of the families and the accessible foods.

Assessing the Need for Mental Health Services in UNRWA Clinics in Lebanon for Palestinian Refugees from Syria

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Poster number: 53

The United Nations Relief and Work Agency (UNRWA) has been the primary, and often the only, body that delivers relief and medical services to Palestinian refugees relocated to Syria, Lebanon, Jordan, the West Bank, and Gaza. Due to worsening conflicts, Palestinian refugees were unable to move around safely and faced severe restrictions owing to escalating threats from shelling and armed clashes, exacerbating vulnerabilities that existed prior to the Syrian conflict. While this population suffered from the warfare, no structured mental health services, including psychological counseling, is provided by UNRWA clinics in Lebanon, where a portion of PRS now reside. As there is no mental health diagnosis made, it is unknown as to the extent of untreated patients in this 235,000 refugee population.

This project, thus, is crucial as it seeks to understand the barriers to mental health services and potential solutions from the perspective of health providers. The goal is to lay the groundwork for more extensive work addressing the health needs and to work towards the design of effective interventions to provide services address the mental health of Palestinian-Syrian refugees.

To assess the needs for mental health services, PRS from UNRWA clinics were given the PHQ-9 and the Clinician-administrated PTSD scale. A portion of the patients was asked to participate in an in-depth interview. Healthcare providers at the UNRWA clinics were also surveyed to assess their perspectives on the barriers in creating mental health services and solutions to those barriers.

To date, 44 PRS had completed the screening questionnaires, of which 10 in-depth interview were obtained. 33 UNRWA healthcare providers had completed the assessment survey. The questionnaire data would estimate the cases of undiagnosed mental illnesses. The qualitative interview and provider survey will be analyzed as themes will be identified and responses will be grouped by themes and ranked. Results will be presented at the AMWA Annual Conference.

Cancer Chemotherapy in Severely Resource-Limited Settings

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Introduction: Cancer is rapidly emerging as a major source of morbidity and mortality in countries with limited resources and infrastructure. Ethiopia has only three oncologists and one oncology unit for a population of 80 million. A breast cancer center was recently established at the Hawassa College of Medicine and Health Sciences (HCMHS) as a satellite unit to the only existing source of cancer care at Addis Ababa University (AAU). With growing interest to treat cancer globally, safe protocols for the provision of chemotherapy are essential. Our group analyzed current safety practices at HCMHS.

Methods: We observed the safety protocols at the Oncology Department at Jacobi Medical Center, Bronx, NY. Subsequently, we observed the current practices at HCMHS for four weeks. We divided the protocols for handling chemotherapy into four categories: storage, preparation, administration, and disposal.

Results: Due to a lack of pharmacists, nurses prepare chemotherapy at the patient's bedside. The unit has no ventilated cabinet for preparation of chemotherapy and lacks a reliable electricity source. There are a limited number of syringes, and IV tubing systems are rudimentary. Nurses use gowns, goggles, surgical masks and non-chemotherapy approved gloves while preparing and administering the drugs. Currently there is no protocol for proper and safe disposal. Excess medication is often flushed down toilets or sinks. There is a cardboard safety box designated for sharp material; a separate disposal container is reserved for instruments that may have trace substances. The final disposal of this material is by incineration.

Conclusion: It is necessary to establish protocols for storing, mixing, administering, and disposing of chemotherapy in a manner that is safe for both patients and staff. Incorporating clinical oncology pharmacists as key members of the oncology team should be considered for safety and to enable the nurses to focus on patient care.

Medicine in Society

An Evaluation of the Florida State University AMWA Mentor Program

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Poster number: 55

This project was designed to assess the success of the FSU AMWA mentor program for undergraduate students interested in the medical field. The goal of the program is to give female undergraduate students the necessary resources and a source of support during the pursuit of a medical education. The assessment was done by sending monthly electronic surveys to mentors and mentees. The initial survey collected demographic data, as well as self-reported level of knowledge regarding the healthcare field and medical school application process. All surveys asked questions related to the frequency of contact between mentors and mentees, the type of contact, and the level of satisfaction with the program. When asked why they wanted to be a part of this program, undergraduate students had responses such as “guidance”, “someone who can inspire me”, and “someone to talk to that has gone through similar things”. We found that of those who responded to the initial survey, 98% of mentors and mentees had communicated with each other and that 81% had met in person. Over the course of the semester, 36% said they had communicated at least once a month and an additional 39% said they had communicated more than once during the semester. More importantly, we found that 77% of responders said that they felt more confident about deciding to apply to medical school as a result of the program. When asked if the program had met their goals, 81% responded “yes”. This project will be used to continue to improve the program in hopes of enhancing the presence of women in medical school and strengthening the bond among female medical professionals. Future research should look into the proportion of mentees in the program who are accepted to medical school relative to the proportion of acceptance in the general population.

A Balancing Act: A Single Institution’s Experience with Pursuing Gender Equality

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Poster number: 56

Introduction: The growing shortage of physicians in the United States is well documented. According to the AAMC, medical schools have attempted to address this shortage by expanding enrollment. As class sizes increase, medical schools must continue pursuing gender equality among students to ensure that the growing number of future physicians will adequately represent the population. The purpose of this study is to investigate a single institution’s number of applicants, matriculants, and graduates of both genders and compare these with the national AAMC benchmarks.

Methods: In a cross-sectional study, the number of applicants, matriculants, and graduates at the University of Miami Miller School of Medicine (UMMSM) from 1973 to 2011 were collected from UMMSM’s Office of Admission. Graduate data was collected from UMMSM’s alumni office. National figures were obtained from the AAMC.

Results: In 1973, 17 of 131 (13%) students newly enrolled in UMMSM were female, compared to 20% nationally. In 2011, 110 of 205 (54%) students in the UMMSM first-year class were female, compared to 47% nationally. Between 1972 and 2011, there were increases in the number of applicants to UMMSM by 304%, enrollment by 57%, and percentage of female matriculants by 41%. Nationally, between 1975 and 2011, there were increases in applicants by 4%, matriculants by 29% and percentage of female matriculants by 23%.

Conclusion: UMMSM has made great strides towards gender equality and increasing enrollment since its

establishment in 1952. Overall, U.S. medical schools have experienced similar success. Achievements in gender equality in medical education are partly attributable to the development of academic and professional organizations that offer support and mentorship for women in medicine. Despite tremendous growth in female matriculation at UMMSM, the continuous challenge as an institution is to achieve gender equality across all specialties and to successfully promote women academically and into leadership roles.

Gender Representation in the Johns Hopkins University School of Medicine (JHUSOM) Learning Environment

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Background: At JHUSOM, 50% of students and over 35% of faculty are female, yet study data found female student comfort negotiating for oneself, following on a team, and giving negative feedback decreased from matriculation to the end of the preclinical years, while male student comfort with the same skills increased. It is unclear if aspects of the learning environment contribute to this finding.

Objectives: We hypothesized that exposure to female vs. male leaders differs in the preclinical years and might lead to a disparity in gender-concordant role-modeling.

Methods: We looked at exposure to academic leaders during the preclinical curriculum and examined the AY 2012-2013 1st and 2nd year courses for gender representation among both core and intersession course directors and lecturers. We used t-tests to evaluate the proportion of female faculty included as lecturers by female vs. male course directors.

Results: 10% (3/31) of academic department heads, 0% (0/4) of heads of learning colleges, 33% (8/24) of salary-supported advisors, and 25% (1/4) of deans in the Office of Student Affairs at JHUSOM are women. In core courses, 26% (9/35) of course directors, 30% (121/396) of course lecturers, and 23% (184/789) of course hours were provided by female faculty. Intersessions had 55% (6/11) female directors, 56% (30/54) female lecturers, and 54% (41/75) female lecture hours. Female course directors included higher proportions of female lecturers in their courses than did male course directors (48% vs. 26%; $p < 0.0001$).

Conclusions: Female faculty representation among preclinical leaders has not reached parity with the percentage of females on faculty. Interestingly, female course directors included a higher proportion of female lecturers in their courses. Medical students were not directly studied with regard to faculty gender role-modeling, and further investigation is needed to determine if increased exposure to female leader role-models affects female student comfort with leadership skills.

The Prevalence of Social Media Policies in U.S. Medical Schools

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Background: Medical students are among users of social media sites - a 2010 small survey reported that 90% of medical student study respondents participated in online social networking. [1] Although social media sites offer positive aspects such as advancing education, research and patient care, their public nature and permanence may have negative professional consequences. Despite the concerns for online professional misconduct, a 2010 investigation of medical school social media policies found that only 10%

of schools had explicit guidelines or policies concerning social networking usage. [2] This study investigates the percentage of U.S. medical schools with a social media policy.

Methods: 141 U.S. allopathic medical schools were identified through the American Association of Medical Colleges website and 33 U.S. osteopathic medical schools were identified through the American Association of Colleges of Osteopathic Medicine website. A search algorithm was employed to identify school social media policies. Policies were obtained between 06/01/13-06/20/13.

Results: 166/174 (95.4%) handbooks or policies were obtained. 8/174 (4.6%) schools (5/141 allopathic, 3/33 osteopathic) were excluded from analysis because a handbook or policy was unavailable despite an email request. A total of 84/166 (50.6%) U.S. medical schools - 67/136 (49.3%) allopathic and 17/30 (56.7%) osteopathic schools - had social media policies.

Conclusions: Since 2010, there has been a 5-fold increase in the percentage of U.S. medical schools with social media policies. This major increase in policy implementation implies institutional consideration of medical student social media usage.

References:

1. Bosslet GT, Torke AM, Hickman SE, Terry CL, Helft PR. The patient-doctor relationship and online social networks: Results of a national survey. *J Gen Intern Med.* 2011;26(10):1168-1174.
2. Kind T, Genrich G, Sodhi A, Chretien KC. Social media policies at US medical schools. *Med Educ Online.* 2010;15:10.3402/meo.v15i0.5324.

Public Health

A National Hotline Survey of Victims: Are Healthcare Professionals Screening for Domestic Violence?

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Poster number: 59

Background: In 2011, the Institute of Medicine (IOM) recommended universal patient screening of women for interpersonal/domestic violence (DV) victimization. Based on the recommendation, preventative screening was added to the Affordable Care Act. This study provides a new snapshot of victims' reports of screening rates in a medical setting, and is one of the largest surveys of victims in over a decade.

Objective: Determine the screening rate for domestic violence in a healthcare setting as reported by self-identified adult victims of domestic violence.

Methods: The brief survey was administered by advocates to 2,435 consenting participants who called the National Domestic Violence Hotline (NDVH) during a six week period in 2012-2013. Questions addressed routine DV screenings, diagnostic questions in emergency/urgent care facilities, and whether victims had been prevented from seeking medical care. Data were analyzed using frequencies and significance calculated using the chi-squared distribution.

Results: 40% of female and 27% of male participants reported that they had been asked by a healthcare provider if they have experienced DV in the past 12 months, with men significantly less likely to be screened. 27% of all participants reported that they had been asked if their condition was related to DV by emergency/urgent care staff; there were no significant demographic differences. 26% of

participants stated a partner/former partner prevented them from seeking medical care; women were significantly more likely to report that they had been prevented from seeking medical care.

Conclusion: Results suggest that screening rates are increasing; that male victims are less likely to be screened for DV and to be prevented from seeking medical care; and that emergency/urgent care staff may overlook DV as a cause for injury/illness among women.

Project Serve: A Service Experience with Emphasis on Cultural Competency and Communication for Student Healthcare Providers

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The Project Serve mission is to provide free, healthy, home cooked meals to the families residing at the Ronald McDonald House on a biweekly basis. In addition to cooking, students share the meal alongside the families. This unique environment allows for quality interactions between the RMH families, who have children seeking treatment at UM/Jackson Hospitals, and the medical students. The objectives of Project Serve are to (1) improve medical students' ability to communicate with patients in a non-clinical environment, (2) enhance medical students' understanding of obstacles facing families who have children with chronic health issues, and (3) improve medical students' knowledge of diverse cultural beliefs. We hypothesized that these interactions could foster the development of communication skills, cultural competency, and an enhanced understanding about many of the challenges patients and their families face when seeking medical care away from their homes and community. To determine whether the Project Serve experience complemented existing medical school curricula, we administered surveys to participating students. Results from free response and Likert scale questions were analyzed and statistical analysis was performed in SPSS. Survey results found that 74.19% of students strongly agreed that Project Serve provides students with a unique opportunity to interact with people from different backgrounds in a way that they have not been able to elsewhere in their formal medical curriculum. In addition, 58.06% of students strongly agreed that the Project Serve experience enhanced their medical training and will give them an advantage when it comes to interacting with and diagnosing/treating patients. Project Serve helps medical students gain an understanding of different cultures and increased awareness of the medical, financial, and psychosocial challenges faced by families staying at the Ronald McDonald House.

Use of a Multiparty Web Based Videoconference Support Group for Family Caregivers

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Poster number: 61

Background: Caregiving has been associated with negative consequences on caregiver health and wellbeing including high stress levels, depression, physical symptoms, and psychosocial problems. While in-person support groups may improve certain outcomes, they create additional challenges like finding respite care and transportation.

Objectives: To determine and report upon the feasibility and outcomes that resulted from a 6-month pilot of a weekly web based videoconference support group for caregivers of persons with dementia.

Methods: Participants were recruited from two centers in Indianapolis. The support group was held weekly in a similar manner to traditional support groups. Feasibility was assessed through attendance data and a post-intervention focus group. Demographics and baseline and outcomes measures of caregiver depression (PHQ-9), anxiety (GAD-7), health and quality of life (SF-36), burden (Caregiver Burden Scale), and self-efficacy (Revised Scale for Caregiving Self-Efficacy) were collected.

Results: We enrolled five caregivers; all female, with a mean age of 56, an average of 14.9 years of education, and the majority of whom cared for a spouse. Attendance was 83% and all participants reported positive views of the group and videoconference medium. Improvement in caregiver anxiety, depression, and physical health scores were reported. PHQ-9 scores remained the same with burden increasing slightly. Self-efficacy subscales controlling upsetting thoughts and responding to disruptive behavior improved but worsened slightly for obtaining respite.

Conclusion: Web based support was a positive experience, provided an acceptable, feasible, low-cost technological alternative to in-person support that reduced barriers to attendance like time constraints, lack of respite care, or transportation by being available in the home.

Legislative And Community Support for Breastfeeding Promotion in African American Women

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Poster number: 62

Breastfeeding is recognized as the best choice for infants. The U.S. has since adopted the World Health Organizations (WHO) Baby-Friendly Hospital Initiative (BFHI) as reflected in the Healthy People 2010/2020 breastfeeding objectives because of the low breastfeeding rates. Although Tennessee has multiple breastfeeding legislations the rate of exclusive breastfeeding at 6 months is one of the lowest in the country. The goal of this study is to evaluate perceived breastfeeding legislative needs of African-American mothers in Nashville, and propose suggestions that can positively impact their breastfeeding rates. Pregnant African American women in Davidson and surrounding counties were recruited by word-of-mouth and flyers in community settings, Nashville General Hospital, and the Meharry Pregnancy Centering Program. Participants completed pre-intervention survey that included demographic, breastfeeding and infant nutrition knowledge, attitude, and practice (KAP) questions. Survey responses were compared across demographic sub-group by Chi-square test using the SPSS version 21. 57 participants were surveyed, f(79%) were ages 25-35, f(86%) had at least a high school diploma, f(44%) were single, f(42%) unemployed, and f(46%) earned below \$15,000 annually. They expressed the need for breastfeeding promotion and support from hospitals, employers, and state but were unaware of the need for breastfeeding protection. This need was highest among women with more than a high school education. The public should be better educated about existing breastfeeding promotion and support legislations in Tennessee. Breastfeeding protection legislations should be extended to mandate employers to actively protect breastfeeding by providing paid maternity leave to working mothers. Hospitals should be mandated to promote breastfeeding as the default choice for all mothers.

Funding provided by Center for Medicare and Medicaid Services: 110CMS331079/01 and the Robert Wood Johnson Foundation for Health Policy at Meharry. R.J. was supported through an award from The U.S. Health Resources and Services Administration (HRSA), D34HP16299 (Charles Mouton, PI).

The Impact of Multidisciplinary Hepato-Pancreato-Biliary Case Conference on the Management of Pancreatic Cancer

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Background/Aim: Prospective case discussion allows for the dissemination of the best practices in patient care. The aim of this study was to determine if the initiation of a Multidisciplinary Hepato-Pancreato-Biliary (HPB) Case Conference has influenced the approach of the initial method of tissue diagnosis of pancreatic cancer at our institution.

Methods: All patients initially diagnosed with pancreatic cancer at our institution between 2007-2012 were queried from the Tumor Registry. Patient charts were reviewed for demographic and clinical information. Patients were classified as resectable, locally advanced/unresectable, or metastatic at the time of presentation. The method of initial tissue diagnosis was determined. The HPB Case Conference log was queried for the number and type of cases presented. Data was analyzed using Chi-square test, Wilcoxon rank sum test or t-test, as appropriate.

Results: Since 2010, a total of 116 cases, including 42 pancreatic cases, have been presented during the Multidisciplinary HPB Case Conference. A total of 171 pancreatic cancer cases, including 91 female and 80 male, diagnosed between 2007-2012 were identified from the Tumor Registry. When comparing the three-year time frame prior to (2007-2009) and after (2010-2012) the initiation of the HPB conference, there was a significant increase in the use of a surgical or EUS approach for resectable pancreatic cancer ($P=0.048$), EUS approach for locally advanced/unresectable ($P=0.017$), and metastatic biopsy site approach for metastatic ($P=0.009$) as compared to other methods as the initial method of tissue diagnosis.

Conclusions: The initiation of the Multidisciplinary HPB Case Conference has positively influenced patient care and physician practices at our institution.

Local Food Systems' Relationship to Health: Fad, Fable or For Real? A look at the literature

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Many claims are made about local foods, but these are not always based on firm evidence. This systematic review of the literature looks at the connection between local food systems and possible associated outcomes. Articles were retrieved from SCOPUS using 4 different search algorithms 1,615 titles were reviewed and papers deemed relevant based on titles and abstracts were retrieved and reviewed. The findings section is organized by questions that may be posed relating the environmental, economic, nutritional, attitudes and motivations, social/cultural and mental and psychological aspects of local food systems with possible outcomes. The findings are also organized into a table listing positive, neutral and negative ways local food systems may contribute to desirable outcomes posed in each question. Overall it seems local food systems may be associated with many desirable outcomes but this connection is delicate and is dependent on the inputs of farmers and consumers, with a greater effort put into local food systems yielding more positive outcomes. Environmental benefits are greatest when farmers use sustainable and organic methods that build up the soil (possibly sequestering carbon) and decrease the amount of emissions produced and energy required. The decreased miles food travels from production to consumption may have an effect, though a smaller effect than changing production methods or consuming less meat would. Economically, local food systems, especially when produce is purchased directly from a farmer, can benefit area economies because a greater percentage of money spent is re-invested in local economies and local businesses experience more profits when farmers markets are operating. Nutritionally, local food systems could cultivate more nutritional varieties than the conventional food system and may increase fruit and vegetable consumption, though this is most pronounced for the avenues of procuring local foods that require more consumer effort, such as community gardens and CSAs.

Evaluation of a health and empowerment program created by medical students for commercial sex workers: Pilot study

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Poster number: 65

Introduction: Commercial sex workers (CSW) living with drug addiction and mental illness often encounter the stigma associated with these conditions. “Women Leading Healthy Change” (WLHC) is a 10-week program designed by medical students in partnership with a local non-profit, Off The Streets® (OTS), to educate and empower CSW living with addiction while simultaneously giving medical students the opportunity to learn from these women and their struggles.

Methods: WLHC sessions were held for 1-1.5 hours per week for ten weeks, covering topics in women’s health and mental health. CSW participants completed an Empowerment Scale upon enrollment and completion to assess participant’s perceived level of empowerment. Weekly pre-and post-session tests were administered to assess knowledge. Feedback sessions were held during weeks five and ten.

Results: Empowerment scale items grouped by category ($p > 0.1$) or in total ($p = 0.3$), showed no significant difference between pre- and post-program responses. Pre- to post-test improvement in knowledge was seen for two topics: HPV and Cervical Cancer ($p=0.006$) and PTSD, Bipolar, and Depression ($p=0.02$). The number of participants that improved to score all correct answers on post-session tests was significant in two topics: What to expect at the gynecologists office ($p=0.05$) and HPV and Cervical Cancer ($p=0.006$).

Conclusions: The 10-week WLHC program did not show a significant change in the level of empowerment of the participants, but did show that the level of knowledge for select women’s health and mental health topics did significantly increase.

Depressive Symptoms Between Spouses in Older Adulthood

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Poster number: 66

Depression, highly prevalent in the United States, has become an increasingly alarming public health concern. The presence of depressive symptoms is observed in all stages of life and can have significant consequences for the affected individual. This wide-scale longitudinal study explored the association between depressive symptoms in older couples, thus shedding insight into how spousal relationships can contribute to depressive symptomology in older adulthood. The study also examined whether age differences between spouses had an impact on this trajectory. A nationally representative sample of 6582 target husbands and 5428 target wives, ≥ 65 years of age, was collected from the Health and Retirement Study database. A shortened version of the Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms in both target groups. These assessments were then analyzed using Higher Linear Modeling (HLM), an analysis computing program, to estimate the trajectory of depressive symptoms.

This study found that depressive symptoms increased in older adulthood and found evidence of depressive symptoms between spouses, with some concordance over time. That is, husbands’ and wives’ depressive

symptoms scores were correlated and as wives increased in depressive symptoms, so did their husbands and vice versa. Also, husbands with wives that were either younger or older had higher depressive symptoms that increased more over time. While Wives with younger husbands had higher depressive symptoms, this age difference was not related to change over time. This study highlights the importance of addressing interpersonal relationships, such as marriage, which may play a role in the trajectory of medicine. Physicians need to be aware of all contributing factors that could put an elderly person at a higher risk for depressive symptoms, and potentially depression.

Case Studies

Residents

Breast Creepy Crawlers

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Poster number: 67

Breast microcalcifications, very small deposits of calcium, are not uncommon in screening mammograms and increase with age. The arrangement of the deposits may alert one to the possibility of a cancer or may represent benign lesions. Rarely in the US are they the result of a parasite! A 72-year-old female recently immigrated from Nigeria to the US to live with her daughter after suffering a stroke. She had previously been healthy and had no other complaints. After a normal breast exam, she had a screening mammogram which noted diffuse calcifications attributed to filariasis. Lymphatic filariasis is a major cause of acute and chronic morbidity in most tropical and subtropical countries. In Nigeria, the disease is complicated by the plethora of environmental conditions of its different regions. This distribution is due to the deteriorating drainage systems, large-scale dam and irrigation projects, which create an optimal breeding site for filarial vectors in many parts of Nigeria. Lymphatic filariasis is caused by an infection with the parasitic worm *Wuchereria bancrofti* in Africa (*Brugia malayi* and *Brugia timori* in Asia-Pacific) that is transmitted by *Anopheles*, *Culex*, *Aedes* and *Mansoni* mosquitoes. The predominant manifestations of the infection are caused by an obstruction of the lymphatics, which leads to lymphedema, hydrocele, elephantiasis, and tropical pulmonary eosinophilia. A rare manifestation is lymphatic filariasis involving the female breast. Wormlike calcifications are visible on mammograms, therefore, radiologists should be aware of the endemic nature of filariasis in the country of origin. As routine mammography becomes available in Nigeria, there is a need for a high level of suspicion for parasitic calcifications in the breast parenchyma in mammographic images so that the infection will not be misdiagnosed for a malignant breast lesion.

Complement Deficiency In An Adolescent With Recurrent Disseminated Gonococcal Infections

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Poster number: 68

Background: Complement deficiencies are rare occurrences at 0.03%. The incidence of deficiencies in the membrane attack complex components are the most common in the United States. Certain populations have an incidence as high as 1 out of 1600, such as African Americans in the Southeastern US. Numerous studies have shown an association between *Neisseria meningitidis* and these deficiencies. Few studies, however, illustrate a relationship between *Neisseria gonorrhoeae* and these same deficiencies. This case demonstrates the aforementioned association in an adolescent with recurrent disseminated gonococcal infections.

Case: A 17 year old female, whose history includes pelvic inflammatory disease, gonococcal pharyngitis and gonococcal arthritis, presented with a one day history of leg pain, back pain, and fever. Vitals were significant for tachycardia. Examination revealed a tender, erythematous papular rash on her left hand and leg, cervical adenopathy, right costovertebral tenderness and lower abdominal quadrant tenderness bilaterally. Initial workup revealed rare gram negative coccobacilli on urine gram stain; negative gonorrhea and Chlamydia PCR; and negative urine pregnancy test. The differential included pyelonephritis and pelvic inflammatory disease. The patient was started on Bactrim and Zithromax for UTI and PID but switched to ceftriaxone for disseminated gonococcal infection. Due to previous severe gonococcal infections, additional labs were sent- complement CH50-decreased at less than 13U/ml (normal 31-66U/ml) and C5 protein-15.3mcg/ml (normal 55-113mcg/ml). The patient was referred to immunology who confirmed complement deficiency.

Comments: Disseminated gonococcal infection occurs in 0.5 to 3 percent of patients with *N. gonorrhoeae* in the absence of negative blood cultures. Given seventy percent of new incidences of *N. gonorrhoeae*

infections occur in 15 to 25 year olds, this case illustrates the importance in considering routine testing for complement deficiency in adolescents with more than one episode of disseminated gonococcal infection.

Metastatic papillary thyroid cancer in a patient with chronic lymphocytic leukemia and prostate cancer: a case study

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Poster number: 69

Our patient is a 60-year-old male diagnosed with CLL in 2006. Shortly afterwards, he was diagnosed with prostate cancer and subsequently underwent a radical prostatectomy which “cured” his prostate cancer. His CLL was managed expectantly as he remained asymptomatic.

In 2013, he was found to have predominantly left sided cervical lymphadenopathy with the largest node measuring 8cm. There was a concern for progression of his CLL versus prostate cancer metastasis. Consequently, he a biopsy was performed which showed metastatic papillary thyroid carcinoma. The patient denied a family history of thyroid cancer or a personal history of head or neck radiation. A left thyroid lobectomy with left sided comprehensive neck dissection as well central and superior mediastinal node dissection was performed. The pathology confirmed the diagnosis of metastatic papillary thyroid cancer. Subsequently, he then underwent a completion thyroidectomy with right-sided comprehensive lymph node dissection. A follow up scan showed persistent metastatic disease in his mediastinum. He is now scheduled to receive radioactive iodide.

Individuals with chronic lymphocytic leukemia have an increased risk of developing secondary malignancies due to defects in cellular and humoral mediated immunity. In older literature, it has been shown patient's with CLL have an increased risk of having prostate cancer, breast, lung and skin cancer. Recently, a large retrospective study showed CLL portends a higher risk of thyroid cancer with a relative risk of 4.67.

Based on the available data and the patient’s unusual presentation as well as advanced disease at the time of diagnosis, we believe his CLL induced immunosuppression contributed to his development of thyroid malignancy as well as its rapid spread. Therefore, patients with CLL may benefit from screening for thyroid cancer. There are currently no screening guidelines for patients with CLL. Whether early screening reduces mortality will have to be investigated in future studies.

Acanthamoeba and Filamentous Fungal Keratitis: A Case of Two Rare Ocular Infections

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Poster number: 70

Background: Acanthamoeba and filamentous fungal keratitis are rare corneal infections that are difficult to detect and treat. This case underscores important signs suggesting co-infection and important therapeutic and prognostic indicator guidelines.

Case Presentation: 27-year-old female presented to the ED with left eye pain and blurry vision after being hit in the left eye with a football two weeks prior. She developed a foreign body sensation and flushed her left eye with tap water. She denied contact lens wear or any past ocular or medical problems. Her vision in the right eye was 20/30 and 20/60 in the left eye without pinhole improvement. Her intraocular pressures,

motility and confrontational visual fields were within normal limits. On slit lamp exam, her left eye showed 3+ injection of the conjunctiva and sclera. The left cornea had edema, descemet's folds and diffuse stellate keratic precipitates. An inferior stromal infiltrate without overlying epithelial defect measuring 2mm x 1mm was also present. The anterior chamber had 2+ cell and flare. The dilated fundus exam was within normal limits. She was empirically treated with fortified antibiotics and started on topical and oral fungal treatment when cultures returned positive for filamentous fungal keratitis. Topical Baquacil was started to cover for Acanthamoeba as her vision declined. The CDC reported a positive Acanthamoeba culture four days later.

Discussion: This case demonstrates the need for high suspicion for rare pathogens in keratitis and to keep co-infections on the differential when certain treatment regimens fail to show improvement. Fungal keratitis often develops following trauma involving plant or vegetable matter. Acanthamoeba is a cornea infection caused by a free-living amoeba. Therapy will continue for 3-4 months followed by corneal transplantation.

From Birth Control to Blood Clot: Dural Venous Sinus Thrombosis in the Oral Contraceptive User

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Poster number: 71

Learning Objectives: 1. To review the pathophysiology of dural venous sinus thrombosis; an uncommon cause of stroke in young patients. 2. To review the risk factors for thrombotic occlusion of intracranial veins and sinuses, and raise awareness of this rare complication seen in the relatively large population of young healthy females using oral contraceptives. 3. To review the strengths and weaknesses of imaging modalities in venous sinus thrombosis detection.

Background: Dural Sinus Thrombosis (DST) is defined as a thrombotic occlusion of intracranial dural sinuses. Although DST accounts for less than 1% of cerebrovascular accidents, it is an indisputably preventable cause of stroke in young patients. DST is more common in women with a female to male ratio of 3:1. We present a case of a young healthy female with a headache on oral contraceptives who and was found to have cerebral venous thrombosis on head CT and MRV.

Conclusions: There is a relatively large population of young females on oral contraceptives, and headache is one of the most common causes of imaging through the Emergency department. It is important to have a high clinical suspicion and direct special attention to the sometimes neglected dural sinuses on all head CTs. If diagnosed in its early stages, these thromboses can be easily lysed using medical or endovascular interventional therapy. Typical imaging findings include hyperdense sinuses on non-contrast CT, the "cord" sign referring to hyperdense cortical veins on CT, and the "empty delta" sign on contrast enhanced CT indicating superior sagittal sinus thrombosis. MR findings usually include the absence of flow in the occluded sinus on 2D time-of-flight MRV, "blooming" of hypointense thrombus on T2 GRE, and hyperintense clot on DWI. Understanding the radiologic manifestations of DST can aid in the prompt diagnosis of this potentially life-threatening condition.

Original Research

Residents

Workplace Bullying Among Physicians: A Gender Focused Study

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Poster number: 72

Background: Despite a growing number of female physicians, inequities in attainment of high level supervisory positions along with persistent income disparities between male and female physicians remain. Proposed theories contributing to the continued existence of the “glass ceiling” phenomenon include gender discrimination, evaluation biases against women, higher standards set for women, exclusion from male dominated social networks, lack of female-to-female mentoring, inhospitable work environments, and work-family balance issues. Interestingly, several studies have shown that women are more likely to be targets of workplace bullying. Further examination regarding the frequency of workplace bullying in the medical community and its contribution to the glass ceiling phenomenon is needed.

Objective: The purpose of this study is to examine the type and frequency of workplace bullying among physicians as a function of gender. **Methods:** This study is part of the larger Council of Academic Family Medicine (CAFM) Educational Research Alliance (CERA) omnibus survey of active US family physician CAFM members (data to be released January, 2014). A 13-item survey was created, using a collection of validated tools, to assess related sociodemographic characteristics, bullying occurrences, and bullying-related behaviors and consequences.

Anticipated Results: We suspect that female physicians experience greater workplace bullying as compared to male physicians. Additionally, we also predict bullying tactics committed by females to be more covert than those committed by males. We expect results of this survey to stimulate formation of additional hypotheses, as this sensitive subject is further explored.

Conclusions: To be determined.

Radiation-related quality of life parameters and toxicity after targeted intraoperative radiotherapy (IORT): preliminary results

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Poster number: 73

Background: Intraoperative radiotherapy (IORT) is a new treatment approach for early stage breast cancer. Immediately after tumor resection the tumor bed can be treated with low dose X-rays by a single high dose. This prospective single institution pilot study reports on the effects of IORT on radiation-related quality of life (QoL) parameters and toxicity.

Methods: Thirty one women with stage I-II breast cancer (age, mean-58,3) were entered into the study. The selection criteria for referral for IORT included tumor size, tumor cavity size, margin status and absence of an extensive intraductal component. After breast-conserving surgery, a single dose of IORT therapy was delivered using 50-kV x-rays to a depth of 10 mm from the applicator surface over a twenty to forty five minute duration. Patients were reviewed at regular and predefined intervals.

Results: Thirty one patients completed IORT boost. Patients were followed up after one week then at six month intervals. Breast pain was the most common reported side effect of the procedure and occurred in four patients (12%). One patient had dermatitis (0.03%), two patients (0.06%) developed seroma. There were no reported locoregional recurrences or deaths at an average of 12 months.

Conclusions: IORT with the Intrabeam system is an effective method of delivery of a single dose of

radiation for breast cancer patients undergoing lumpectomy. In select patients with a low risk of recurrence it has been shown to be just as efficacious as six weeks of whole breast radiation. The treatment is convenient, well tolerated and does not cause greater skin damage than the expected late reaction in normal tissue after whole breast radiation.

Sleep apnea, abdominal obesity, inflammation and insulin resistance: gender specific associations

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Poster number: 74

Introduction: In obese males obstructive sleep apnoea (OSA) is associated with visceral adiposity, inflammation and insulin resistance. Findings in overweight males and especially females are limited, probably because OSA is considered a predominantly “male disorder”. Our goal was to examine the association between OSA, abdominal fat compartments, inflammation and insulin resistance in a relatively nonobese population of men and women and study gender specific differences.

Methods: 81 subjects, 22 middle-aged males and 20 postmenopausal females with OSA; 19 male and 20 female controls were studied in the sleep laboratory for four nights. Serial 24h blood samples for interleukin (IL)-6, tumour necrosis factor receptor (TNFR)-1, leptin and adiponectin, and single samples for high-sensitivity C-reactive protein (hsCRP), fasting glucose and insulin levels were obtained. Abdominal visceral and subcutaneous fat and liver fat were assessed with computed tomography.

Results: Apneic males had significantly higher visceral fat than controls. Apneic females had higher subcutaneous fat than controls. In both sexes, OSA was associated with increased liver fat. In males, apnea was associated with visceral whereas in females it was associated with subcutaneous, visceral and total fat. Apneic males had significantly higher hsCRP, IL-6, leptin and insulin resistance than controls. Apneic females had significantly higher hsCRP; however, IL-6, TNFR-1, insulin resistance, leptin and adiponectin were similar to controls.

Conclusion: OSA is associated with inflammation and insulin resistance, even in nonobese males. This association is stronger in males than in females. In overweight males, visceral adiposity is associated with OSA whereas in females it is associated with global adiposity. In overweight males, our therapeutic goal should be the reduction of visceral adiposity and its metabolic correlates, whereas, in females, weight loss may be sufficient. Future studies are needed to address the possible gender effect in terms of the association of OSA with cardiometabolic disorders in women.

Quality of Life and Mental Health Indicators in Community Members Living Near Open Cast Mines in Northern Colombia

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Poster number: 75

Background: Recent air quality assessments performed in the northern areas of Colombia impacted by open pit coal mining have confirmed that total suspended particulate matter (TSP) and particles smaller than 10 µm consistently exceed daily and annual standards. Later studies identified areas of pollution near these complexes in order to assist with implementation of decontamination measures. However, to date, limited systematic studies of the impact on community health, quality of life, or mental health in these areas have been performed.

Methods: This study was conducted in and around the rural communities of La Guajira and Cesar in northeast Colombia. First we examined the geographic distribution of mining sites in relation to neighboring communities, tested local air quality for markers of contamination, and gathered aggregate level data from the neighboring community clinics to collect information about rates of respiratory illness. In addition to objective measures, we met with community leaders and union workers in Cesar and La Guajira to identify general social circumstances affecting the environment and the health of their communities and conducted focus groups in communities of La Guajira and Cesar using the Duke Health Profile to examine physical, mental, and social health and the Patient Health Questionnaire-9 (PHQ-9) to screen for depression.

Results: Objective levels of air particulates with a diameter of 10 μm or less for our target sites were similar to the nearest largest city and 2-3 times higher when compared to rural sites located 150 km away from the coal mines. Lower levels were observed in physical, mental and social health-based scores with the majority of individuals screening positive for at least mild depressive symptoms. Respiratory infections were documented as the most commonly seen illness in the nearest clinic that serves this area. Conflicts described between mining companies and communities included poor mediation, lack of resources, inconsistent representation, and conflicts related to cultural sensitivity.

Conclusions: Although resettlement of the communities in Cesar was supposed to have been complete nearly one year ago, the communities and mines are still stalled in initial phases of planning and the villagers now face recurring food shortage crises so severe that they were recently visited by the UN. High levels of particulates equal to that of larger polluted cities, elevated screening markers among community members for depression, and social conflicts discussed during focus groups all demonstrate the need for improved mediation which is vital in order to for both sides to begin instituting critical services.

Domestic Child Sex Trafficking: The Need for Physician Education

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Poster number: 76

Background: Data are scant regarding the beliefs, knowledge, or training of physicians regarding children trafficked for sex, and education for physicians is scarce and underutilized.

Hypothesis: We hypothesize that most physicians will deem human trafficking an important topic but will be inadequately informed regarding warning signs of trafficking, the scope of the problem, and available resources. The results of this study will be used to increase physician training about human trafficking.

Design/Methods: We conducted an anonymous cross-sectional national survey of physicians, residents, and medical students. Participation was voluntary. An electronic 20-item survey was distributed by AMWA, the APPD, and colleagues of the AAP from June through October 2013. The survey expanded upon a 2011 survey by Grace and Collins of Stanford University. Demographic information, as well as knowledge of trafficked patients and national trafficking statistics, were assessed. Data as of October 31, 2013 were analyzed using univariate, multivariate, and chi-square analyses.

Results: Of 1584 respondents, 374 were practicing physicians, 674 residents (461 pediatric), and 410 medical students. Overall, medical students were more likely than practicing physicians and residents to agree/strongly agree that "it is important for me to know about human trafficking" (86% vs. 83% vs. 81%, $p < 0.01$). Practicing physicians were more likely than medical students and residents to correctly estimate the number of trafficked youth in the U.S. each year (15.5% vs. 11.2% vs. 8.5%, $p < 0.01$). Practicing physicians were more likely than residents or students to agree that they knew who to call if they encountered a victim of trafficking (40.4% vs. 19.9% vs. 8.8%, $p < 0.01$).

Conclusions: While a majority of physicians in all stages of training place importance on knowing about human trafficking, they lack knowledge about trafficking and are not familiar with existing resources. There remains a need for physician-specific human sex trafficking education in U.S. medical schools, residency programs, and hospital-based practices. A majority of physicians in all stages of training place importance on knowing about human trafficking. We have created an online module and will conduct pre- and post-curriculum analysis to ascertain the effectiveness of this curriculum.

Case Studies

Attendings

Prenatal care of a preadolescent victim of sex trafficking: a case report

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Poster number: 77

The debt bondage and subsequent pregnancy of a preadolescent patient raises awareness of human trafficking in the U.S. medical system. A nine-year-old female immigrant, evaluated for a benign heart murmur, was noted to have abdominal fullness, subsequently identified as pregnancy.

Prior to immigrating to America, the family accrued debt in Southeast Asia. Upon arrival to the U.S., consistent with their cultural customs, the patient's father offered her as repayment to an adult male member of the local clan collecting the debt. The pregnancy was an undesired result of this arrangement. The patient and her family were shunned by their community.

Prenatal care was initiated at 31 weeks. The patient was found to be severely anemic and had serologic evidence of past hepatitis B infection. A multidisciplinary team was involved in her care and preparations for delivery, including Maternal Fetal Medicine, Pediatric Gynecology, Anesthesiology, Ethics, Chaplaincy, interpreters, a childbirth educator, a child life specialist and Social Work in cooperation with Child Protective Services. At 40+6 weeks, labor was induced for obstetric indications. The patient underwent a vaginal delivery complicated by a 3rd degree laceration. Six weeks later, an IUD was placed. The newborn was discharged to the care of the patient's parents.

The English language medical literature lacks reports of prenatal care of a preadolescent victim of sex trafficking. Related literature most commonly provides education and guidelines on victim identification and barriers to care, with some editorials, outcome and population data, and proposals for addressing the issue in the U.S. health care system. Our case highlights the complexity of multidisciplinary care required for a preadolescent pregnant victim of human trafficking, all in light of the Mature Minor concept and cultural awareness. Further studies are needed to develop best care approach in this challenging clinical and sociological scenario.

A 20-Week Abdominal Pregnancy occurring 10 years after Cesarean Hysterectomy

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A 35-year-old G3P2002 was referred to the maternal-fetal medicine service with an abdominal pregnancy at 20 weeks gestation. She had reported a two-month history of worsening lower abdominal pain and polyuria to her primary care physician, which led to a prolonged investigation prior to the discovery of the fetus. Her history was notable for a cesarean hysterectomy 10 years earlier for postpartum hemorrhage. CT angiogram identified placental blood supply from aberrant aortic and right common iliac vessels. Due to the risk of maternal mortality, surgical intervention was advised. Exploratory laparotomy identified a 370 gram fetus. The placenta was left in situ due to concern for bladder invasion and to minimize bleeding complications. Methotrexate 50 mg/m² was provided weekly to facilitate placental regression. Serial Beta-hcg levels declined from 31,026 mU/mL to 5.7 mU/mL at 15 weeks post-operative.

Abdominal pregnancy after hysterectomy has been attributed to the presence of a pregnancy prior to the hysterectomy or a fistulous formation between the vagina and the uterine cavity, and is classified as early or late appearing, respectively. Since 1895, 57 cases of pregnancy following hysterectomy have been reported, only 4 of which were after a cesarean hysterectomy. Maternal mortality is significantly increased in cases of abdominal pregnancy due to the risk of rupture and massive hemorrhage.

The history of a hysterectomy performed 10 years earlier contributed to a delayed diagnosis of the abdominal pregnancy. Advanced abdominal pregnancies have high rates of maternal mortality and require surgical intervention for patient safety. Providers should be aware of the potential for pregnancy in reproductive age women despite a history of hysterectomy.

Education should be provided to primary care physicians on the need for pregnancy testing in all women of reproductive age with unresolved symptoms. Assessment of educational efforts may document greater awareness of this potentially life-threatening situation.

Original Research

Attendings

Care of the Breast Cancer Survivor: Oncologist or Primary Care Provider?

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Background: Breast cancer is the most common malignancy in US women. With early detection and improved treatment, long-term survival has increased. During treatment and follow up, patients may not receive care from their primary care providers. With a looming oncologist shortage and the burgeoning survivor population, the primary care provider's role in breast cancer survivor care becomes increasingly important.

Objectives: To describe the roles primary care providers play in the care of breast cancer survivors.

Findings: Excellent guidelines for follow up of breast cancer survivors are easily available. Primary care providers and oncologists alike provide essential care to patients. Studies demonstrate that primary care providers feel they should remain involved in preventive and other types of care and are often comfortable providing breast cancer follow up. Oncologists prefer to provide breast cancer follow up but they are faced with increasing numbers of newly diagnosed patients. Women who remain connected to their primary care providers are likelier to receive preventive care services and comorbid condition management. Current guidelines encourage the inclusion of primary care providers in follow up care of breast cancer patients.

Conclusion: With the growing breast cancer survivor population, the question of which provider provides which types of care becomes increasingly important. Inclusion of primary care providers in the care of survivors is encouraged in current guidelines. With appropriate resources, access to education sources, and collaborative relationships with oncology specialists, breast cancer survivors stand to benefit substantially from continued care and long term follow up with their primary care providers, while reducing the burden on oncologists already facing increasing numbers of newly diagnosed patients.