



Kansas City University 2024 Research Symposium

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Abstracts

Unprecedented coexistence of group a strep infection and appendicitis: a growing pediatric concern

Presenting author: Melody Beltran

Affiliation: Kansas City University Joplin

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Abstract:

In the realm of pediatric medicine, it has long been held as an unspoken axiom that the presence of both Group A Streptococcus (GAS) infection and appendicitis in a patient is a rarity bordering on the mythical. Surgeons have traditionally exercised caution, hesitating to operate on individuals with concurrent GAS infections, as historical evidence suggested a negligible likelihood of coexistence. However, recent clinical observations have challenged this established paradigm, revealing a perplexing surge in cases where appendicitis coincides with active GAS infections, some progressing to perforation. Over the course of a few months, our institution has witnessed an alarming uptick in such occurrences, raising questions about potential shifts in GAS strains or the influence of socioeconomic factors. This emerging phenomenon demands meticulous investigation to understand its underlying causes and implications. The hypothesis of a novel GAS strain circulating in the community or an unforeseen interplay of socioeconomic variables emerges as a plausible explanation, warranting further scrutiny. This abstract sets the stage for a comprehensive case series that will delve into the perplexing relationship between GAS infection and appendicitis in pediatric patients. By scrutinizing recent cases, examining clinical presentations, and analyzing microbiological data, our study aims to shed light on this unexpected convergence. The findings from this case series may not only challenge existing medical dogma but also provide invaluable insights into evolving microbial dynamics and their clinical consequences in the pediatric population.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Systemic Dosing of Virus-derived Serpin Improves Survival and Immunothrombotic Damage in Murine Colitis

Presenting author: Mostafa Hamada

Affiliation: Arizona State University

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Abstract:

Inflammatory bowel disease (IBD) is potentially life-threatening, with risk of bleeding, clotting, infection, sepsis, cancer and toxic megacolon. Systemic and local immune and coagulation dysfunction increase IBD severity. Current treatments are partially effective, but there is no definitive cure. Serine protease cascades activate thrombotic, thrombolytic and complement pathways and are regulated by inhibitors, serpins. Viruses encode proteins evolved from endogenous central regulatory pathways. A purified secreted Myxomavirus-derived serpin, Serp-1, dosed as a systemic anti-inflammatory drug, has proven efficacy in vascular and inflammatory disorders. PEGylated Serp-1 protein (PEGSerp-1) has improved efficacy in lupus and SARS-CoV-2 models. We examined PGSerp-1 treatment in a mouse Dextran Sodium Sulfate (DSS) colitis model. Prophylactic PGSerp-1 significantly improved survival in acute severe 4-5% DSS colitis, reducing inflammation and crypt damage in acute 4-5% DSS induced colitis and when dosed as a chronic delayed treatment for recurrent 2% DSS colitis. PGSerp-1 reduced iNOS+ M1 macrophage invasion, damage to crypt architecture and vascular inflammation with decreased uPAR, fXa, fibrinogen and complement activation. This work supports PGSerp-1 as a tissue targeting serpin therapeutic.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Adoption of Vaping Cessation Methods by U.S. Adolescent E-cigarette Users

Presenting author: Hanh Pham

Affiliation: KCU/UNMC

Co-Authors and affiliations: Hongying Daisy Dai PhD, Nick Guenzel PhD, Mathuri Morgan BS, Ellen Kerns PhD, Jonathan P. Winickoff MD, MPH

Abstract:

Background: A large number of adolescent e-cigarette users intend to quit vaping or have past-year quit attempts. However, it remains unknown which methods they use in their vaping cessation efforts.

Method: We analyzed current (past 30-day) e-cigarette users who made ≥ 1 quit attempt in the past 12 months from the 2021 National Youth Tobacco Survey (NYTS) to examine the prevalence and associations of sociodemographic factors, vaping behaviors, and harm perception with the adoption of different vaping cessation methods. **Results:** In the 2021 NYTS, there were 1,436 (7.6%) current vapers, and 889 (67.9%) had made a past-year quit attempt. Of those, 575 (63.3%) (Weighted N=810,000) reported they did not use any resources (unassisted quitting). Peer support (14.2%), help on the Internet (6.4%), a mobile app or text messaging (5.9%), and parent support (5.8%) were the top four cessation methods. Female (vs. male) vapers were less likely to solicit parent support (AOR[95% CI]=0.3[0.1-0.7]), while Hispanic (vs. White) vapers were more likely to seek friend support (AOR[95% CI]=2.1[1.1-3.9]) and parent support (AOR[95% CI]=3.2[1.2-8.8]). Those who perceived vaping to be harmful were less likely to get friend support, but more likely to use a mobile app or text messaging program. Dual users of e-cigarettes and any other tobacco product were more likely to get help from a teacher/coach, a doctor/health care provider, and treatment from medical facilities than sole e-cigarette users. **Conclusion:** This study examined the adoption of different vaping cessation methods among U.S. adolescents. Most adolescent vapers reported unassisted quit attempts. For adolescents who did seek quit assistance, they used peer and parent support more often than a doctor or healthcare provider. Adoption of different vaping cessation methods was associated with demographic factors and vaping behaviors.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Enhancing Rehabilitation for Patellofemoral Pain Syndrome: A Systematic Review of Osteopathic Manipulative Medicine and Traditional Therapies

Presenting author: Eric Khurana

Affiliation: KCU OSM-II

Co-Authors and affiliations: Alfeil Felipe - KCU OSM-II Robert H Ablove - MD

Abstract:

This study investigates the effectiveness of incorporating osteopathic manipulative medicine (OMM) alongside traditional therapies in the treatment of Patellofemoral Pain Syndrome (PFPS). PFPS is a prevalent knee pathology affecting 22.7% of the general population and 28.9% of adolescents. Amateur runners, in particular, experience a significant impact, with an incidence rate of 1080.5/1,000 persons. Commonly treated with physical therapy and activity modification, PFPS remains a debilitating condition. The systematic review employed a PubMed search using the keyword "osteopathic manipulation patellofemoral." Patients diagnosed with PFPS and treated with a combination of OMM and traditional therapies were included. Data collection focused on self-reported patient pain scores within two months of treatment. Four relevant articles were identified, with findings suggesting favorable outcomes for patients receiving OMM alongside multimodal or exercise therapy. The evidence indicated a Level B classification for manipulative treatment of the knee in conjunction with traditional therapies. Specific benefits included improved balance, reduced peripatellar and general knee pain, and enhanced activation of quadriceps and core muscles. Lumbopelvic manipulation demonstrated a positive role in rehabilitating patients with PFPS.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

A retrospective analysis of pneumonia and chronic obstructive pulmonary disease on patient mortality in southwest missouri

Presenting author: Monika Ziogaite

Affiliation: Kansas City University College of Medicine

Co-Authors and affiliations: Cameron Smith - Kansas City University College of Medicine Lindsay Doolan - Kansas City University College of Medicine Heather Von Hegel - Kansas City University College of Medicine Mariam Akhtar - Kansas City University College of Medicine; Freeman Health System Nova Beyersdorfer - Kansas City University College of Medicine Kerry Johnson - Missouri Southern State University John Paulson - Kansas City University College of Medicine; Freeman Health System

Abstract:

Chronic obstructive pulmonary disease (COPD) is a progressive and irreversible lung disease affecting millions worldwide and ranks as the third leading cause of death in the United States. Pneumonia, an infection leading to lung inflammation, is associated with higher mortality rates in COPD patients. This study aimed to explore the individual and combined effects of COPD and pneumonia on mortality rates in rural, Southwest Missouri. Subjects to be included in the study were identified retrospectively using International Classification of Diseases, Tenth Revision (ICD-10) codes for both pneumonia and COPD. The acquired data was then separated into three groups, patients with both pneumonia and COPD (P1), pneumonia (P2) or COPD (P3), then examined for significance in mortality between the groups. Analysis revealed a significant difference in mortality rates between COPD patients with and without pneumonia (P1 vs. P3, $p < 0.0001$), indicating that the presence of pneumonia did increase mortality in COPD patients. There was also a significant difference in mortality when comparing the two diseases on their own (P2 vs. P3, $p < 0.0001$), indicating that pneumonia had a higher mortality rate than COPD. However, there was no significant difference in mortality between pneumonia patients without COPD compared to pneumonia patients with COPD (P1 vs. P2, $p = 0.0806$). These findings show that pneumonia has a higher mortality than COPD, but COPD is not an independent risk factor for mortality in patients with pneumonia. This lack of significant difference in mortality should be further examined by future studies to understand the mechanism why this occurs.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Mortality risk in hospitalized pneumonia and thrombosis patients in the rural United States

Presenting author: Quentin Virden

Affiliation: Kansas City University

Co-Authors and affiliations: Christopher Hagerman - Kansas City University, Aaron Graves - Kansas City University, Zachary Hollendonner - Kansas City University, Nova Beyersdorfe - Kansas City University, Kerry Johnson - Missouri Southern State University, Robert Arnice - Kansas City University/Freeman Health, John Paulson - Kansas City University

Abstract:

Pneumonia remains a significant cause of mortality in the United States. The risk of mortality can be further complicated by certain comorbidities such as thrombotic events. This was a retrospective study comparing mortality in hospitalized pneumonia patients (with and without thrombosis) as well as mortality in patients hospitalized with thrombosis but no respiratory infection in a hospital system in SW Missouri. Our data found mortality was elevated for hospitalized pneumonia with thrombosis patients compared to pneumonia only and thrombosis only admissions. Additionally, pneumonia was overall associated with higher mortality compared to thrombosis only patients. This data reinforces the need for careful consideration for anti-coagulation in certain hospitalized patients with respiratory infections.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Genetic Testing of FTO, MC4R, and ACE Genes to Improve Clinical Outcomes to Childhood Obesity Interventions

Presenting author: Nagib Manzur

Affiliation: Kansas City University

Co-Authors and affiliations: Divya Patel - Kansas City University

Abstract:

Childhood obesity (CO) is a serious public health concern in the United States affecting 1 in 5 children. This cross-sectional study proposal aims to investigate genetic markers associated with CO to better understand the indications for pharmacotherapy and to further develop intervention guidelines. The study focuses on genetic markers FTO, MC4R, and ACE genes which are known to influence responses to the current recommended CO therapy: lifestyle modifications and exercise. The research employs a cross-sectional design, recruiting 150 pediatric participants from Children's Mercy Hospital in Joplin, MO. Inclusion criteria involve <18 years of age, BMI > 95th percentile, and normal liver and kidney function. Exclusion criteria include diabetes, pregnancy, severe chronic/mental illness, and eating disorders. DNA testing for FTO variant rs9936909, MC4R mutations, and ACE II, ID, DD polymorphisms will be conducted with polymerase chain reaction (PCR). A follow-up study will recommend placement of the subjects in one of three intervention groups: lifestyle, lifestyle with pharmacotherapy, and pharmacotherapy only. Current pharmacotherapy for CO is approved for limited use and only in specific age groups. We hypothesize that the study's results will highlight the role of genetic testing in guiding future pharmacotherapy-based management for CO given the increasing approval of drugs for acute obesity management in adults.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Mortality of pneumonia with comorbid urinary tract infection in a rural southwest missouri healthcare system

Presenting author: Tess Krage

Affiliation: Kansas City University

Co-Authors and affiliations: Grant Dolan, OMS-III-Kansas City University Celine Fayad, OMS-II-Kansas City University Jared Ezzell, OMS-II-Kansas City University Bradley Creamer, MS, PhD-Kansas City University Nova Beyersdorfer-Kansas City University Kerry Johnson, EdD-Missouri Southern State University John Paulson, DO, PhD-Kansas City University and Freeman Health System

Abstract:

BACKGROUND: Pneumonia is a major cause of hospitalization and mortality in the United States, and it therefore contributes to weighty healthcare costs. Inquiring how comorbid conditions complicate an inpatient diagnosis of pneumonia in terms of mortality is requisite for disease prevention. This study examines whether the presence or absence of a urinary tract infection (UTI) diagnosis in hospitalized patients with pneumonia in a rural Missouri healthcare system influences mortality outcomes.

METHODS: A retrospective observational study utilized patient outcome data in electronic medical records to divide patients into three populations based on their diagnoses of pneumonia with UTI (P1), pneumonia without UTI (P2), and UTI without pneumonia (P3) according to International Classification of Diseases, Tenth Revision (ICD-10) codes for pneumonia and UTI. A two-sample proportion summary hypothesis test was employed to determine 95% confidence intervals and to compare mortality rates between these populations. **RESULTS:** P1, with both pneumonia and UTI, showed the highest mortality rate, and the diagnosis of pneumonia confers the greatest mortality risk. P3 had the lowest mortality rate. **CONCLUSION:** Pneumonia is the deadlier disease in this sample population, and the comorbid condition of acquiring both pneumonia and a UTI is deadlier than the diagnosis of pneumonia without UTI.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Chlorpromazine for the treatment of Cannabis Hyperemesis Syndrome

Presenting author: Haden Tobola

Affiliation: KCU

Co-Authors and affiliations: Primary Investigator: Nauman Ashraf - Ozark Center

Abstract:

Introduction: Cannabis Hyperemesis Syndrome (CHS) is a clinical syndrome associated with prolonged and regular cannabis use. CHS is characterized by recurrent episodes of abdominal pain, nausea, and vomiting that last for 24-48 hours in chronic cannabis users. While the pathophysiology of this condition remains unclear, the sole recommended treatment for CHS is cessation of cannabis use. Common antiemetic therapies typically show little efficacy, and there are limited pharmacologic treatment options available. With the increasing use of cannabis in the United States, there is a growing need for pharmacologic treatment options to alleviate symptoms in patients who develop CHS. Moreover, there have been very few reported cases of this condition in scientific literature, necessitating further research to identify treatments for patients who develop CHS with pre-existing psychiatric diagnoses.

Case Presentation: Here, we present the case of a 20-year-old African American female with a history of bipolar disorder who presented to the Emergency Department (ED) with persistent bouts of nausea and vomiting in the context of chronic cannabis use. She reported smoking cannabis up to six times per day to alleviate her anxiety. Following admission, she was transferred from the local ED to the inpatient psychiatric unit due to suicidal ideation. Upon primary survey, the patient exhibited mild pallor and reported weakness from vomiting up to five times within the last 24 hours. Laboratory results revealed hyponatremia, hypochloremia, and hypokalemia. Urine toxicology was positive for tetrahydrocannabinol (THC) and cannabinoids. Throughout her hospitalization, the patient received symptomatic treatment numerous antiemetic therapies with no relief. However, administration of a single 10 mg dose of chlorpromazine reduced her reported nausea and vomiting. Additionally, hot showers provided relief as well.

Conclusion: This case report highlights the successful use of chlorpromazine in treating CHS, resulting in the resolution of hyperemesis symptoms in a patient with bipolar disorder.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

A retrospective investigation of mortality associated with comorbid pneumonia and thrombocytopenia in a rural southwest missouri hospital system

Presenting author: Rajbir S Sooch, MPH

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Tabitha Ranson - Kansas City University College of Medicine Hannah Rourick - Kansas City University College of Medicine Nicole R Ford, PhD - Kansas City University College of Biosciences Nova Beyersdorfer - Kansas City University College of Medicine Kerry Johnson, EdD - Missouri Southern State University John Paulson, DO, PhD - Kansas City University College of Medicine, Freeman Health System

Abstract:

Background: Pneumonia contributes to a substantial amount of ED visits, hospital admissions, deaths, and healthcare spending every year. Comorbidities can increase the risk of poor outcomes when associated with pneumonia. One comorbidity yet to be thoroughly researched is thrombocytopenia. Platelets play an important role in activating the immune response. Therefore, a decrease in platelet number may limit the immune response to infection. With this information, the purpose of this study was to investigate an association between thrombocytopenia and poor outcomes with pneumonia.

Methods: This study was a retrospective cohort analyzing rates of mortality associated with comorbid thrombocytopenia and pneumonia, pneumonia without thrombocytopenia, and thrombocytopenia without pneumonia. Data was taken from Freeman Health system utilizing International Classification of Diseases-10 codes from January 1, 2019 to December 31, 2021. ICD-10 codes for pneumonia and thrombocytopenia were extracted and then stratified into those with pneumonia and thrombocytopenia, those with pneumonia without thrombocytopenia, and those with thrombocytopenia without pneumonia. Mortality rates were then compared between the three stratified groups. **Results:** There were 4,414 patients admitted with pneumonia and 1,157 admissions of thrombocytopenia without pneumonia. Of the 4,414 admitted with pneumonia, there were 3,902 patients without thrombocytopenia and 512 with thrombocytopenia. In those without thrombocytopenia, 14% out of 3,902 expired. Out of the 512 patients with thrombocytopenia, 43% expired. In the thrombocytopenia without pneumonia group, 11% out of 1,157 expired. **Conclusion:** These results indicate a significant increase in mortality in patients with pneumonia compared to those with thrombocytopenia. Additionally, patients with pneumonia exhibit increased mortality when combined with thrombocytopenia.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

An incidental finding of idiopathic hypertrophic pachymeningitis: a case report

Presenting author: Divya Venkat

Affiliation: Kansas City University

Co-Authors and affiliations: Keerti Vajrала - Kansas City University Hiral Amin - Kansas City University
Robert Jensen - Johnson County Neurology

Abstract:

In this case report, we explore the clinical, laboratory, and imaging findings, as well as the treatment options and follow-up measures in an 83-year-old patient with idiopathic hypertrophic pachymeningitis (IHP), a rare disorder characterized by fibrosing, hypertrophic inflammation that thickens the dura mater. It can be primary, which has no known cause, or secondary to a diverse list of conditions such as rheumatoid arthritis, syphilis, and tuberculosis. In limited previous reports, patients typically present with headaches, and cranial nerve defects, or can be asymptomatic. An 83-year-old female with a medical history of hypertension and hyperlipidemia presented with speech arrest and was taken to the emergency department, where she received a stroke code, a CT scan, and an MRI. The MRI results showed a temporal lobe meningioma and a pan-cranial pachymeningitis encasing the entire brain and cerebellum and extending into the upper cervical spine. Multiple unsuccessful attempts at a lumbar puncture were made, so a dural biopsy specimen was obtained, which revealed no malignant process. A cerebral spinal fluid specimen (CSF) from the biopsy showed minimal white blood cells (WBCs), ruling out infection. Idiopathic hypertrophic pachymeningitis was the given diagnosis based on the apparent MRI findings. The patient was treated in the hospital for four days with IV methylprednisolone and discharged on oral methylprednisolone for four to six weeks. Additional immunosuppressive agents can be used if corticosteroid use is ineffective over time.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

A Case Report Comparing Progressive Supranuclear Palsy and Cortical Basal Ganglionic Degeneration

Presenting author: Keerti Vajrala

Affiliation: Kansas City University

Co-Authors and affiliations: Divya Venkat- KCU Hiral Amin- KCU Dr. Robert Jensen- Menorah Medical Center

Abstract:

Objective To compare the clinical diagnoses of progressive supranuclear palsy (PSP) and cortical basal ganglionic degeneration (CBD) in a patient presenting with atypical symptoms using clinical, laboratory, and imaging findings. **Background** PSP is a neurodegenerative disease with a supranuclear, vertical gaze palsy accompanied by extrapyramidal symptoms of extensor posturing and akinetic rigidity and resulting in a cognitive dysfunction that represents one of the frontotemporal lobar degenerations (FTLD). CBD is another FTLD disease typically characterized by an asymmetric akinetic rigid syndrome with homolateral ideomotor apraxia. Both are microtubule-associated protein tau (MAPT or tau) inclusion body diseases. **Design/Methods** N/A **Results** A 79-year-old male with a past medical history including hypertension, hyperlipidemia, and hypothyroidism presented to the emergency department for left foot pain and trouble standing and ambulating. He was admitted to the floor for further workup. MRI imaging was acquired, looking for a stroke, hemorrhage, abscess, vascular malformation, focal inflammation, or other etiology for left leg and foot weakness and foot pain. On analysis of the imaging, a “Hummingbird Sign” was found on mid-sagittal sections through the brainstem, a sign that is considered pathognomonic for PSP. Upon further physical examination, he did not present with the characteristic vertical gaze palsy but did present with asymmetrical apraxia, which is a positive sign for CBD. The patient’s leg symptoms spontaneously remitted while on the floor. The patient was discharged to return to previously established care at another hospital with instructions to resume physical therapy and occupational therapy. **Conclusion** The clinical and histopathological features of PSP and CBD can be a challenge to distinguish as they have overlapping features but are classified as two separate pathological processes. This patient’s combined presentation elicits the question of which diagnosis is a better fit as the pathological diagnosis can only be confirmed through biopsy, often obtained during autopsy.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Endothelial reprogramming and enhanced TGF- β signaling persist after completion of chemotherapy

Presenting author: Kass Sjoström

Affiliation: - College of Biosciences Research, Kansas City University

Co-Authors and affiliations: Shixin Tao PhD - College of Osteopathic Medicine, Kansas City University, Nataliya Kibiryeva MD - College of Biosciences, Kansas City University, Melissa Cobb MS - College of Osteopathic Medicine, Kansas City University, Eugene Konorev PhD - College of Osteopathic Medicine, Kansas City University

Abstract:

The number of cancer survivors is increasing due to population aging and advances in early detection and treatment. Cardiovascular disease has become a leading cause of morbidity and mortality in cancer survivors. Patients treated with anticancer chemotherapeutic doxorubicin (Dox) present with cardiomyopathy that develops and progresses after completion of therapy. To understand this late effect, we focused on changes that persist in endothelial cells after Dox treatment. Endothelial cells accumulate increased concentrations of Dox compared to other cardiac cell types. Previously we demonstrated microvascular remodeling and endothelial senescent/proinflammatory reprogramming in mouse hearts after completion of Dox therapy. In this study, we utilized human umbilical vein endothelial cells (HUVEC) to examine changes that occur after Dox is removed from culture media. Using CAGA12-luciferase reporter plasmid, we detected increased transcriptional activity driven by the TGF- β canonical pathway in Dox treated cells. Likewise, Smad3 phosphorylation response to TGF- β 2 was enhanced in the treated cells. Mesenchymal marker expression increased in HUVEC during Dox treatment and was further elevated upon Dox washout. Increased mesenchymal marker expression was reduced by SB431542, a selective inhibitor of the canonical TGF- β pathway, during both Dox treatment and its washout. These results suggest that Dox induced mesenchymal reprogramming persists after completion of Dox therapy and is likely mediated by the canonical TGF- β pathway. We provide evidence that partial reprogramming that compromises endothelial function, secretome, and cardiomyocyte support is alleviated by suppressing the canonical TGF- β pathway.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Colonic Perforation: surgical management and a challenging postoperative recovery

Presenting author: feza abbas

Affiliation: KCUCOM-OMS3

Co-Authors and affiliations: Melody Beltran - OMS3, KCUCOM

Abstract:

Perforation of the colon requires emergent medical intervention to limit life threatening complications. Surgery is usually required and the recovery journey varies depending upon a multitude of factors including the type of surgery, the patient's medical history, and any postoperative complications that may ensue. This case report highlights a complicated and lengthy colonic perforation recovery of a patient mainly due to initial misdiagnosis, patient noncompliance, and extensive past medical conditions. This patient's surgical course consisted of an emergent exploratory laparotomy, partial colectomy, intra abdominal abscess drainage, peritoneal lavage, cholecystectomy, and colostomy. Soon after, the patient started to deteriorate due to postoperative complications, medication nonadherence, and recovery noncompliance, thus the vital importance of an accurate diagnosis and patient cooperation postoperatively.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Hypertension and pneumonia: a retrospective analysis of patient outcomes in southwest Missouri

Presenting author: Dylan Barger

Affiliation: KCU Joplin COM

Co-Authors and affiliations: Jay Jackson, Jad Imad, Manik Arora (KCU Joplin COM)

Abstract:

Pneumonia is a considerable health concern associated with high morbidity and significant short-term and long-term mortality in all age groups worldwide. Hypertension (HTN) is a serious health comorbidity that impacts the course of many disease processes including pneumonia. This study investigates the interaction of HTN and pneumonia retrospectively using deidentified electronic medical records from a hospital system located in Southwest Missouri. Through analysis of this data, it was found that patients admitted for pneumonia with HTN had a lower mortality rate than those admitted for pneumonia without HTN. Although a major limitation to the study was that the data collected did not include prescription information from patients, based on a current literature review the finding that patients with both pneumonia and HTN had a lower mortality rate may be due to concomitant pharmaceutical therapy including ACE inhibitors, angiotensin II receptor blockers (ARBs) and/or HMG-CoA reductase inhibitors (statins).

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Reduced Expression of Endothelial VEGF receptor 2 Persists After Completion of Doxorubicin Treatment

Presenting author: Dejanae Potter

Affiliation: Kansas City University

Co-Authors and affiliations: Eugene Konorev- KCU Melissa Cobb-KCU Nataliya Kibiryeva- KCU Shixin Tao- KCU

Abstract:

Cancer survival rates have steadily increased over the past few decades due to advancements in detection, and therapies. However, cardiovascular complications have become a growing concern for surviving cancer patient populations due to patients succumbing to cardiovascular disease. In particular, the chemotherapeutic drug doxorubicin (Dox) has been shown to cause cardiomyopathy in treated cancer patients. Intravenously administered Dox has been shown to accumulate in cardiac endothelial nuclei resulting in an increased risk of damage. In addition, our prior transcriptomic analysis suggested suppression of the vascular endothelial growth factor (VEGF) pathway in Dox treated human cardiac microvascular endothelial cells. Therefore, this project was designed to examine the mechanism of the Dox effects on VEGF receptor 2 (VEGFR2) using human umbilical vein endothelial cells (HUVEC) cultures. Since Dox cardiomyopathy is known to progress after treatment completion, we examined the Dox effects observed both during treatment and its removal from culture media. We observed reduced expression of the VEGFR2 protein during Dox post-treatment washout. VEGFR2 is the main receptor for VEGF, which is responsible for endothelial proliferation, migration, survival, and maintaining endothelial cell identity. Bioinformatic analysis of KDR, a gene encoding the VEGFR2 protein, in Dox treated endothelial cells predicted inhibition of the pathway by Dox. On the other hand, KDR mRNA was not affected both during Dox treatment and washout, suggesting that reduced VEGFR2 expression is likely mediated by post-transcriptional mechanisms under these conditions. Further analysis of the downstream signaling pathways of VEGFR2 demonstrated reduced activity of the ERK1/2 in treated HUVEC. Thus, these results suggest downregulation of VEGF/VEGFR2 pathway that persists after Dox washout and may conceivably contribute to endothelial reprogramming and compromised function.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

The Usual Suspects: A candidate-based screen of E3 ligases in STING-mediated K63 poly-ubiquitylation

Presenting author: Mahan Hadjian

Affiliation: National Institute of Neurological Disorders and Stroke - Biochemistry Section

Co-Authors and affiliations: Richard J. Youle - National Institute of Neurological Disorders and Stroke

Abstract:

Stimulator of Interferon Genes (STING) is an ER-bound protein that acts as a key component in cellular defense against viral infections. Upon binding of cyclic dinucleotides such as 2',3'-cyclic GMP-AMP (cGAMP), STING mediates an innate immune response through the activation of the interferon pathway as well as upregulation of NF- κ B signaling. While the mechanism of the former has been well-characterized, it is poorly understood how STING leads to the activation of the NF- κ B pathway. Recent work from our lab has shown that upon treatment with a STING agonist, the protein translocates to single membrane vesicles in the perinuclear region, co-localizing with newly formed poly-ubiquitin (Ub) chains. More specifically, these chains display both linear (M1) and lysine-63 (K63) linkages—both of which are classically involved in NF- κ B signaling. Only one E3 ligase is known to deposit M1-Ub chains, but there are possibly hundreds that can mediate K63 poly-ubiquitylation. A candidate-based screen was performed on K63 E3 ligases already shown to be involved in NF- κ B signaling in non-STING pathways—which includes the cytosolic Inhibitors of Apoptosis (cIAP1 and cIAP2), the Pellino family (PELI1, PELI2, and PELI3), and TNF-receptor-associated factor 6 (TRAF6). Through a series of biochemical assays and live cell imaging, it was shown that genetic knockdown and chemical inhibition of these candidates failed to prevent K63-Ub deposition following STING activation. This suggests that another E3 ligase, as-of-yet unresolved in the NF- κ B signaling space, is responsible for the phenomenon—warranting a broader CRISPR-based screen.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

A retrospective analysis: outcome comparisons of pneumonia patients with and without emphysema in a rural midwest hospital

Presenting author: Alexis Black

Affiliation: Kansas City University

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Abstract:

Sabrina Kazem*, Alexis Black*, Divya-Shree Patel*, Levy Hacker*, Scott Goade, Nova Beyersdorfer, Kerry Johnson Pneumonia is a common cause of hospitalization and is associated with significant morbidity and mortality worldwide. Chronic obstructive pulmonary disease (COPD), including emphysema, further increases the risk and severity of pneumonia. We aimed to assess whether the presence of emphysema influences outcomes in patients with pneumonia. In this retrospective cohort study, we used electronic medical records from Freeman Health System in Joplin and Neosho, Missouri (January 1, 2019 to December 31, 2021) to compare mortality rates among three patient populations: pneumonia with emphysema (P1), pneumonia without emphysema (P2), and emphysema without pneumonia (P3). The study included adults meeting International Classification of Diseases (ICD-10) diagnostic criteria for pneumonia or emphysema. Mortality rates were calculated based on patient expiration during their admission. Statistical analysis involved calculating confidence intervals for sample proportions and conducting a two-sample proportion hypothesis test to determine the difference in mortality rates among each patient population. P1 had the highest mortality rate at 25.89%, followed by P2 at 17.17%, and P3 with the lowest mortality rate at 6.44%. Comparing P1 to P2, pneumonia and emphysema showed an 8.72% higher mortality rate. Similarly, P1 had a 19.45% higher mortality rate compared to P3. Additionally, P2 exhibited a 10.74% higher mortality rate than P3, emphasizing the significance of pneumonia on mortality. In this rural population, the presence of emphysema with pneumonia is associated with an increased risk of mortality, underscoring the importance of considering this comorbidity in clinical management.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

TGF- β pathway inhibition ameliorates deleterious effects of doxorubicin on endothelial nitric oxide synthase

Presenting author: Manbir Sanghera

Affiliation: KCU COB Research Track

Co-Authors and affiliations: Melissa Cobb - KCU Dr. Shixin Tao - KCU Dr. Eugene Konorev - KCU

Abstract:

Doxorubicin (Dox) is an anthracycline chemotherapeutic drug that is effective against multiple types of cancer but also known to cause cardiovascular complications, including cardiomyopathy and heart failure. Previous work by our lab has described Dox-induced damage to cardiac endothelial cells that is mediated by the transforming growth factor-beta (TGF- β) pathway. Endothelial nitric oxide synthase (eNOS) is an endothelial specific gene that regulates myocardial blood supply and cardiac function. The roles of Dox and the TGF- β pathway in regulation of eNOS has not been examined. We tested the hypothesis that downregulation of the eNOS protein by Dox in endothelial cells is mediated by the canonical TGF- β pathway. We used human umbilical vein endothelial cells (HUVEC) and SB431542 (SB), a small molecular weight inhibitor of the canonical TGF- β pathway. Since cardiomyopathy is known to develop after completion of Dox treatment, we focused on endothelial changes after Dox was removed from culture media. eNOS protein expression slightly decreased during Dox treatment and was further reduced during Dox washout. On the other hand, NOS3 mRNA levels were reduced during Dox treatment but not washout. Additionally, reporter plasmid experiments demonstrated that NOS3 promoter activity remained unchanged both during Dox treatment and its washout, as compared to control. Incubation with the TGF- β pathway inhibitor significantly increased eNOS expression in both control and Dox-treated endothelial cells. Thus, eNOS expression remains suppressed after removal of Dox from culture media and may conceivably contribute to endothelial and cardiac dysfunction.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Post-translational modification profile of TDP-43 in alzheimer's diseased mouse brain tissue: An in vitro study looking to develop a biomarker

Presenting author: Devvrat Bhakta

Affiliation: Kansas City University - College of Osteopathic Medicine

Co-Authors and affiliations: Abdulbaki Agbas M.Sc, Ph.D. - Kansas City University Edina Kosa M.Sc - Kansas City University

Abstract:

To develop a blood-based biomarker for neurodegenerative diseases is a much-needed tool for clinical studies. Well-developed and validated blood-based biomarker will serve in early diagnosis for neurodegenerative diseases and screening purposes for patient recruitment in clinical trials. In this summer research proposal, we will attempt to establish a portfolio of post-translationally modified TAR-DNA/RNA binding protein (TDP-43), a regulator of nuclear transcription factor, in brain homogenate obtained from 5XFAD transgenic mice and their control littermates. Our aim is to verify post-translational modification profiles of the TDP-43 derivatives in 5XFAD transgenic mouse brain homogenate as we have observed in human platelet cytosol in our previous study. These studies will pave the road to identify disease specific TDP-43 derivative(s) that can be assign as potential biomarker for Alzheimer's disease.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Medical student appraisal of novel brainstem model and utility of 3D printing in curricula, Kansas City University

Presenting author: Jay Jackson

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Fiona New Mae Visconti Farida Mehrhoff Melissa Zolnierz

Abstract:

As education moves to digital and virtual modalities, kinesthetic learners are being left behind. Given the trends in using 3D printing to facilitate both medical education and patients' understanding of pathology, this study investigated whether medical students can utilize 3D printing technology in a manner that is conducive and efficient. Medical students participated (N = 28), the majority of which having zero experience with 3D printing (n = 21). The students used a one-page print-out of instructions and 100% of participants were able to find a 3D model from the internet, convert and print a file then assemble a pre-printed object. The average time to completion was 7 minutes and 31 seconds for the printing portion of the study. The students then completed a quantitative survey concerning appraisal of the printing process that gauged their interest in 3D printing. The overall results of the survey demonstrated an interest and ease of 3D printing models for self-study. Although we are limited by convenience sampling and the size of our sample, the results from our study demonstrate major implications in both the structuring of 3D labs in medical libraries and the ability of medical students to pick up new technology.

Category: Medical Education

Presentation mode: Live podium presentation

Location: Joplin Campus

Pneumonia and hypokalemia outcomes investigated in a rural, midwestern population

Presenting author: Amanda Sonnenburg

Affiliation: Kansas City University College of Osteopathic Medicine, Joplin

Co-Authors and affiliations: Scott Andelin - Department of Primary Care, Kansas City University College of Medicine, Joplin Mason Penske - Kansas City University College of Medicine, Joplin Claire E Reagen - Kansas City University College of Medicine, Joplin Megan Unrath - Kansas City University College of Medicine, Kansas City Nova Beyersdorfer - Department of Primary Care, Kansas City University College of Medicine, Joplin Kerry Johnson - Department of Mathematics, Missouri Southern State University John Paulson - Department of Primary Care, Kansas City University College of Medicine, Joplin

Abstract:

Background Pneumonia is a broad term encompassing lung infections with varying causes, presentation, and prognosis. Efforts to improve the mortality rates of pneumonia have been nominal. The primary objective of this retrospective study was to determine if the presence of hypokalemia in patients admitted to the hospital with pneumonia was associated with an increased mortality rate compared to patients admitted with pneumonia without hypokalemia. **Methods** This retrospective study used data from the Freeman Health System (FHS) electronic medical record in Southwest Missouri from January 1, 2019, to December 31, 2021. This study included patients 18 years of age and older admitted to the hospital with pneumonia or hypokalemia or both. Patients were divided into three sample groups including 1,045 patients with pneumonia and hypokalemia, 3,369 patients with pneumonia but without hypokalemia, and 3,594 patients with hypokalemia but without pneumonia. The data was analyzed to compare the mortality rates among the groups. **Results** The mortality rate for patients with pneumonia and hypokalemia was the highest at 20.86%, followed by those with pneumonia but no hypokalemia at 16.83%, and finally, those with hypokalemia but no pneumonia at 5.43%. The differences in mortality rates comparing the three sample groups were all statistically significant with P-values less than 0.05. **Discussion** This study looked at three sample groups of patients admitted to the hospital with pneumonia, hypokalemia, or both. Patients with pneumonia and hypokalemia had a higher mortality than both those with pneumonia without hypokalemia and those with hypokalemia without pneumonia. **Conclusions** Our study suggests that hypokalemia is a risk factor for increased mortality rate for patients admitted to the hospital with pneumonia. This understanding could help affect decision making in the care of patients with pneumonia prior to hospitalization, upon admission or during the hospitalization.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Barriers to Uptake and Adherence of Oral Pre-exposure Prophylaxis among Latino Men Who Have Sex with Men in the United States: a Systematic Review

Presenting author: Miguel De Souza Peixoto MS

Affiliation: KCU

Co-Authors and affiliations: Jordan Fader MS- KCU Dr. Jan Talley PhD, MA, MSW - KCU

Abstract:

Objective: This systematic review aims to evaluate barriers Hispanic/Latino men who have sex with men (HLMSM) face along the PrEP continuum of care, with the goal that this information can be utilized to create culturally tailored interventions for increasing PrEP use and adherence. Methods: Following PRISMA guidelines, databases searched include PubMed, Scopus, Embase, and Academic Elite. Included studies were primary investigations completed in the United States which assessed factors associated with willingness to start and adhere to a PrEP regimen, included a quantifiable sample size of adult HLMSM, and stratified results for HLMSM from other ethnic and sexual minority groups. Results: 23 studies were included for review. The authors identified three thematic categories of barriers to PrEP uptake and adherence: individual, systemic, and cultural-level barriers. Within these, the most frequently reported barriers were mistrust of healthcare providers and pharmaceutical companies and concerns about the cost of medication and associated visits. Conclusions: HLMSM face barriers along the PrEP continuum of care related to individual, cultural, and systemic factors. Delineating these barriers allows for a more targeted approach to increasing uptake and adherence for this community.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Comparative analysis of blind techniques for central line placement in hypovolemic patients: supraclavicular vs. infraclavicular approach in cadaveric model

Presenting author: Cameron Smith

Affiliation: Kansas City University

Co-Authors and affiliations: Omer Riyadh MSc, Dominic Maiuro MS, Chloe Maye, Swathi Sridhar MSc, MPH, Kenneth Stewart DO, Melissa Zolnierz PhD

Abstract:

Introduction & Objective: Central venous line placement is an invasive procedure that allows recipients to receive medications rapidly through a catheter placed into a large vein. Patients with hypovolemia (decreased blood fluid) require prompt fluid resuscitation through these lines. The subclavian vein is a common location due to multiple accessibility points. The infraclavicular approach is utilized more often, while the supraclavicular approach is seldom used due to physicians' unfamiliarity with it. This study aims to see if there is a difference between the two approaches in gaining venous access by utilizing cadavers that simulate hypovolemia. We also compare anatomical differences between left and right subclavian access to see if this impacts success as well. **Materials and Methods:** A clinician experienced in placing central lines performed standard SC and IC needle insertion mimicking real-life placement on embalmed cadavers without imaging assistance. Two different latex dyes were used to trace the trajectory of both approaches. After 72 hours, dissections of the insertion areas and a two-person confirmatory system determined the needle and dye penetration of the vessel wall. Biometric data, including subclavian vein width and length, were recorded. **Results:** Comparison of the SC vs IC approach yielded a non-significant difference between the two sides. However, the left side seems to have a higher chance of IC success. Further, males seemed to have a higher rate of success with the IC approach on the left side compared to females but still non-significant. **Conclusion:** The SC and IC locations for venous line placement are comparable techniques for addressing hypovolemia, with no significant difference between males and females. Male IC's left-side approach showed favorability, but due to the sample size, it was not significant. This result could be due to increased breast tissue in females. Follow-up studies are encouraged with larger sample sizes to confirm.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

A case report of haloperidol-induced neuroleptic malignant syndrome

Presenting author: Jordan Pearce Fader

Affiliation: Kansas City University

Co-Authors and affiliations: Madison Evans - AT Still University KCOM Austin Lundgren - AT Still University KCOM Trenton Sigmund - AT Still University KCOM

Abstract:

Neuroleptic malignant syndrome (NMS) is a severe reaction to antipsychotic medications characterized by fever, muscle rigidity, altered mental status, and autonomic dysfunction. Here, we describe the case of a 58-year-old female who presented with altered mental status 2 days after open reduction and internal fixation of the hip. A rapid response team was mobilized when the patient appeared agitated with increased respiratory demand and tachycardia. After being ventilated and moved to ICU, she developed fever and rigidity. A preliminary diagnosis of metabolic encephalopathy of unknown origin was made. Her hospital stay included a course of 5mg of haloperidol to be given every 4 hours for agitation. During her inpatient stay, she continued home paroxetine, which was prescribed for major depressive disorder. Because of her medications and presentation, the differential diagnosis included a workup for neuroleptic malignant syndrome, serotonin syndrome, and infectious processes. Once NMS was determined as the most likely etiology, antipsychotic medications were discontinued, and dantrolene and amantadine were administered, which resulted in resolution of symptoms. This case report demonstrates the importance of early identification of and intervention for NMS.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

HTN and Pneumonia

Presenting author: Dylan Barger

Affiliation: KCU OMS-2

Co-Authors and affiliations: Manik Arora, Jad Imad, Jay Jackson - Kansas City University

Abstract:

Pneumonia is a considerable health concern associated with high morbidity and significant short-term and long-term mortality in all age groups worldwide. Hypertension (HTN) is a serious health comorbidity that impacts the course of many disease processes including pneumonia. This study investigates the interaction of HTN and pneumonia retrospectively using deidentified electronic medical records from a hospital system located in Southwest Missouri. Through analysis of this data, it was found that patients admitted for pneumonia with HTN had a lower mortality rate than those admitted for pneumonia without HTN. Although a major limitation to the study was that the data collected did not include prescription information from patients, based on a current literature review the finding that patients with both pneumonia and HTN had a lower mortality rate may be due to concomitant pharmaceutical therapy including ACE inhibitors, angiotensin II receptor blockers (ARBs) and/or HMG-CoA reductase inhibitors (statins).

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Emerging Trends in the Prevalence of Military Medicine Interest Groups and Specialty Tracks at U.S. Medical Schools

Presenting author: Megan A. Unrath

Affiliation: Kansas City University

Co-Authors and affiliations: 2dLt Donald P. Keating III, OMSIII - Kansas City University; 2dLt Rachel M. Steffes, MS, OMSIII - Kansas City University; Maj Timothy M. Guenther, MD, USAF - University of Wisconsin; Bryan G. Beutel, MD - Kansas City University

Abstract:

A challenge confronting healthcare is the national physician shortage, notably impacting the Department of Defense's recruitment of military physicians. To address this, the Health Professions Scholarship Program is annually awarded to medical students to facilitate their transition into the U.S. Armed Forces. There is a notable absence of military medical education in civilian schools to accommodate the unique interests of these students. While medical schools have adapted with interest groups and specialty tracks to cater to student passions, the presence of military medicine interest groups (MMIGs) and military medicine specialty tracks (MMSTs) remains unexplored. This study aimed to 1) update the prevalence of MMIGs in U.S. medical institutions, 2) identify the presence of MMSTs, and 3) compare military medicine involvement between allopathic and osteopathic programs. In a cross-sectional analysis, surveys were dispatched to 208 U.S. medical schools, with responses from student services or available data from 200 institutions included in the final analysis. A secondary survey was sent to respondents who provided MMIG or MMST contacts. Results indicated that 62% (n=124/200) of schools currently have an established MMIG, a modest growth from 56% (n=70/125) in 2015 (p=0.14). MMST prevalence, however, is minimal at 1% (3/200). Osteopathic institutions demonstrated a significantly greater engagement in military medicine (88.7%) compared to allopathic schools (52.4%) (p<0.001). The involvement of larger national military student organizations could be playing a pivotal role in bolstering osteopathic engagement compared to their allopathic peer institutions. This research underscores the need for comprehensive military medical training in medical schools to meet the interests and career aspirations of their students. Future studies should also evaluate the efficacy of MMIGs and MMSTs in preparing students for military medical roles.

Category: Medical Education

Presentation mode: Poster presentation

Location: Kansas City Campus

An unusual suicide by stabbing: the role of the forensic pathologist in determining cause and manner of death

Presenting author: Karin Wells, MA

Affiliation: Kansas City University

Co-Authors and affiliations: Deiter Duff, MD - Kansas City University, Greene County Medical Examiners Office

Abstract:

Suicides by sharp force are very uncommon. Here we present a 62-year-old female who was found deceased on the kitchen floor next to two knives during a welfare check. She was lying prone with areas of dried blood noted on her lower legs and arms. There were a number of dried blood stains and spatter throughout the decedent's bedroom, bathroom, and kitchen. During the scene investigation, a total of three bottles of lidocaine were found, along with a syringe containing a clear fluid. At autopsy, 23 sharp force injuries to the trunk were noted, most of which were located in the left chest. Additionally, numerous needle punctures were noted along the left breast. Toxicology results from blood and skin samples indicated the presence of lidocaine and its metabolite, MEGX. This case highlights the importance of a thorough scene investigation, autopsy, and toxicological analyses in determining the cause and manner of death, particularly in cases of unusual suicide.

Category: Case Reports and Studies

Presentation mode: Live podium presentation

Location: Kansas City Campus

A retrospective analysis of hospitalization outcomes from two rural hospitals in southwest missouri

Presenting author: Sharon Pala

Affiliation: Kansas City University College of Osteopathic Medicine, Joplin

Co-Authors and affiliations: Micaela Saathoff - Kansas City University College of Osteopathic Medicine, Joplin Chance Benedict. - Kansas City University College of Osteopathic Medicine, Joplin Nicholas Vollano, MBS - Kansas City University College of Osteopathic Medicine, Joplin

Abstract:

Pneumonia and hypotension are two of the most common medical diagnoses seen worldwide. This study was conducted to investigate the risk of mortality due to unspecified pneumonia in individuals with hypotension compared to those without hypotension. The sample population consisted of 6,497 patients from the Freeman Health System in Joplin and Neosho, Missouri. Results from this sample suggest that patients with both pneumonia and hypotension have a higher risk of mortality compared to pneumonia patients without hypotension.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Analyzing SOD Activity in Lung Tissue of a Murine Model of Marfan Syndrome

Presenting author: Matthew Tiojanco

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Marfan syndrome is an inherited autosomal dominant disorder caused by mutation in the Fibrillin-1 gene (FBN1) affecting elastic connective tissue. Marfan syndrome commonly presents with ectopia lentis, aortic dissections, mitral valve prolapse, and COPD in later stages. Patients are shown to have higher concentrations of reactive oxygen species in blood plasma. Increased ROS due to oxidative stress can lead to increased cell damage and death, and have been linked to the formation of aortic dissections. Superoxide dismutases (SOD) are a class of enzymes that convert harmful oxygen radicals into molecular oxygen and hydrogen peroxide. Manganese-containing SOD (MnSOD) regulates radical oxygen located in the Mitochondria. The aim of this study is to explore the role of SOD expression and ROS in relation to COPD found in Marfan syndrome. It is hypothesized that the defect in Fibrillin-1 causes oxidative stress in the lung tissue, which often causes COPD, and it is expected that there would be less SOD activity in tissues from mice with Marfan syndrome. The activity of SOD1 and MnSOD in relation to the oxidative stress that is caused by the deficiency of Fibrillin protein will be determined. To accomplish this, a murine model of Marfan syndrome Fbn1^{mgR/mgR}, mice with a hypomorphic mutation in the Fibrillin-1 gene were compared with homozygous wild type mice. Mice were sacrificed after 1, 4, and 8 week intervals, and both SOD1 and MnSOD expression was quantified in lung tissue. Results showed that there was a significant decrease in SOD1 expression in Marfan mice at the one and four week intervals, but no significant difference in the eight week interval. MnSOD did not have any significant difference in expression in the one and four week Marfan mice, but was expressed at a significantly higher level in the 8 week Marfan mice compared to controls.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Mortality comparison between pneumonia patients with and without a secondary diagnosis of nicotine dependence

Presenting author: Andrew Greek

Affiliation: Kansas City University

Co-Authors and affiliations: Quynh Doan, OMSII - Kansas City University, Jacey Greek, OMSII - Kansas City University, Luke Koenen, OMSII - Kansas City University, James Hearn, PhD - Kansas City University, Nova Beyersdorfer - Kansas City University, Kerry Johnson, EdD - Missouri Southern State University, John Paulson, DO, PhD - Kansas City University

Abstract:

Nicotine is commonly used and highly addictive. Pneumonia can result from infections or non-infectious causes, with smokers showing increased inflammation and reduced pathogen clearance, suggesting a link between nicotine dependence, smoking, and susceptibility to pneumonia. This study aims to establish a relationship between the history of nicotine dependence in pneumonia patients and their mortality rates. This was a retrospective observational study with data collected from hospitals in the Freeman Health System located in Joplin and Neosho, Missouri. Data was collected between January 1, 2019 and December 31, 2021. The investigators employed Wald's method and a two-sample proportion summary hypothesis test to determine the confidence intervals and to compare the mortality rates between the various groups, respectively. The study considered a pool of 8,656 patients. Of this number 4,414 had pneumonia. Those with pneumonia without nicotine dependence totaled 1,720 while 2,694 patients had both pneumonia and nicotine dependence diagnoses. The pneumonia patients with a history of nicotine dependence had the highest mortality rate at 19.58% (95% CI: 17.61-21.55%). Groups without pneumonia but with a history of nicotine dependence or current nicotine dependence had the lowest mortality rates at 5.44% (95% CI: 4.47-6.41%) and 2.70% (95% CI: 2.02-3.39%), respectively. Interestingly, the difference in mortality was not significant when comparing pneumonia patients with a history of nicotine dependence to pneumonia patients without nicotine dependence ($P=0.8102$). There were significantly higher mortality rates for patients with pneumonia, both with and without a history or current nicotine dependence, than for patients with nicotine dependence but without pneumonia. Additionally, patients with a history of nicotine dependence had higher mortality rates than patients with current nicotine dependence regardless of the presence of pneumonia. This study showed that pneumonia has a larger impact on mortality than nicotine usage.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

An atypical presentation of a bilateral biceps brachii tear.

Presenting author: Patrick Riscoe

Affiliation: KCU

Co-Authors and affiliations: Jared Nichols DO- KCU

Abstract:

Introduction: Bicep Brachii tears (BBTs) are inducible via athletic etiologies including lifting, pulling, throwing or traumatic etiologies like lacerations, blunt force trauma, or burns surrounding the area of the biceps tendon, the latter being depicted in our patient. It is not currently common practice to counsel post-burn patients on ways to avoid subsequent musculoskeletal injuries relating to the burn. This case highlights the importance of holistic approaches in managing complex pain patients and counseling patients post-burn. **Case:** A 53-year-old male presented to clinic for low back pain management for spinal stenosis with neurogenic claudication complicated by alcoholic hepatic cirrhosis. On initial exam, a recent skin graft placed to treat a second-degree burn on the left forearm was noted along with a left sided BBT developing shortly after the burn. On his right arm, another BBT had been present for several years. A multifaceted approach including osteopathic manipulative therapy and acupuncture were applied. Later, gabapentin, then narcotic therapy and hospice were added due to decline in functionality due to terminal cirrhosis. **Results:** The patient endorsed some improvement in pain with all methods, gabapentin was later discontinued due to increased confusion. After a year of monthly appointments, his condition worsened leading to hospice consultation. The greatest result was the patient expressing to his wife that his health team truly cared and didn't see him as another "alcoholic". **Discussion:** The left sided BBTs development secondary to the burn highlights the need for counseling patients post-burn to avoid mechanical strain to the affected region to prevent development of similar musculoskeletal injuries. The ongoing care, multifaceted trials of pain relief, and frequent follow-ups with this patient exemplifies the osteopathic philosophy of a patient-centered approach.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

The implications of cardiac rehabilitation in HFpEF individuals with comorbidities.

Presenting author: Jason Onwenu

Affiliation: KCUCOM - Joplin

Co-Authors and affiliations: Dr. Francisco Fuentes, M.D. - University of Texas Health Science Center at Houston/McGovern Medical School

Abstract:

There is evidence that patients with stable chronic heart failure of reduced ejection fraction (HFrEF) with an LVEF < 35% benefit from cardiac rehabilitation. There has been limited data demonstrating the benefits of cardiac rehabilitation for patients with heart failure of preserved ejection fraction (HFpEF). However, most HFpEF patients have co-morbidities, such as Type II diabetes mellitus, obesity, hypertension, hyperlipidemia, and history of myocardial infarction, that would respond to physical activity and help mitigate their effects on heart failure symptoms. Thus, the criteria that determines whether a heart failure patient is eligible for cardiac rehabilitation should not be contingent on ejection fraction, but on metrics that define the co-morbidities (e.g., HgA1c for T2DM, BMI for obesity, lipid panel for hyperlipidemia, etc.). The aim of this study is to demonstrate the utility and benefits of cardiac rehabilitation for HFpEF patients with respect to morbidity and mortality rates, quality of life, rehospitalization rates, and health care spending. Restructuring the eligibility criteria for cardiac rehabilitation for HFpEF patients such that comorbidities are considered would improve morbidity and mortality rates, increase the quality of life, decrease rehospitalization rates, and reduce health care spending.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Former inmate experiences as they related to correctional architectural design features and wellbeing

Presenting author: Tommi Donnelly-Julian

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

This is a dissertation proposal based on a systematic literature review by Engstrom & van Ginneken (2022). They established that there are at least 16 architectural domains that have an impact on inmate wellbeing. There are currently no assessment tools that solely appraise prisons' architectural features to determine potential inmate wellbeing. The present work consists of two parts: the creation of such an assessment tool based on 14 of the 16 architectural domains, as well as a qualitative interview; and the implementation of the assessment tool and interview as a brief pilot study. Participants will be former prison inmates that are no longer under formal correctional supervision recruited from various programs in the Kansas City metropolitan area. Each participant will respond to the quantitative assessment based on the facility in which they were housed and provide qualitative responses to the interview. The assessment will be scored based on the assumption that a higher score is equivalent to better inmate wellbeing in that facility. Thematic analyses will be conducted on coded responses to the interview questions to determine any significant thematic differences between each architectural domain.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Hyperkalemia and Pneumonia - A Retrospective Study on Hospital Outcomes in a Rural Midwestern Population

Presenting author: Melissa Bryan

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Abstract:

Background: Pneumonia stands as a widely known contributor to hospitalization and mortality among adults in the United States. Meanwhile, disruptions in potassium homeostasis are known to be associated with life-threatening cardiac dysrhythmias and in-patient mortality. This study seeks to examine the prevalence of hyperkalemia and its correlation with in-patient mortality among pneumonia patients. Methods: We used electronic medical records to perform a retrospective observational cohort study in Southwest Missouri patients admitted for Pneumonia and Hyperkalemia. The sample population was divided into three populations, patients with pneumonia (P1), pneumonia and hyperkalemia (P2), and hyperkalemia without pneumonia (P3). The goal was to determine and compare the in-patient mortality rates of these populations. Results: Patients with both pneumonia and hyperkalemia (P1) demonstrated the highest mortality rate, ranging from 34.25% to 42.31%, significantly surpassing rates observed in patients with pneumonia alone (P2) or hyperkalemia alone (P3). Notably, patients with pneumonia alone (P2) exhibited a mortality rate comparable to patients with hyperkalemia alone (P3), indicating a distinct impact when both conditions coexist. Conclusion: Our study revealed that patients admitted to the hospital with pneumonia and hyperkalemia had a statistically significant increase in mortality, in comparison to patients with pneumonia or hyperkalemia independently.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Recurrent Tracheal Stridor due to Innominate Artery Compression Syndrome and Esophageal Dilation

Presenting author: Grant Dolan

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Cali Clark

Abstract:

We present a case of an 81-year-old female who was admitted to the Freeman intensive care unit from an outside facility due to recurrent tracheal stridor and respiratory distress. Initial imaging was significant for an anomalous innominate artery that crossed anterior to the trachea and large esophageal dilatation. Esophagoduodenoscopy (EGD) was performed which confirmed food impaction and patient underwent removal of the food bolus, however was still having achalasia symptoms after the procedure. Repeat EGD showed invasive gastric adenocarcinoma causing pseudoachalasia. The patient continued to have symptoms of recurrent stridor leading to respiratory distress. It was determined the combination of esophageal pseudoachalasia due to invasive gastric adenocarcinoma and the anomalous innominate artery caused compression of her trachea, both posteriorly and anteriorly. This combination led to recurrent tracheal stridor and respiratory distress requiring intubation. Given the extent of her gastric adenocarcinoma and worsening symptoms, palliative care was consulted and the patient was transitioned to comfort measures. An anomalous innominate artery running anterior the trachea can lead to tracheal compression by creation of a sling, which compresses the anterior wall of the trachea. This compression leads to ciliary immotility, difficulty clearing secretions, and results in obstruction of airflow and subsequent respiratory stridor and distress. It is this mechanism, in combination with posterior compression via pseudoachalasia, that led to recurrent respiratory distress required intubation in our patient.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Atorvastatin or ezetimibe combined with pcsk9 inhibitor lowers ldl-c and lp(a) in type 1 diabetics

Presenting author: Anila Katragadda

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Brenda Dorcely MD, NYU Langone Health Ira J. Goldberg MD, NYU Langone Health

Abstract:

Introduction Patients with Type 1 Diabetes (T1D) are at an increased risk for cardiovascular disease (CVD) and often use lipid-lowering medications to prevent vascular disease. In addition, increased glycemic variability (GV) is a significant risk factor for CVD. **Methods** This project is a prospective, interventional, cohort study that will recruit 125 adult participants with T1D and LDL-c >100mg/dL. The participants will receive two injections of a PCSK9 inhibitor and take daily oral atorvastatin or ezetimibe for 4 weeks. Before and 4 weeks after lipid-lowering medications, the participants will have research study visits for blood draws and optional vascular studies including endothelial cell harvesting and PET/CT for vascular imaging. Currently, there are 20 participants enrolled in the study. **Results** We compared Lipoprotein A, C-Reactive Protein (CRP), LDL-c, and HDL-c at baseline and after one month of medication use. LDL-c ($p<0.001$) and Lipoprotein A ($p=0.035$) were significantly reduced in patients after treatment (average reduction of 83mg/dL and 1.9mg/dL, respectively). The reduction of LDL-c showed a strong effect size, with a Cohen's d of 27.51. In addition, HDL-c was significantly decreased following treatment ($p=0.003$), an unexpected result. CRP did not have any significant change after treatment ($p=0.70$). Multiple indices of GV were correlated with baseline HbA1c ($p=0.004$), Lipoprotein A ($p<0.001$), and CRP ($p=0.03$). **Discussion & Conclusion:** These results show that a regimen of atorvastatin/ezetimibe combined with a PCSK9 inhibitor significantly lowers cholesterol, especially LDL-c and Lipoprotein A, which contribute to CVD. There is also a significant relationship between GV and biomarkers of CVD. However, there was no significant correlation between GV and total cholesterol, LDL-c, and HDL-c. This could be due to the small sample size of GV data at this point in the study ($n=8$). In total, these results can be used to influence clinical management of T1D and prevention of CVD.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Retrospective analysis on pneumonia and anemia in rural midwestern Missouri

Presenting author: Shelby Mertz

Affiliation: KCU

Co-Authors and affiliations: Jenna Watts - KCU Tyler Stone, MPH - KCU Morgan Stewart, MS - KCU Nova Beyersdorfer - KCU Kerry Johnson, EdD - MSSU John Paulson, DO, PhD, FAAFP - KCU, Freeman Health System

Abstract:

Pneumonia and anemia are prevalent medical conditions with significant implications on patient health, resulting in numerous hospitalizations and deaths. Various studies have been done on the mortality rates of pneumonia and anemia individually. However, fewer describe the mortality of patients diagnosed with pneumonia superimposed on anemia. This retrospective study used data from electronic medical records obtained from rural Southwest Missouri patients who were admitted with either anemia or pneumonia. The primary outcome was mortality while admitted. The study found that patients with pneumonia had a higher mortality rate of 25.8% when diagnosed with comorbid anemia compared to the baseline group of patients with pneumonia without anemia at 14.0%. This study demonstrates a higher mortality in patients with pneumonia and anemia than pneumonia and anemia alone.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Renal Disease and Pneumonia Outcomes Investigated in a Rural, Midwestern Population

Presenting author: Joselyn Schmitz

Affiliation: Student Researcher

Co-Authors and affiliations: Robert Hillard, MD, FCAP Lane Mittler, OMS-II Benjamin Kossman, OMS-II Vishnu Basude, OMS-III Nova Beyersdorfer Kansas City University Kerry Johnson, EdD Missouri Southern State University John Paulson, DO, PhD Kansas City University, Blvd., and Freeman Health System

Abstract:

Background: Both pneumonia (PNA) and kidney disease (KD) are linked to increased mortality rates both worldwide and in the United States. Such diseases have a great effect on rural patients with increased morbidity, making assessment of the combination of PNA and RD relevant in a rural population. **Materials and Methods:** A retrospective cohort study was performed on International Classification of Diseases 10th Edition (ICD-10) data from a hospital system located in Southwestern Missouri. Data was acquired from patients admitted between December 2019 and December 2021. Patients were separated into those with acute kidney injury (AKI) and chronic kidney disease (CKD), with and without PNA. The data was analyzed and subset analysis performed utilizing two sample proportion tests (Wald's method) to compare mortality rates. **Results:** The 95% confidence interval (CI) for the mortality rate of patients with PNA with AKI and PNA with CKD was between 32.87% to 39.28% and 21.93% to 28.00%, respectively, revealing a significant increase in mortality for those diagnosed with AKI combined with PNA – higher than any other disease category. AKI in isolation also had a higher mortality rate than either CKD or PNA alone: 2.63% to 6.00% higher ($p=0.0020$) and 0.99% to 4.49% higher ($p<0.0001$), respectively. **Conclusions:** Based on our results, patients diagnosed with KD and PNA are at a higher risk for mortality than either disease alone and such an increase in mortality is correlative with the presence of AKI. Further studies would not only provide greater statistical power to assess the impact of additional comorbidities but also generalize the results to other population groups.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Tablet based interactive distraction in pediatric patient undergoing same day procedures with general anesthesia

Presenting author: Chance Aplanalp

Affiliation: Dr. Randall Hansen and Dr. Suporn Sukpraput

Co-Authors and affiliations: Freeman Health System

Abstract:

Preoperative pediatric anxiety has been linked to negative outcomes, unsafe inductions, sleep disturbances and reduced patient satisfaction. Traditionally, preoperative medication(s) such as benzodiazepines, beta-blockers and opioids have been given to minimize preoperative anxiety. Although these medications may be effective, several studies suggest that tablet-based interactive distraction (TBID) is equally effective as a preoperative anxiolytic in pediatric patients. TBID involves age-appropriate video games that have been preloaded onto a tablet, and subsequently given to a pediatric patient before the administration of anesthesia. The purpose of this study is to investigate if parent and staff perceived anxiety is reduced in pediatric patients undergoing same day procedures. Tablets with preloaded age-appropriate video games are distributed to pediatric patients from 2-12 years-old undergoing same day surgical procedures. The tablets will be handed out by a preoperative nurse who has been trained and given a script thereby maintaining consistency when presenting the tablets. The patients will be encouraged to play video games until the time of anesthesia induction. Anxiety will be based upon the perception of the parents and the same preoperative nurse presented each tablet. Afterwards, the parents and the preoperative nurse will be given a survey that uses a Likert numbering scale (1-4) to answer 4 questions. The results will be used to determine whether tablet-based interactive distraction decreases preoperative anxiety in pediatric patients undergoing same-day procedures.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

An Exploration of Orthorexia Nervosa Prevalence Rates Across Two Cultural Groups: Caucasian Americans and Japanese Americans and How It Influences Life Satisfaction

Presenting author: Kaitlyn Emmons

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Orthorexia nervosa is an eating disorder where individuals fixate on healthy and pure eating. They often eliminate major food groups from their diet to obtain optimum health. The long-term effects of orthorexia nervosa often include malnourishment, a weakened immune system, abnormally low heart rate, and electrolyte and hormone imbalances. Previous research has mainly focused on orthorexia nervosa and orthorexic behaviors in European countries. This study focused on cross-cultural differences between Caucasian Americans and Japanese Americans to identify between group differences in orthorexic behaviors. The study will use the Test of Orthorexia Nervosa (TON-17), World Health Organization Quality of Life-BREF (WHOQOL-BREF), and the Asian American Multidimensional Acculturation Scale to test for orthorexia nervosa prevalence, quality of life, and acculturation. The clinical research question is to find the prevalence rates of orthorexia nervosa between Caucasian Americans and Japanese Americans, and how it relates to their quality of life. It is hypothesized that Japanese Americans will score higher on the TON-17, indicating positive symptoms for orthorexia nervosa. It is also hypothesized that Japanese Americans will score higher on the WHOQOL-BREF, indicating a higher level of quality of life owing to their belief that consuming healthy food has a positive impact on their quality of life. Key Words: Eating disorder, orthorexia nervosa, Caucasian Americans, Japanese Americans, quality of life.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

The subscapularis healing index: a new scoring system for predicting subscapularis healing following arthroscopic repair

Presenting author: Nicholas Zuk

Affiliation: KCU OMS-II, 2nd author

Co-Authors and affiliations: Ali İhsan KILIÇ - İzmir Bakırçay University Patrick Denard - Oregon Shoulder Institute Javier Ardebol - Oregon Shoulder Institute Teresa Pak - Oregon Shoulder Institute Mariano Menendez - Oregon Shoulder Institute

Abstract:

Background: Previous research has emphasized the impact of prognostic factors on arthroscopic rotator cuff repair (ARCR) success, but specific focus on subscapularis (SSC) healing is lacking. Purpose: This study aimed to identify prognostic factors for SSC healing after ARCR and develop the Subscapularis Healing Index (SSC-HI) by incorporating these factors. Study Design: Case-control study; Level of evidence, 3. Methods: This was a retrospective study using prospectively maintained data collected from patients with isolated or combined SSC tears who underwent ARCR between 2011 and 2021 at a single institution with minimum 2 year follow-up. Functional outcomes were assessed using the American Shoulder and Elbow Surgeons (ASES) score, Subjective Shoulder Value (SSV), and Visual Analog Scale (VAS) pain scale. SSC tendon healing was evaluated via ultrasound at the final follow-up. Multivariate logistic regression analysis was performed to determine the factors affecting SSC healing, and based on these factors, the SSC-HI, which ranges from 0 to 15 points, was developed using odds ratios (ORs). Results: The overall healing failure rate was 10.8% (30/279). Risk factors for healing failure included female sex ($p = 0.008$, $OR = 3.119$), body mass index (BMI) ≥ 30 kg/m² ($p = 0.053$, $OR = 2.323$), supraspinatus muscle fatty infiltration ≥ 3 ($p=0.033$, $OR=3.211$), lower SSC muscle fatty infiltration ≥ 2 ($p=0.037$, $OR=3.608$), and LaFosse classification ≥ 3 ($p = 0.007$, $OR=3.224$). A 15-point scoring system using these risk factors was developed, allowing for the SSC healing failure rate to be predicted using a patient's score. Conclusion: The SSC-HI scoring system integrates clinically and radiological factors to predict SSC healing after surgical repair. Successful SSC healing was found to be associated with enhanced functional outcomes, underscoring the clinical relevance of SSC healing prediction in the management of these tears.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Joplin Campus

Geriatric-Onset of Systemic Lupus Erythematosus may be at Higher Prevalence than Previously Considered: A Case Series

Presenting author: Alexandra Lawlor

Affiliation: Kansas City University

Co-Authors and affiliations: Rachel Alef - NOVA Southeastern University Angelica Roger - NOVA Southeastern University Michael Silverman - West Palm Beach VA Medical Center

Abstract:

Systemic Lupus Erythematosus (SLE) is a rheumatological autoimmune disease presenting with multiple systemic manifestations including, but not limited to, dermatological, cardiovascular, neurological, hematological, and renal expressions. Typically, SLE presents in women of childbearing age. However, its onset may be more prevalent in elderly populations than previously considered. This case series explores five geriatric patients presenting to the same clinic with a late-onset diagnosis of SLE (age at presentation range: 64-80 years old). All patients presented with positive ANA values, 4/5 patients presented with positive dsDNA antibodies, and 1/5 presented with positive anti-Smith antibodies. Patients predominantly presented with musculoskeletal symptoms and varying arthritic presentations. Based on the findings of this study, it may be valuable to adopt a higher clinical suspicion for SLE, especially as presenting symptoms in elderly patients overlap with the more common rheumatoid or osteoarthritis and because all five patients demonstrated moderate to excellent responses to standard treatment. SLE may be under-diagnosed and highly-treatable within the geriatric community, underlying an opportunity to improve their quality of life.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Posterior reversible encephalopathy syndrome related to blood transfusion in a male chronic anemic: a case report

Presenting author: Marianna shaikhly, OMS III

Affiliation: Kansas City University

Co-Authors and affiliations: Sameer Khan, OMS-III Elizabeth Landers, DO Abi Ravichandran, MD

Abstract:

Introduction: Posterior reversible encephalopathy syndrome (PRES) is a clinical-radiographic diagnosis that can be visualized as symmetric posterior white matter vasogenic edema in the occipital and parietal lobes that arises as a consequence of endothelial damage in vulnerable vasculature. PRES can present clinically as visual changes, headaches, seizures and altered mental status. Although most cases of PRES have been described in the setting of hypertension, a rare subset have developed in the setting of blood transfusion in chronic anemia. Currently, there is no established clinical features of PRES in these cases. **Case Presentation:** Here, we present the first documented case of PRES in an adult male following blood-transfusion. The patient is a 69-year-old caucasian male who had an acute exacerbation of chronic anemia and went on to develop PRES following the transfusion of three units of packed red blood cells. **Conclusions** 22 total cases of PRES following a blood-transfusion have been documented. 20 of these cases are reported in females and 1 in an adolescent male. In the setting of chronic anemia correction in patients with identifiable risk factors, care should be taken to transfuse blood products over long periods of time with close monitoring of hemoglobin levels to mitigate the risk of developing PRES. In patients with PRES, early identification and discontinuation of inciting factors are critical to favorable prognosis.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Evaluation of the Oral Health Screening Component of Score 1 for Health

Presenting author: Brian Pholvichitr

Affiliation: CDM- D1 Student

Co-Authors and affiliations: Sharon M. Gordon, DDS, MPH, PhD - Associate Dean for Academic Affairs and Research KCU College of Dental Medicine Latasha Vick, DDS Director of Community Based Education and Outreach KCU College of Dental Medicine

Abstract:

Background: Score 1 for Health is a preventative health screening program that provides local Elementary school children with free, in-health screenings and health education. This program is an essential part of Kansas City University's medical and dental school curriculum. **Objective:** The purpose of this study was to evaluate the oral health data collected from the Score 1 for Health program. This descriptive data will be used to later evaluate the impact that the newly opened dental school had on Elementary school aged children in the local area. **Methods:** This two-part study consisted of 1) An oral health assessment that was performed by KCU dental faculty using the Missouri Preventative Service Program (PSP) form and 2.) An analysis of the data collected from these assessments. **Results:** 431 medical students conducted oral health screenings in 8 different Elementary schools in the Joplin area, serving 1716 children. A total of 509 surveys were collected using the PSP form. The median age was 9 years old, with ages ranging from 3- 11 years. Almost all schools had a greater number of female than male participants. 13.6% of the students a history of rampant decay and 21.2% needed to have early or urgent dental care. **Conclusion:** With the opening of KCU's new dental school and oral health center. It is expected to see a decrease in untreated decay and an increase in dental sealants leading to an overall increase to care and access for dental treatment.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Pediatric vulvodynia: a retrospective analysis of comorbidities using the TriNetX global health research network

Presenting author: Erin Hayes

Affiliation: Kansas City University

Co-Authors and affiliations: Tazim Dowlut-McElroy, MD, MS - Children's Mercy Hospital

Abstract:

Background Vulvodynia is vulvar pain of at least 3 months, without an identifiable cause. In adults, vulvodynia is associated with urogenital symptoms, immunological issues, and other chronic pain conditions. In children and adolescents, only one published case series described an association with urinary symptoms. Associations with other conditions and immunologic issues remain unknown. This study aims to evaluate the association of urogenital symptoms, immunological issues and chronic pain disorders with vulvodynia in children and adolescents using a large research network database (TriNetX). **Methods** This IRB exempt retrospective cohort study utilized de-identified patient medical records between January 2015 and July 2023 from TriNetX, a HIPAA compliant health research network driven by Children's Mercy Hospital Oracle Cerner Millennium data. Statistical analysis was performed using TriNetX and SPSS Version 28.0 (IBM Corp, Armonk, NY). **Results** A single vulvodynia cohort (n=1,410) consisting of females aged 0-18 years was identified from TriNetX. Four sub-cohorts were developed to evaluate associated genitourinary symptoms, chronic pain, immune, and autoimmune disorders with relevant immunological markers. Conditions most commonly associated with vulvodynia included dermatitis and eczema(n=470, 33.3%), pain in joint(n=370, 26.2%), pain with micturition(n=310, 22%) and migraine(n=160, 1.3%). Immunological markers compared between the sub-cohorts indicated C-reactive Protein (CRP) was significantly higher in the genitourinary($1,198.9 \pm 391.3$ mg/L) and chronic pain cohorts(145.7 ± 160 mg/L) ($p=0.03$) compared to the immune disorders and autoimmune cohorts. Eosinophil levels approached statistical significance with levels highest in the autoimmune cohort ($4.2 \pm 2.5\%$) ($p=0.05$) compared to the other three sub-cohorts. **Conclusion** In children and adolescents, vulvodynia is associated not only with genitourinary symptoms but also with chronic pain disorders (migraine headache) and immune disorders (dermatitis and eczema). Elevated CRP in children with vulvodynia, although nonspecific, suggests a possible inflammatory component as etiology. Further research is needed to clarify the etiology of vulvodynia in the pediatric population.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

The Non-coding Heart: Functional Analysis of LncRNAs in Cardiogenesis

Presenting author: Aaron Allard

Affiliation: Kansas City University

Co-Authors and affiliations: Christian Bell Reema Mody Natalia Kibiryeve Douglas Bittel

Abstract:

Congenital heart defects affect nearly 1% or about 40,000 live births per year in the United States and are the leading cause of neonatal death. Development of the heart is an intricate temporal and spatial biological process with many epigenetic factors influencing its progression. In our studies, we focused on non-coding RNAs and their role in regulation of cardiogenesis. Previously, we have shown that small cajal body RNAs, a subclass of small non-coding RNAs, affect alternative splicing of genes important for heart development. Yet, the lncRNAs involvement, specifically lncRNA-miRNA-mRNA regulatory axes, has not been well studied in cardiogenesis. Human cardiac organoids are three-dimensional cellular constructs with biological and functional characteristics similar to the in vivo organ and used to study early stages of heart development. Here, we examine Next Generation Sequencing transcriptomic data from cardiac organoids to investigate regulatory effects of lncRNAs. Using Ingenuity Pathway analysis, MirBase, and lncBook 2.0, we identified novel lncRNA-miRNA interactions affecting genes in pathways involved in cardiogenesis (WNT-Catenin signaling, Cardiac hypertrophy signaling, Factors promoting cardiogenesis in vertebrae). Those findings will serve as preliminary data for further functional analysis of lncRNAs during different stages of cardiogenesis.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Bovine lactoferrin impairs in-vitro growth of neonatal sepsis-causing *Escherichia coli* clinical isolates.

Presenting author: Matthew Mayorga

Affiliation: First author

Co-Authors and affiliations: Joshua L. Wheatley - Children's Mercy Kansas City and University of Missouri-Kansas City Brianna N. Maldonado - Children's Mercy Kansas City Susana Chavez-Bueno - Children's Mercy Kansas City and University of Missouri Kansas City School of Medicine.

Abstract:

Background: *E. coli* is a dominant cause of neonatal sepsis with no prevention currently available. Lactoferrin (LF) is an iron-sequestering antibacterial protein that has been shown to decrease all-cause late-onset sepsis. The impact of LF on impairing growth of neonatal *E. coli* septicemia isolates carrying various iron-acquisition virulence genes has not been investigated. We aimed to determine the effects of bovine lactoferrin (bLF) on in vitro growth of neonatal *E. coli* septicemia strains and to characterize the presence of iron-acquisition virulence genes in the isolates. Methods: We tested six clinical *E. coli* strains obtained from blood of septic neonates including the archetypal RS218 and nonpathogenic DH5 α as control. Isolates represent the most frequent phylogroups and multi-locus sequence types among neonatal *E. coli* strains. Strains were grown in media containing 0, 0.1, 1.0, and 10 mg/mL bLF. Optical density (OD) readings were obtained every 30 min. for 20 h. Experiments were repeated 3 times. OD area-under-the-curve (AUC) values were compared with ANOVA. Whole genome sequencing (WGS) was obtained to determine the presence of iron-acquisition virulence genes. Results: For all strains, the growth decrease with 10 mg/mL bLF compared to zero bLF was highly significant ($p < 0.001$). Growth was also significantly reduced at 1 mg/mL for most strains ($p \leq 0.02$). Growth suppression at 10 mg/mL was greatest in DH5 α . WGS analyses showed that all pathogenic strains carried several iron-acquisition virulence genes, with *chuA* (hemin receptor), *fyuA* (siderophore receptor), *irp2* (protein-2-peptide synthetase), and *sitA* (iron transport protein) found in all. Conclusions: Bovine LF effectively impairs growth of neonatal sepsis-causing *E. coli* regardless of iron-acquisition genes. Future studies will examine additional isolates and the effect of greater bLF concentrations. These data have the potential to inform dosing regimens for additional in vivo studies to further assess bLF's protective effects against neonatal sepsis.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Examining the efficacy and overlap between CBT and ADHD coaching in ADHD treatment: A systematic narrative literature review

Presenting author: Stephanie Topham

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

A systematic narrative literature review will be conducted to examine current research for the efficacy of cognitive behavioral therapy (CBT) and ADHD (attention-deficit/hyperactivity disorder) coaching for ADHD treatment. The aim of this study is to indicate which treatment approach between CBT and ADHD coaching yields better outcomes for symptom mitigation in individuals with ADHD according to the literature. This research will work to determine the presence of overlap between the two modalities as well as common factors for efficacy across both modalities. The PICO model will be used to set systematic guidelines for inclusion criteria with databases being recorded throughout the process. The results from this study could be helpful in indicating the more effective treatment approach between ADHD coaching and CBT to improve treatment planning and outcomes of adults with ADHD.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Kienbock's conundrum: a tale of a lone wrist's struggle

Presenting author: Brady Clark

Affiliation: Kansas City University

Co-Authors and affiliations: Brian Harvey, DO - Children's Mercy Hospital

Abstract:

The patient is a left-hand dominant 16-year-old male who presented to the clinic complaining of right wrist pain. He states without a mechanism of injury he started having decreased ROM and pain over the past three years. During a recent football game, he had an acute increase in pain which prompted his appointment to clinic. He complained of dorsal and volar pain at the wrist and described it as stabbing and non-radiating. The pain is not constant. He stated pain increased when he kept it still for too long. The pain decreased with movement and wrapping of the wrist. The patient denied any bruising, swelling, numbness, tingling, or nighttime pain. On physical exam, inspection revealed mild swelling to dorsum of right hand. Pain with palpation was appreciated at the distal radio-ulnar joint with minimal pain over the lunate and scaphoid bones of the right hand. Right wrist flexion/extension were decreased by 10 degrees and ulnar/radial deviation were decreased by 5 degrees secondary to pain. Strength of right wrist flexion, extension, supination, pronation, and ulnar and radial deviation were all 4/5 with pain. Grip strength was 4/5 without pain. Neurological exam revealed intact sensation to entire distal upper extremity. Functional/Provocative tests showed pain with piano key sign, pain with the Watson test, and a positive ulnar fovea. An XR Wrist Complete Right was ordered and showed collapse of the lunate bone, prompting the diagnosis of avascular necrosis of the lunate (Kienbock's Disease). The patient was placed in a short arm cast to protect the wrist during activity, and he was referred to orthopedic surgery for consultation. The patient underwent a right distal radius vascularized bone graft to the right lunate. He followed up with the orthopedic team with no complains and appropriate healing one month after surgery.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Telehealth and Burnout for Mental Health Providers in Rural Missouri

Presenting author: Gracie Ellis

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

There is a shortage of mental health providers in rural areas across the Midwest. Many rural mental health providers are having to balance heavy caseloads and the ethical choice of choosing to refer individuals to services in the city that are maybe not within their means. To combat this, the use of telehealth services to provide patient care has become of growing popularity. The shift to utilize telehealth services has become even more prevalent since the COVID-19 pandemic. However, using these services to provide patient care has caused clinicians to have less face-to-face interactions with clients, work odd hours, and have more difficulty in managing work/life balance. The purpose of the proposed study is to examine if the use of telepsychology/telehealth services are increasing mental health provider burnout in rural Missouri. The goal of this dissertation is to increase awareness about the unique challenges that are faced by mental health providers in rural Missouri that could be contributing to burnout. By increasing awareness, officials, clinicians, and members of these respective communities might be able to begin addressing these challenges to benefit the field of rural mental health. It is proposed that the more hours a mental health provider spends using telehealth throughout the week will be positively correlated with a higher degree of burnout as measured by the Maslach Burnout Inventory.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Bilateral 1st rib fractures in high school football player: A case report

Presenting author: Jens Mellby

Affiliation: Kansas City University

Co-Authors and affiliations: James Roberson, MD - Children's Mercy

Abstract:

15 year old male presented with right shoulder pain from weight lifting. Patient did not recall any pain or injury with power clean but did have pain with military press. He denied any pop and only had pain in the posterior shoulder along the scapula. At subsequent follow-ups, patient had gradual improvement in pain and eventually only had pain during heavy overhead lifts which he largely avoided. He denied any difficulties with breathing. At 6 month follow-up, patient complained of left first rib pain for the previous month. He did not recall any specific injury to the left 1st rib, but noticed similar pain to right 1st rib injury 6 months prior. On physical exam, inspection of the right shoulder revealed no swelling or ecchymosis. No pain with palpation of the 1st rib/neck. Tender along the scapula and the trap/lats/teres major. Pain with prone I/T/Y's both active and resisted. At subsequent follow-ups, no longer tender along the right scapula and the trap/lats/teres major but pain with palpation of the 1st rib/neck. FROM of the right shoulder without pain. At 6th month follow-up, patient had pain upon palpation of the 1st rib/neck on the left, but no longer on the right. FROM of the right and left shoulders without pain. Shrugging of the scapula and shoulders caused no pain. 5/5 strength with abduction and forward flexion of the shoulders/arms without pain. Patient received CXRs showing right first rib fracture and subsequent left first rib fracture with healing of the right, normal DEXA scan, normal vitamin D level, and an unremarkable MRI. The plan for the patient included rest, ice, physical therapy with HEP, and ibuprofen PRN. Patient was cleared to continue light core and lower body weight lifting as tolerated. Advised to avoid throwing, contact, or other overhead lifting activities.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

A Comparison of the Morphology of the Obturator Nerve in Males vs. Females: An Anatomical Study

Presenting author: Michaela Tonsager

Affiliation: Kansas City University

Co-Authors and affiliations: Taryn Bissing- Kansas City University

Abstract:

This is a cadaveric study that explores the morphology of the obturator nerve in the context of adjacent structures, focusing on a comparison between males and females. It bases its methods off of an anatomical study by Jo et al. (2016) who suggested that a male versus female comparison of the obturator nerve's course and location would be a beneficial contribution to the literature. The bony prominence at the exit of the obturator nerve from the obturator foramen was used as the point of reference. Its location relative to the anterior superior iliac spine, pubic tubercle, inguinal ligament, femoral artery, and adductor longus was measured. Various measurements between these adjacent structures were obtained based on the methods used in the anatomical study listed above. A two-tailed t-test will be used to evaluate for any potential significant differences between males and females for each individual measurement. The results of this study and further understanding of the anatomical differences of the obturator nerve is relevant clinically in multiple settings. Obturator nerve injuries can occur in various gynecologic or orthopedic surgeries, fascial entrapment, or during performance of an obturator nerve block. Understanding the location of the nerve in males versus females can further assist clinicians and surgeons in approximating its location when performing these procedures.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Case Report of a Pediatric Patient with Hereditary Hemorrhagic Telangiectasia

Presenting author: Lauren Evelti

Affiliation: KCU

Co-Authors and affiliations: Dr. Olga Brea, MD, FAAP, SSM Health Pediatrics St. Mary's Hospital
Jefferson City, MO

Abstract:

Hereditary Hemorrhagic Telangiectasia is a disease that affects the vascular system presenting with epistaxis, telangiectasias, and visceral arteriovenous malformations due to increased angiogenesis. Individuals present with a wide variety and severity of symptoms which is why screening and monitoring is critical. Additionally, this can make establishing a diagnosis difficult causing Hereditary Hemorrhagic Telangiectasia to be underdiagnosed. The pediatric population poses another difficulty to diagnosis due to their age and lack of symptoms. Here we review the importance of early diagnosis, screening, and testing especially in the pediatric population to improve quality of life.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

A retrospective analysis of outcomes in patients with diabetic and pneumonia comorbidities in a rural midwestern area

Presenting author: Timothy Small

Affiliation: Kansas City University

Co-Authors and affiliations: James Hearn, JD, LLM, MPH, D.Bioethics, D.Min - Kansas City University
Elise Freij - Kansas City University Hayden Smith - Kansas City University Taygan Brant - Kansas City University
Nova Beyersdorfer - Kansas City University Kerry Johnson, EdD - Missouri Southern State University
John Paulson, DO, PhD, FAAFP - Kansas City University

Abstract:

Background: Both pneumonia and diabetes are leading causes of hospitalization and mortality in the United States. It has been previously proposed that diabetes increases the risk of infection. There is little information regarding mortality rates for patients hospitalized with pneumonia and with and without diabetes as a comorbidity. **Methods:** A review of electronic medical records was used to conduct a retrospective study of mortality rates for diabetic and non-diabetic patients hospitalized with pneumonia and patients hospitalized with diabetes-related illnesses. They divided the patients into three groups. Group P3 consisted of 6,312 diabetic patients without pneumonia. Groups P2 and P1 consisted of 2,717 non-diabetic patients with pneumonia, and 1,697 diabetic patients with pneumonia, respectively. **Results:** P1 had 311 patient deaths ($18.33\% \pm 1.84$), P2 had 474 patient deaths ($17.45\% \pm 1.42$), and P3 had 318 patient deaths ($5.04\% \pm 0.54$). Both P1 and P2 had higher mortality than did P3. **Conclusion:** This study showed no significant difference between the mortality rates of the two patient groups hospitalized with pneumonia. However, this study did discover higher mortality rates for both patient groups hospitalized with pneumonia as compared to the patient group hospitalized without pneumonia, indicating pneumonia to be deadlier.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Minimizing complications of venous malformation in pediatric age using a series approach to treatment: A case report

Presenting author: Ashley Lesser

Affiliation: KCU

Co-Authors and affiliations: Christian Nassif - KCU Wayne F Yakes - Swedish Medical Center, Yakes Vascular Malformation Center

Abstract:

Pediatric vascular malformations arise in approximately 0.5% of the population [1]. Venous Malformations (VM) result from congenital inborn errors in the development of the venous channels and grow with the individual [2]. VMs vary in location, clinical presentation, and treatment. Pediatric VMs present increased challenges in treatment in that additional considerations such as future growth, reoccurrence, and mobility must be considered. We report a pediatric patient presenting with a large, time sensitive, VM of the lower extremity with associated decreased mobility, sensation, and impending bone decay. Due to the complexity of the VM and the additional pediatric considerations, a novel ethanol sclerotherapy series approach with an accompanying medication regimen was utilized leading to 98% resolution of the VM with preserved mobility and sensation.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Symptomatic colonic mucosal prolapse through the anastomosis after low anterior resection

Presenting author: Christian Nassif

Affiliation: Kansas City University

Co-Authors and affiliations: Ashley Lesser, MBA BS Kansas City University Jeremy Deutsch, MD
University of Kansas School of Medicine-Wichita

Abstract:

Low Anterior Resection (LAR) surgery is used to treat rectal cancer by resecting the colorectal segment containing the cancer, and anastomosing the colon to the rectum.¹ LAR is a well established surgical procedure and has a somewhat high incidence of known post surgical complications.^{2,3} We report a patient who underwent LAR for adenocarcinoma two years prior, and presented with rectal bleeding and mucoid stools. A diagnostic colonoscopy was performed and revealed a colonic mucosal prolapse through the end to side recto-colonic anastomosis, an exceedingly rare complication of LAR. A 3 to 4 cm segment of mucosa proximal to the anastomosis, showed a few ulcerations. Biopsies taken were consistent with colitis related to the mucosal prolapse.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Nivolumab-induced immune mediated colitis localized to the distal colon, seven years into therapy

Presenting author: Christian Nassif

Affiliation: Kansas City University

Co-Authors and affiliations: Mouna Todorov, MD Heartland Pathology Imad I Nassif, MD University of Kansas School of Medicine-Wichita

Abstract:

Nivolumab targets programmed cell death protein 1 (PD-1) and is used in cancer treatment by increasing the immune response. It has rarely been associated with Immune Mediated Colitis (IMC). We present a 66-year-old man, with metastatic lung adenocarcinoma, treated with Nivolumab for seven years, who developed tenesmus and mucoid, bloody diarrhea. Colonoscopy revealed endoscopic and histopathological Ulcerative Colitis (UC) like changes, limited to the distal 25 cm of the colon. Although Nivolumab-induced IMC resembling UC is a known adverse effect, there are very few reports of Nivolumab-induced IMC localized to the distal colon and occurring seven years after treatment initiation.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Retrospective study comparing mortality rates of patients with pneumonia and patients with the comorbidity, coronary artery disease, in rural United States community hospitals

Presenting author: Morgan Irvin

Affiliation: Kansas City University College of Medicine

Co-Authors and affiliations: Miranda Kennedy- Kansas City University College of Medicine Het Patel- Kansas City University College of Medicine Lukas Vopnford- Kansas City University College of Medicine Nicole R Ford, PhD- Kansas City University, Department of Biosciences Nova Beyersdorfer- Kansas City University, Department of Biosciences Kerry Johnson, EdD- Missouri Southern State University, Joplin, MO John Paulson, DO, PhD- Department of Primary Care, Kansas City University College of Medicine. Freeman Health System, Joplin, MO

Abstract:

Pneumonia and Coronary Artery Disease are both prevalent illnesses that afflict people in the US, yet there is little data comparing the impact these diseases have on patient mortality rates. The purpose of this retrospective study is to compare mortality rates in patients diagnosed with pneumonia without coronary artery disease, coronary disease without pneumonia, and those diagnosed with both diseases. Patient data was obtained from the electronic medical record from Freeman Health System in Joplin and Neosho, Missouri, using the International Classification of Diseases, tenth revision (ICD-10) diagnostic codes for a period of 36 months. Of the patients included, those with pneumonia and coronary artery disease had the highest mortality rates. Patients with pneumonia and coronary artery disease had a significantly higher mortality rate compared to those with coronary artery disease without pneumonia ($p < 0.0001$). The difference between patients with pneumonia and coronary artery disease and those with pneumonia without coronary artery disease was not significant ($p = 0.0668$). These results suggest pneumonia is a deadlier disease, though more research is needed to support this claim. It is imperative to expand our understanding of the relationship between pneumonia and coronary artery disease to improve outcomes of the patients who suffer from these illnesses.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Variables in increased stroke burden in the South Asian population

Presenting author: Liana Jamil

Affiliation: Kansas City University

Co-Authors and affiliations: Sahibjot Saini - Kansas City University

Abstract:

Despite stroke being the leading cause of death worldwide, there is limited information on ethnic variations in stroke incidence and the causes for those variations. It has been noted Western countries have experienced about a 42% decrease in stroke incidence over the past two decades, whereas countries such as India have reported substantial increases in stroke incidence over the same time period. Furthermore, South Asians account for about 40% of global strokes while only accounting for about 24% for the world's population. Although there is increasing evidence of inter-ethnic differences in stroke incidence, studies looking into the differences in risk factors for developing stroke are sparse. Any existing studies are limited by incomplete understanding of risk factors, stroke, and stroke type due to unreliable reporting, small sample sizes and underrepresentation in global studies. The purpose of this study was to look at existing literature to discern and identify prevalent risk factors that put the South Asian population uniquely at risk for stroke. Epidemiological studies were analyzed to identify both traditional risk factors as well as nontraditional population-specific risk factors to determine their roles in the overall stroke burden in South Asia. We found that traditional stroke risk factors, including diabetes, hypertension, hyperlipidemia, and tobacco abuse have a higher prevalence in South Asia compared to the global average. Also, rapid urbanization and social determinants of health may contribute to the increased stroke burden. Limited access to thrombolytic intervention with tissue plasminogen activator and availability of tertiary care centers hinders treatment of stroke before leading to disabling symptoms or death. Limited general education and understanding of stroke in the population further can impede seeking out intervention. In addition, lack of access and availability of rehabilitation facilities worsen post-stroke outcomes for patients from the Indian subcontinent.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Dye fading in cotton fabrics to determine time since death in forensic context

Presenting author: Alexa Geist

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

The determination of time since death is an important variable in forensic casework. Current methods to determine time since death rely on characteristics of the body. However, these characteristics are often highly variable due to factors such as the health, age, sex, and cause of death of the individual. The items found on remains, such as clothing, are often manufactured to known standards and therefore may be less variable. Clothing would then aid in determining time since death in these cases. This study aims to use dye fading in textiles as a measure of time independent of the body. In this study, red, white, and blue cotton t-shirts were placed outdoors for 12 weeks, and samples were taken weekly from the front and back of the shirt, where the back of the shirt was in direct contact with the soil. These samples were then analyzed for wavelength at maximum reflectance using UV-Visible Spectrometry. This wavelength signifies the true color of the fabric. From this study, we observed the front of the t-shirts fading more rapidly, allowing the creation of a ratio between front and back samples. With these results, we will determine a correlation of fading with respect to time to establish time since death when human remains are found.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

functional and structural connectivity of the cerebellum to the amygdala in Bipolar Disorder

Presenting author: Peyton M Berardi

Affiliation:

Co-Authors and affiliations: Joseph Shaffer

Abstract:

Traditionally, the cerebellum has been thought to be primarily responsible for motor function, however, an increasing number of studies have found a link between the cerebellum and bipolar disorder (BD). Given the well-established role of the limbic system in BD, we seek to determine whether the cerebellum is affecting the limbic system, particularly the amygdala, in BD. Identifying such a relationship could provide insight into designating BD. . We performed an analysis of a large dataset collected from 4 MRI studies of BD retrieved from the NIH Data Archive. T1/T2 and resting state MRI images of each subject's brain were analyzed to identify structural and/or functional connectivity differences in the cerebellum and amygdala of BD participants. Our findings help clarify the role of the cerebellum in BD.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Functional and structural connectivity of the cerebellum to the amygdala in bipolar disorder

Presenting author: Peyton M Berardi

Affiliation: Joseph Shaffer

Co-Authors and affiliations:

Abstract:

Traditionally, the cerebellum has been thought to be primarily responsible for motor function, however, an increasing number of studies have found a link between the cerebellum and bipolar disorder (BD). Given the well-established role of the limbic system in BD, we seek to determine whether the cerebellum is affecting the limbic system, particularly the amygdala, in BD. Identifying such a relationship could provide insight into designating BD. . We performed an analysis of a large dataset collected from 4 MRI studies of BD retrieved from the NIH Data Archive. T1/T2 and resting state MRI images of each subject's brain were analyzed to identify structural and/or functional connectivity differences in the cerebellum and amygdala of BD participants. Our findings help clarify the role of the cerebellum in BD.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Pneumonia and Respiratory Failure: A Retrospective Analysis of Hospitalization Outcomes from Rural Southwest Missouri

Presenting author: Pratyusha Tadepalli

Affiliation: KCU Joplin

Co-Authors and affiliations: Philip Haynos - KCU Joplin, Reice Brown - KCU Kansas City, Kaushal Dholakia - KCU Kansas City

Abstract:

Pneumonia is the first leading infectious disease cause of death in the United States. This retrospective observational cohort study reviewed electronic medical records of patients from southwestern Missouri and surrounding areas including Arkansas, Oklahoma, and Kansas that received care from the Freeman Health System. Patients that were admitted with and without a pneumonia diagnosis, as well as their comorbid respiratory failure, were considered. Results showed that patients who had a diagnosis of pneumonia and respiratory failure had the highest mortality rate when compared to rates of patients who had one or the other diagnosis.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Effects of Pregnane X Receptor Expression and Activation on Human Breast Cancer

Presenting author: Pratyusha Tadepalli

Affiliation: KCU Joplin

Co-Authors and affiliations:

Abstract:

The human Pregnane X Receptor (hPXR: NR1I2) is a ligand activated nuclear receptor that is known to regulate the expression of numerous genes involved in several cellular processes, including the metabolism of endobiotic and xenobiotics, cell cycle regulation, and cell proliferation rate. Previous studies have suggested that hPXR plays a central role in the development of chemotherapeutic resistance in both liver and colon cancers, but new data suggests the same may be true in human breast cancers. The purpose of our study was to investigate the roles hPXR has in altering the proliferation rate, migration, and invasiveness of human breast cancer cells in-vitro, as well as determining any gene expression changes that may help to explain these differences. MDA-MB-231 triple negative breast cancer cells were stably transfected with human PXR and treated with the hPXR agonist, SR12813. Preliminary data suggests that when compared to wild type MDA-MB-231 cells, the hPXR transfected cells proliferated at a faster rate, but were slower to migrate and invade through Matrigel. Additionally, real-time qPCR data showed that increasing hPXR activity may be correlated with the decreased expression of the CDKN2A and INK4A tumor suppressor genes. Future studies will aim to use Next Generation RNA Sequencing to look for changes in global gene expression patterns and further define their specific roles in activity changes between wild type and hPXR activated breast cancer cells.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Joplin Campus

Evaluation of Surgeon Education on Opioid Prescribing Practice in an Orthopedic ASC

Presenting author: Simran Aulakh

Affiliation: KCU

Co-Authors and affiliations: Jake Rodgers, D.O. - Des Moines University

Abstract:

The over prescription of opioids after orthopaedic procedures is well documented and infers an issue of awareness in over-prescribing. There is a lack of consensus among surgeons as to how to appropriately prescribe opioids to provide adequate post-operative pain relief. The goal of the current study was to analyze the effectiveness of prescribing guidelines and to determine how needed 'as needed' post-operative pain medications are. An internal audit taken in 2018 at the Orthopedic Outpatient Surgery Center in West Des Moines, Iowa examined 14 orthopedic surgeons for two weeks and their prescriptions given for five common orthopedic procedures. After converting the prescriptions into Hydrocodone 5/325 equivalents, the mode prescription for each surgeon by procedure was calculated and distributed. The surgeons were given educational information about physician influence in the opioid epidemic and were recommended to decrease their opiate prescriptions to match the surgeon with the lowest prescription for the procedure. A one month and one year follow up was performed to track changes and prescribing habits (Figure 1). Over the course of this study, all five procedures had a marked decrease in maximum prescription. The most significant was Hip Scope, which decreased by 60%. Procedures that demonstrated greatest variability in prescribing practices had the greatest change, however this was not uniformly adopted. This novel study suggests that an effective means to overprescribing while still maintaining adequate pain control is by recommending post-operative prescribing guidelines based on the minimal opiate prescription for a procedure.

Category: Medical Education

Presentation mode: Poster presentation

Location: Joplin Campus

Neonatal risk of low birth weight associated with in utero exposure to antiretroviral therapy in rural Kenya

Presenting author: Durganili Balasubramaniyan

Affiliation: KCU OMS-III

Co-Authors and affiliations: Kaheerman Saibire - KCU OMS-III Dr. Desai - KCU

Abstract:

Human immunodeficiency virus (HIV) is a global health issue with an estimated 38.4 million people living with the virus. While there is currently no cure, antiretroviral therapy (ART) has been developed to maintain a healthy lifestyle. The World Health Organization has highlighted ART regimens recommended in pregnant women to reduce the risk of vertical transmission. However, studies are highlighting that ART may increase the risk of adverse neonatal outcomes including preterm birth, low birth weight, and stillbirth. Our study aims to understand this relationship, focusing on populations in rural Kenya. A cohort study was conducted utilizing a KCU Institutional Review Board approved survey to gather information about the patient's pregnancy and neonatal outcomes. The survey tool, which included open-ended questions regarding HIV and medical history, was distributed to patients presenting at a clinic in Kenya during the fall and winter of 2023. There were 22 eligible participants aged between 18 to 65 years old, who had a total 67 live births. Of the 22 patients surveyed, 55% (n=12) were reported as HIV positive while 45% (n=10) were reported as HIV negative. The 22 live births of the HIV negative mothers were all reported to be of normal weight and full term babies. Of the 45 live births from the HIV positive mothers, 24 were births when the mothers were actively on ART. 54.2% (n=13) were full term, 29.2% (n=7) were preterm, 12.5% (n=3) were very preterm, and 4.2% (n=1) were extremely preterm. The results indicate there were no significant differences in neonatal outcomes between HIV positive and negative mothers. There were no observed differences in birth weight and in gestational age across the live births. Limitations such as sample size can be addressed in future studies to continue building on our understanding of the relationship between ART and neonatal outcomes.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Studying the Knowledge, Skills, and Attitudes of Young Women Related to Feminine Hygiene Awareness

Presenting author: Sruthi Kundur

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Dr. Christi M. Navarro - Nova Southeastern University

Abstract:

Improving the knowledge, skills, and attitudes regarding feminine hygiene can have a transformative impact on the lives of women, especially those living in poverty who may not have access to affordable feminine hygiene products and lack the education needed to use them safely and effectively. Working on improving knowledge, skills, and attitudes about feminine hygiene will help transform the lives of women. Although people have access to menstrual essentials, many lack the education to safely use them. The question being addressed in the research was: Does providing menstrual hygiene management resources and education programs to females improve their knowledge, skills, and attitudes? This project measured how effectively providing menstrual hygiene management resources and education programs to young women can improve their knowledge, skills, and attitudes toward the subject. Data from 17 individuals between the ages of 17 and 25 were used in the study and acquired with the help of an NGO organization in India, done virtually. The NGO works to provide women with the confidence and education they need to be successful in their future endeavors. The research consisted of a pre-assessment survey, an educational program, and a post-assessment survey. In the pre-assessment survey, participants were asked a series of ten questions about their baseline knowledge of feminine hygiene. The educational program served as a platform to teach young women about various menstrual products and ways they can manage their feminine hygiene. Lastly, the post-assessment survey was administered after the educational program to measure the young women's increase in knowledge, skills, and attitudes. Findings show that the educational program component successfully improved participants' overall learning outcomes of knowledge, skills, and attitudes about feminine hygiene between the pre-assessment and post-assessment surveys. This suggests that the educational component was effective.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Kansas City Campus

Streptococcus anginosus bacteremia and splenic vein thrombophlebitis after sigmoid colon perforation by a toothpick

Presenting author: Omer Riyadh

Affiliation: Kansas City University

Co-Authors and affiliations: Mostafa Hamada- Kansas City University Kayla Tran - Kansas City University Omar Rehman - Freeman Hospital // Kansas City University Omron Hassan - Freeman Hospital // Kansas City University

Abstract:

Accidental foreign body ingestion is not an uncommon occurrence, yet instances involving toothpicks are rare and can lead to severe complications. Cases of toothpick ingestion most often occur in children aged 6 months to 6 years and are even less common in adults. A review article encompassing 136 cases of toothpick digestion between 1994 and 2012 found that all ingested toothpicks perforated an organ at the time of extraction, with the exception of only one case. Perforation may lead to subsequent bacteremia, sepsis, and even death. *Streptococcus anginosus* is often found within normal gastrointestinal microbiota; however, they are opportunistic pathogens and may lead to widespread infection when given a site of entry through intestinal mucosa. Resultant septic thrombophlebitis is exceptionally rare, and we present the first known reported case of splenic vein thrombosis associated with *streptococcus anginosus*. The present case highlights the importance of an iterative diagnostic approach in the face of recurrent or evolving symptoms.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Tablet based interactive distraction in pediatric patient undergoing same day procedures with general anesthesia

Presenting author: Chance Aplanalp

Affiliation: Freeman Health System

Co-Authors and affiliations: Randall Hansen, DO Alex Otto, DO Kent McIntire, DO, Suporn Sukpraut-Braaten, PhD

Abstract:

Introduction: Preoperative pediatric anxiety has been linked to adverse outcomes, unsafe inductions, sleep disturbances, and reduced patient satisfaction. Traditionally, preoperative medication(s) such as benzodiazepines, beta-blockers, and opioids have been given to minimize preoperative anxiety. Although these medications may be adequate, several studies suggest that tablet-based interactive distraction (TBID) is equally effective as a preoperative anxiolytic in pediatric patients. TBID involves age-appropriate video games that have been preloaded onto a tablet and subsequently given to a pediatric patient before the administration of anesthesia. This study aims to investigate if parent and staff perceived anxiety is reduced in pediatric patients undergoing same-day procedures. **Methods:** This is a prospective observational study. Tablets with preloaded age-appropriate video games are distributed to pediatric patients from 2-12 years old undergoing same-day surgical procedures such as tonsillectomy, adenoidectomy and tympanostomy tubes. A trained preoperative nurse will be given a script as the tablets are distributed, thereby maintaining consistency when presenting the tablets. The patients will be encouraged to play video games until anesthesia induction. What are the outcomes used to test the hypothesis? Anxiety will be based upon the perception of the parents and the same preoperative nurse presented each tablet. How to measure the outcomes? Afterward, the parents and the preoperative nurse will be given a survey that uses a Likert numbering scale (1-4) to answer a set of four questions. These questions evaluate the perceived anxiety that the patient experienced. **Results:** The results will be used to determine whether tablet-based interactive distraction decreases preoperative anxiety in pediatric patients undergoing same-day procedures. **Conclusion:** Explain how to use the results from this study to implement it in the practice. Limitations of the study include small sample size, limited to one practice, anxiety being subjective etc.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Joplin Campus

Systematic review of tablet based interactive distraction in pediatric patient undergoing same day procedures

Presenting author: Chance Aplanalp

Affiliation: Freeman Health System

Co-Authors and affiliations: Randall Hansen, DO Alex Otto, DO Kent McIntire, DO, Suporn Sukpraut-Braaten, PhD

Abstract:

Introduction: Evidence showed tablet-based interactive distraction (TBID) is effective as a preoperative anxiolytic in pediatric patients. TBID involves age-appropriate video games that have been preloaded onto a tablet and subsequently given to a pediatric patient before the administration of anesthesia. The purpose of this study is to provide a comprehensive analysis of previous studies that have investigated the use of TBID to minimize preoperative anxiety. Methods: The literature criteria for this systematic review included randomized control trials and prospective studies that used TBID as a method to reduce preoperative anxiety in pediatric patients ages 1-12. Data extraction concentrated on the patient population to which the tablets were introduced, the method of tablet administration, how anxiety was evaluated, who completed the evaluations, and the results of each publication. This chosen data set is to systematically understand if TBID is effective and to identify the most practical ways to implement TBID. Collected data from the selected publications were entered into a table. Results: For this systematic review, 11 publications were screened for eligibility. These studies were selected based on the keywords “tablet-based interactive distraction” in PubMed. This data represented 475 total patients (T) and 249 patients who implemented tablet use (TAB) the other 226 patients were used as various control groups. The outcome of each study is summarized and placed into a table. Discussion: This study is expected to provide an overall assessment of the effectiveness of TBID and evidence-based guidelines as clinicians incorporate tablet use into preoperative protocols. Time to give the tablet to the children impacts its efficiency. Conclusion: Tablet use demonstrated an effective reduction in perioperative anxiety, emergence of delirium, and time-to-discharge, increasing parental satisfaction compared to midazolam. These results can be achieved when implemented under specific parameters such as tablet introduction timing, game selection based on interest, etc.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Bilateral tensor fascia suralis muscles and unilateral accessory biceps femoris muscle: a cadaveric case study

Presenting author: Makayla M Swancutt

Affiliation: Kansas City University Department of Pathology and Anatomical Sciences

Co-Authors and affiliations: Jared M Hailey - Kansas City University Jennifer F Dennis - Kansas College of Osteopathic Medicine

Abstract:

This study reports the findings of bilateral TFS and a unilateral accessory muscle belly of the biceps femoris muscle in a 72-year-old female. These findings were first identified during educational dissection of the lower extremity by first-year medical students. The accessory muscle belly and bilateral TFS were further dissected to identify their origin and insertion. Specimens of the TFS crural fascia insertions underwent immunohistochemical staining to determine their composition. The left TFS (length, 22.83 ± 0.05 cm; width, 6.24 ± 0.14 mm) originated from the biceps femoris long head muscle (BFLH) and inserted onto the crural fascia overlying the lateral gastrocnemius muscle. The right TFS (length, 114.89 ± 0.62 mm; width, 9.82 ± 0.11 mm) originated from the BFLH and inserted onto the crural fascia overlying the medial gastrocnemius muscle. The length of the crural fascia insertion was 76.26 ± 3.00 mm and 127.69 ± 1.41 mm in the left and right limbs, respectively. An accessory biceps femoris muscle belly was identified on the left limb. It originated from the greater trochanter and inserted on the distal end of the biceps femoris long head. The common peroneal nerve passed under the accessory muscle belly 20.3 cm inferior to the lower border of the piriformis. This data characterizes the novel finding of bilateral TFS muscles with a unilateral accessory biceps femoris muscle belly. To the best of our knowledge, this presentation has not been previously explained by cadaveric or imaging studies.

Category: Case Reports and Studies

Presentation mode: Live podium presentation

Location: Kansas City Campus

Endocervical adenocarcinoma – case report with recurrence and metastatic peritoneal implants

Presenting author: Minah Tariq

Affiliation: Kansas City University

Co-Authors and affiliations: Dr. Jack T. Adcock - Kansas City University

Abstract:

Endocervical adenocarcinoma is a challenging cancer to diagnose as it is often confused for endometrial adenocarcinoma on initial biopsy. Once diagnosed, the typical treatment is to perform a radical hysterectomy with bilateral salpingoophorectomy, and a lymphadenectomy as the cancer travels lymphatically. After doing a search of key terms “endocervical adenocarcinoma” on PubMed, we present the first reported case of endocervical adenocarcinoma with recurrence in the form of metastatic pelvic and peritoneal implants after undergoing a radical hysterectomy and lymphadenectomy. The patient in this case report is a 48-year-old South Asian female with a large exophytic cervical lesion and multiple symptomatic fibroids. The patient also had a lymphadenectomy with 22 negative lymph nodes on biopsy. About 1 year later, the patient’s symptoms returned, and it was found that she had multiple metastatic peritoneal and pelvic implants. She then underwent systemic therapy with cisplatin and radiation treatment but died within 3 years. The novelty of this patient’s case can encourage physicians to consider a more aggressive treatment plan with systemic therapy and concurrent surgical removal for endocervical adenocarcinoma. This case also carries an important teaching point that patients benefit from monitoring their own symptoms.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Radiofrequency Ablation as a Treatment Option for Chronic Trigeminal Neuralgia: A Case Series

Presenting author: Ammar Siddiqui

Affiliation: KCU

Co-Authors and affiliations: Minah Tariq, MS3 - KCU Mayank Gupta, MD - Kansas Pain Management

Abstract:

Trigeminal neuralgia is a chronic pain condition characterized by sudden, severe facial pain that is often triggered by vibration or light touch. Despite the availability of various medical and surgical interventions, many patients continue to suffer from debilitating pain. Radiofrequency ablation (RFA) is a minimally invasive procedure that provides a promising alternative. RFA involves using heat to ablate the region of the trigeminal nerve responsible for the pain. This study aims to report the cases of four patients with long-term, persistent, and debilitating trigeminal neuralgia who were treated with RFA after having previously failed other medications and treatments. Demographic data, medical history, treatment history, and post-procedural outcomes were collected to assess the utility of RFA as a treatment option for these patients.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Comparison of age and mortality in pneumonia patients: A retrospective study

Presenting author: Jens Mellby

Affiliation: Kansas City University

Co-Authors and affiliations: Mariam Akhtar, MD - Kansas City University Ali Badar - Kansas City University Mariah Fedje - Kansas City University Varun Karri - Kansas City University Nova Beyersdorfer - Kansas City University Kerry Johnson, EdD - Missouri Southern State University John Paulson, DO, PhD - Kansas City University

Abstract:

Pneumonia, defined as inflammation of the lungs typically caused by viral or bacterial sources, contributes to nearly 50,000 deaths each year in the United States while also being a leading cause of hospitalizations. Increased age of patients has been shown to be a significant risk factor for poor outcomes of patients with pneumonia due to decreasing immune responses as well as increased likelihood of comorbid conditions. This study was conducted to evaluate the impact of age on the outcomes of patients hospitalized with pneumonia. The sample size included 4,414 patients from Freeman Health System in Joplin and Neosho, Missouri, hospitalized with pneumonia, of whom 2,653 were ≥ 65 years old, and 1,761 that were < 65 years old. Results were compared to 27,510 patients admitted without the diagnosis of pneumonia, of which 7,978 prior admissions were excluded, and 10,061 were ≥ 65 . Results from this study revealed that advanced age ≥ 65 contributes to higher mortality regardless of the presence of pneumonia, and this mortality is significantly increased in patients ≥ 65 with the diagnosis of pneumonia. The data collected in this study is specific to the Southern Missouri population and is limited by the presence of comorbidities in elderly patients.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Reduced expression of endothelial markers in doxorubicin treated endothelial cells

Presenting author: Sabrina Turek

Affiliation: KCU

Co-Authors and affiliations: Dr. Eugene Konorev, MD, Ph.D Dr. Shixin Tao, Ph.D

Abstract:

Cancer survivors represent a growing group of patients at risk of premature cardiovascular disease due to complications of chemotherapeutic drugs, including doxorubicin (Dox). Most studies have focused on cardiomyocytes as a direct target of Dox. We have recently shown that microvascular endothelium is a critical target of Dox in the heart. Specifically, we detected an altered pattern of endothelial gene expression, including reduced expression of endothelial specific transcripts that persisted after completion of the Dox treatment. Specifically, our preliminary data suggested decreased expression of endothelial nitric oxide synthase (eNOS) in Dox treated endothelial cultures. The purpose of the proposed project is twofold: 1) assess the role of vascular endothelial growth factor (VEGF) in regulating expression of eNOS in intact human endothelial cells; and 2) examine the effects of the eNOS transcriptional enhancer AVE3085 on expression of eNOS in Dox treated endothelial cells. It is anticipated that this approach will help identify novel interventions aimed at alleviation of cardiovascular complications of chemotherapy.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

A retrospective observational study on the hospitalization outcomes of pneumonia patients with or without severe sepsis and shock in southwest Missouri

Presenting author: IVAN BAHAMON

Affiliation: Kansas City University, Joplin

Co-Authors and affiliations: Julianne Garcia - College of Medicine, Kansas City University College of Medicine, Joplin Troy Henley -College of Medicine, Kansas City University College of Medicine, Joplin Wade Weston - College of Medicine, Kansas City University College of Medicine, Joplin Robert Arnice, MD - College of Medicine, Kansas City University College of Medicine, Joplin; Freeman Health System, Joplin Nova Beyersdorfer - College of Medicine, Kansas City University College of Medicine, Joplin Kerry Johnson, EdD - Department of Mathematics, Missouri Southern State University, Joplin John Paulson DO, PhD - College of Medicine, Kansas City University College of Medicine, Joplin; Freeman Health System, Joplin

Abstract:

Background: Sepsis and pneumonia are two broad diagnoses that continue to trouble the modern medical field, despite advances in technology and treatment protocol. Consistently high mortality rates caused by these diagnoses both separately and together propagate further study into the exact nature of their relationship. This study seeks to analyze the effects of sepsis on mortality rates of admitted pneumonia patients in the rural Midwestern setting. **Methods:** A comparative retrospective study of adults over the age of 17 admitted to a large healthcare system in Southwest Missouri, was conducted from January 1, 2019, through December 31, 2021. Five patient cohorts were differentiated using International Classification of Diseases, Tenth Revision (ICD-10) codes. **Results:** A total of 5,216 admitted patients were included, of which 4,384 were diagnosed with pneumonia and 832 patients were diagnosed with severe sepsis without pneumonia. Three groups were differentiated among those patients diagnosed with pneumonia: 441 patients with severe sepsis and septic shock, 417 patients with severe sepsis without septic shock, and 3,526 patients without severe sepsis. Those patients diagnosed with severe sepsis without pneumonia resulted in two groups: 362 patients with septic shock and 470 patients without septic shock. Two sample proportion analyses demonstrated a significant increase in the mortality rate for septic shock patients regardless of the absence or presence of pneumonia.

Conclusion: These findings associate the concurrent conditions of pneumonia and severe sepsis with a higher mortality rate. This increased mortality rate was shown to be greater still with coexistence of septic shock. Overall, septic shock was determined to be the deadliest condition among the diagnoses compared.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Standardizing mental health orientation for parents of incoming high school freshmen

Presenting author: Bradley Smith

Affiliation: Kansas City University PsyD

Co-Authors and affiliations:

Abstract:

The mental health crisis in America continues to expand and impact a number of areas in a person's life. One crucial area is education. The CDC indicates a recent 40% increase in persistent sadness, hopelessness, and suicidal thought/behaviors in young people. Additionally, over one in three high school students report experiencing low emotional well-being. These statistics are alarming considering in the 2021-2022 year, 96% of public schools reported offering at least one type of mental health service to their students. This suggests an urgent need to reassess how mental health is approached in school settings. One potentially crucial explanation for this glaring disconnect may have to do with the students own ability to detect a crisis within themselves. Having access to resources is crucial, however when so many adolescents may have difficulty in identifying their own mental health problems, it is therefore understandably difficult for them to utilize those resources. Then need is then placed on fortifying their support systems and solidifying the ability and confidence of those systems in assisting high school youth. One crucial support system that is often sought as a first-line defense against a variety of concerns for youth is their parents. In fact, adolescents typically tend to not seek formal professional resources initially, and instead seek help through their families. Despite this, parents and caregivers tend to have limited mental health knowledge. Additionally, even with adequate mental health literacy, current mental health programs fail to build the confidence of parents to address identified mental health concerns. As such, the purpose of this study is to design a high school mental health program which targets both the mental health literacy and the confidence of parents and caregivers to assist with mental health crises as they are identified.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

A characterization of the posterior femoral cutaneous nerve and its clinical application for autologous breast reconstruction

Presenting author: Makayla M Swancutt

Affiliation: Kansas City University Department of Pathology and Anatomical Sciences

Co-Authors and affiliations: Charlie R Marchese - Kansas City University Bethany A Baumgartner - Kansas City University Aaron J Allard - Kansas City University Bradley A Creamer - Kansas City University Jennifer F Dennis - Kansas College of Medicine Anthony B Olinger - Kansas City University

Abstract:

Autologous breast reconstruction (ABR) uses a harvested tissue flap from the abdomen, posterior thigh, or buttocks to rebuild the breast post-mastectomy. A common risk of ABR is loss of breast sensation. Identification of nerves for use in autologous sensate breast reconstruction flaps is an important surgical consideration. The posterior femoral cutaneous nerve (PFCN) and its branches supply sensory innervation to skin of the posterior thigh, leg, perineum, and buttocks, creating a feasible candidate for sensate profunda artery perforator (PAP) flaps for ABR and reestablishing breast sensation. This study characterized PFCN perforating branches located within the PAP flap region, as compared to an anatomical landmark intersection (ALI). Twenty-three gluteal and posterior thigh regions from 15 formalin-embalmed donors were dissected to the level of the deep fascia to identify PFCN branches. PFCN branch diameter (mean, 1.34 ± 0.35 mm) and length (mean, 8.82 ± 5.78 mm) piercing the deep fascia were measured; branches were retro-dissected proximally to the PFCN trunk and the distance recorded (mean, 92.55 ± 38.00 mm). The mean distance to branch emergence from ALI (mean, 113.55 ± 19.80 mm) and from the midline of the posterior thigh (mean, 18.90 ± 11.17 mm) were calculated. Two-Tailed T-tests comparing the left and right limb of seven donors determined bilateral, statistically significant difference between the length of branch emergence back to the main trunk of PFCN ($p=0.00$). These findings illustrate the presence of adequate yet variable PFCN branches within the PAP flap region in regards to diameter, length, and location for use in sensate ABR. This study characterizes the PFCN branching and highlights the importance of performing adequate nerve visualization studies bilaterally prior to surgical intervention as each patient presents with a unique PFCN branching pattern.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Off-target consequences of autoimmune therapy: bull's-eye maculopathy.

Presenting author: Suha Zaidi

Affiliation: Kansas City University

Co-Authors and affiliations: Brock Halling - Kansas City University Ravi Patel MD - Florida Eye and Associates

Abstract:

This case highlights a unique presentation of a rare condition, bull's-eye maculopathy (BEM), secondary to chronic hydroxychloroquine use. Hydroxychloroquine is a systemic medication, prescribed primarily to treat autoimmune inflammatory disorders. A majority of autoimmune disorders occur in women and consequently the research of BEM reflects a skewed patient population. This case contributes to the limited body of knowledge regarding BEM because our patient is a male. Although hypothesized to be related to lipofuscin granulation, the true mechanism of BEM-mediated vision loss is not understood. Gaining further insights on this particular process has implications in the grand scheme of retinal degeneration. This patient is a 74 year old male presenting with longstanding rheumatoid arthritis, hypercholesterolemia, and vision changes secondary to bullseye retinopathy. He has a history of tamsulosin and hydroxychloroquine use, increasing his risk for ocular pathology. The patient underwent bilateral cataract surgery in 2018, improving his distance vision significantly. A corrective YAG capsulotomy was performed on the right eye only. He has a family history of glaucoma, but has had consistently stable intraocular pressure and unremarkable cup to disk ratio bilaterally. In the posterior segment, he has retinal changes in both eyes. The left eye shows an epiretinal membrane but otherwise healthy retina with no breaks, holes, or tears. The right eye shows bull's eye maculopathy. Overall, his eyes are stable, with no indication of central scotoma. Bull's-eye maculopathy is seen in patients undergoing long-term hydroxychloroquine therapy. Once developed, BEM is irreversible, but early detection and discontinuation of medications can prevent progression and vision loss. Management of autoimmune disorders must be carried out carefully with respect given to underlying comorbidities and other health concerns. Further exploration of BEM may prove beneficial to our overall understanding of the pathology and mechanism of retinal degeneration.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Translating Embodied Learning for Simulation in Clinical Psychology: Designing and Evaluating Skill Competency and Student Confidence

Presenting author: Nichmarie Soto Bonilla, PhD

Affiliation: KCU

Co-Authors and affiliations: Jennifer Fugate, JMB, PhD - KCU Sheila Macrine, PhD - University of MA - Dartmouth Teja Fuller - KCU Eva Hernandez Cuevas - KCU Matthew Long - KCU Sydni Martin - KCU

Abstract:

There is a lack of understanding in how to assess graduate students' application of health-related coursework during simulated events that focus on behavioral competency skills. For example, simulated cases provide an opportunity for students to translate coursework into clinical practice. In fact, simulated performance with the medical community shows that student self-reports of knowledge and performance improves via interactive learning. However, less is known about how to assess clinical competence and whether more objective outcome measures (e.g., behavior-based) improve over time (Yu et al., 2021). The purpose of this project was to create a modifiable behavioral rubric to track how clinical psychology doctoral students apply APA behavioral competencies during case-base simulated patients experiences (SPEs) over a 2-year (4 event) period. The events broadly cover clinical interview, assessment, and intervention of clinical psychological vignettes. The rubric was created by evaluating the specific APA competencies covered in each course (e.g., [1] professionalism [A] with focus on honesty and integrity), and reviewing validated and published scales and instruments regarding clinical competence (e.g., IPT Adherence and Quality Scale; Interpersonal Psychotherapy Institute, 2015). The resulting rubric covered six core competencies (with 21 sub-competencies) and includes at least two statements per sub-competency (total items = 76). The rubric assessed clinical skills on 4-levels of competency or as not observable. Participants (1st and 2nd-yr PSYD students, n = 39) will be video-taped during four classes' SPEs from which their interactions with the simulated patient will be coded using this developed rubric. Participants will also complete survey measures at four timepoints (pre/baseline, and after each the second, third, and fourth SPE) evaluating their impostorism, self-efficacy, and self-perception of clinical skills. We aim to compare and contrast self-reported and observed competence levels in students across two years of simulated experiences aligned with coursework.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Health outcomes and length of stay of emergency department patients with limited English proficiency: a systematic literature review

Presenting author: Ivan Bahamon

Affiliation: College of Osteopathic Medicine, Kansas City University, Joplin, MO

Co-Authors and affiliations: Gretchen Y. López-Hernández, PhD - Department of Basic Sciences, College of Osteopathic Medicine, Kansas City University, Kansas City, MO Humberto López Castillo, MD, PhD - Department of Health Sciences, College of Health Professions and Sciences, Academic Health Sciences Center, University of Central Florida, Orlando, FL; Department of Population Health Sciences, College of Medicine, Academic Health Sciences Center, University of Central Florida, Orlando, FL

Abstract:

In the United States there are over 139 million emergency department (ED) visits yearly. Detrimental health outcomes for patients in the American healthcare system have been linked to language barriers. The purpose of this review is to compare published health outcomes of patients with limited-English proficiency (LEP) compared to patients with English proficiency (EP) in American EDs. The search utilized keyword variations of four concepts (LEP, ED, outcome, interpreter) in four databases (PubMed, Ovid Medline, Embase, and Scopus) from their inception to June 2023. Records were independently reviewed by two reviewers, with a third reviewer serving as tiebreaker. Studies were included if they (1) were published in English; (2) were conducted in a United States' ED; (3) compared EPs to at least one group of LEPs; and (4) compared at least one health outcome or length of stay. The search identified 578 unique manuscripts, of which 13 were included. Study designs were heterogeneous (2 cross-sectional, 11 longitudinal) and included a median (IQR) of 11,427 (460:50,615) EP patients and 2,042 (274:5,670) LEP patients. Eight studies specifically included the use of a trained medical interpreter. Eight outcomes of interest were reported: ED length of stay (LOS, n=7), ED disposition (n=5), ED readmissions (n=4), mortality (n=2), tests and images ordered (n=2), and triage acuity, ED-ICU LOS, and time to medication (n=1 each). Eight studies demonstrated at least one significant difference in health outcomes or LOS of LEP patients compared to EP patients. While heterogeneous, studies show inconsistencies on the ED health outcomes of patients with LEP, including LOS, ED disposition, and ED readmissions. Studies that included subgroup analyses indicated greater disparities within different language groups. Although the participation of a trained medical interpreter appears to improve health outcomes for LEP patients, future studies should quantify the effect on reducing health outcome disparities.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Joplin Campus

Pneumonia and Heart Failure: A Retrospective Analysis of Hospitalization Outcomes from Two Rural Hospitals in Southwest Missouri

Presenting author: Daniel Kim

Affiliation: Kansas City University

Co-Authors and affiliations: Grant Sanders, Kansas City University Andrew Payne, Kansas City University Alexander Stowe, Kansas City University

Abstract:

Pneumonia remains of the deadliest infectious disease despite advances in vaccinations, testing, and antibiotics. Heart failure also represents one of the leading causes of morbidity and mortality among Western nations, affecting 1-2% of the population. These two conditions often co-exist within the same patient, yet, the relationship between these two diseases has not been fully elucidated. This retrospective study aimed to determine the impact of heart failure on mortality for patients with pneumonia. The sample population consisted of 32, 639 patients from Freeman Health System's Electronic Medical Records data base in Joplin and Neosho, Missouri between January 2019 to December 2021. This study showed that patients with pneumonia and heart failure have a statistically significant increase in mortality compared to those with pneumonia without heart failure.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Synthesis and characterization of novel nanoparticles and studies on their interactions with stem cells

Presenting author: Purva Sethi

Affiliation: KCU

Co-Authors and affiliations:

Abstract:

Human umbilical cord- derived mesenchymal stem cells (hUC-MSCs) are known for self-renewal and differentiation into cells of various lineages. Here, we have analyzed the efficacy of human serum albumin coated iron oxide nanoparticles (HSA-IONPs) on the differentiation of hUC-MSCs. The colloidal stability of the HSA-IONPs was tested over a long period of time (≥ 20 months) and the optimized concentration of HSA-IONPs for labeling the stem cells was found to be 60 $\mu\text{g/ml}$. The study also emphasizes in evaluating NPs association with stem cells in terms of their interactions, self-renewal and differentiation potential. Detailed in vitro assays have been performed to ascertain the effect of the NPs on stem cells. LDH assay showed minimum release of LDH depicting least disruptions in cellular membrane. Mitochondrial impairment of the cells was also not observed by MTT assay. Flow cytometry analysis revealed lesser generation of reactive oxygen species in HSA-IONPs labeled hUC-MSCs in comparison to bare and commercial IONPs. These findings offered greater insights into stem cell-NPs interactions. Also, TEM showed endocytic engulfment of the nanoparticles by the hUC-MSCs. During the process, the gross morphologies of the cytoskeleton were also found to be intact as shown by immunofluorescence microscopy, suggesting the significant role played by the protein surface modification of the IONPs. Also, the HSA-IONPs engulfment did not show any detrimental effect on the differentiation potential of the stem cells, thereby confirming that the inherent properties of stem cells were maintained. Moreover, the synthesized IONPs also served as a potent MR contrast agent which showed signal enhancement based on the particle concentration and applied MR sequence parameters. The results revealed minimum signal dilution and efficient labeling of stem cells suggesting their use in several pre-clinical applications. Therefore, surface modified IONPs are currently considered to be preferred contrast agents for cell labeling and tracking experiments.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Biochemical Characterization of Nuclear Receptor Activity Using a Reporter Gene Assay

Presenting author: Yasmeen Sawalha

Affiliation: Yasmeen Sawalha

Co-Authors and affiliations: Clayton Tindell, Kaitlin Barnes, Dan Brobst, & Dr. Jeff Staudinger

Abstract:

The pregnane X receptor (PXR, NR1I2) is a pivotal member of the nuclear receptor superfamily, playing a crucial role in the regulation of xenobiotic metabolism and homeostasis. PXR exhibits remarkable versatility by sensing a broad spectrum of endogenous and exogenous ligands. PXR activation modulates the expression of an extensive array of important target genes involved in drug metabolism and drug transport, primarily in liver and intestine. As a ligand-activated transcription factor, PXR serves as a key mediator in the body's adaptive response to xenobiotic exposure, enabling the orchestration of a finely tuned cellular defense mechanism. Understanding the intricate molecular mechanisms underlying PXR function holds profound implications for pharmacology, toxicology, and therapeutic interventions, making it a subject of intense research and investigation. The XREM-LUC reporter gene is a unique tool used to study the activity of the pregnane X receptor (PXR). XREM stands for xenobiotic response element module that is derived from PXR-responsive enhancer sequences within the CYP3A4 promoter. LUC refers to the luciferase gene, which is used as a reporter in cell-based luminescence assays. In this context, the XREM-LUC plasmid is a chimeric gene construct designed to assess the transcriptional activity of PXR in response to any experimental ligand. By using the XREM-LUC reporter gene, scientists can evaluate the potency of various compounds in activating or inhibiting PXR and gain insights into the molecular mechanisms underlying PXR-mediated transcriptional regulation. This tool is particularly valuable for studying drug metabolism, toxicology, and the potential interactions of pharmaceutical compounds with PXR.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

The effect of trauma activation time on outcomes for high level alerts

Presenting author: Brian Young

Affiliation: KCU Joplin - OMS2

Co-Authors and affiliations: Steven Young, M.D., Thoracic Surgery Resident, University of Virginia Health System Jeffrey Young, M.D., Professor, University of Virginia Health System

Abstract:

Introduction: In the realm of multisystem traumatic injuries, timing is paramount. Yet, the impact of variations in warning time preceding arrival at definitive care remains an unexplored gap in existing literature. This study aims to describe the influence of trauma activation time on trauma outcomes. Our hypothesis states that diminished activation time may correlate with prolonged emergency department dwell times and increased frequencies of activation level upgrades. **Methods:** An institutional registry database was queried for all adult trauma admissions presenting with either of the two most severe alert levels between January 1st, 2011 and November 2nd, 2023. Demographic data was then analyzed and primary outcome variables were stratified based on each patients recorded time from trauma activation to arrival. **Results:** A total of 894 patients were included in the final cohort. The average patient age at presentation was 44.6 ± 21.5 years, a majority (73.8%) of patients were male, and white (80.4%). Most patients underwent a trauma with a blunt mechanism (89.9%) with a mean injury severity score (ISS) of 27.0 ± 11.9 . The mean trauma activation warning time was 14.0 ± 8.0 minutes and 12.5% of patients had their original activation level upgraded following arrival in the ED. Lower trauma alert warning was associated with higher rates of alert upgrade ($p < 0.001$) but was not associated with longer ED dwell time ($p = 0.24$). Amongst patients with ISS > 15 both findings persisted ($p < 0.001$ and $p = 0.10$ respectively). **Conclusion:** In our study, decreased warning prior to arrival was associated with increased likelihood of an upgrade to the alert level, but did not demonstrate an association with the length of ED dwell time.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

The Effects of the Pregnane X Receptor (PXR) on Growth, Migration, and Chemotoxicity in Human Breast Cancer Cells

Presenting author: Akansha Rao

Affiliation: KCU COM 2026 Student

Co-Authors and affiliations: Akansha Rao - KCU-COM 2026 Myia Dickerson - KCU-COM 2026 Grant Sanders - KCU-COM 2026 Pratyusha Tadepalli - KCU-COM 2026 Dr. Bradley Creamer, PhD - PI

Abstract:

Breast cancer is the second most common type of cancer diagnosed worldwide and the second leading cause of cancer-related deaths among women. While progress has been made in the diagnosis and treatment of breast cancer, traditional chemotherapeutic treatments can lead to the development of chemotherapeutic resistance and remains a major challenge in overall patient outcomes. One potential barrier is the pregnane X receptor (PXR), a ligand-inducible nuclear receptor that regulates the expression of CYP450 enzymes. A major function of this family of enzymes includes the breakdown and excretion of xenobiotics. Other suggested functions of PXR include effects on cellular proliferation, migration, motility, and invasion. Furthermore, previous studies have shown that PXR likely can drive chemotherapeutic resistance in liver and colon cancers, and thus, we aim to investigate the possible roles of PXR in breast cancer. The goal of our project was to determine phenotypic changes in response to PXR expression and activation in breast cancer cells, specifically its effects on proliferation, migration, invasion, and chemotherapeutic resistance. MDA-MB-231 triple negative breast cancer cells were stably transformed to overexpress human PXR and treated with a PXR agonist, SR12813. Following activation, we conducted proliferation rate, transwell cell invasion, and in-vitro wound closure assays, as well as measuring changes in chemotherapeutic resistance via a cisplatin toxicity assay. Cells with activated PXR showed slower invasion and migration rates, along with an increased cisplatin resistance when compared to non-transformed MDA-MB-231 cells. These findings indicate PXR likely has a significant effect on the proliferation, migration, and invasion rates of cancer cells. Future studies aim to determine how these phenotypic changes are regulated by PXR expression.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Challenges in obtaining prenatal care for HIV positive patients in rural Kenya?

Presenting author: Kaheerman Saibire, OMS3

Affiliation: Kansas City University

Co-Authors and affiliations: Durganili Balasubramaniyan, OMS 3- Kansas City University Gautam Desai, DO - Kansas City University

Abstract:

An estimated 25.6 million people are living with Human Immunodeficiency Virus, with a notable increase in the HIV rate among pregnant women. While there is no cure for HIV, antiretroviral therapy (ART) and post-exposure prophylaxis have been effective in controlling the virus. Early diagnosis, improved ART adherence, patient education, and routine prenatal care are crucial for ensuring uncomplicated pregnancies in HIV-positive women. The study aimed to explore the pregnancy experiences and prenatal care practices of women in relation to their HIV status in Kenya. After KCU Institutional Review Board approval, the survey tool was distributed to patients presenting at a clinic in Kenya during the fall and winter of 2023. The survey included closed-ended questions regarding HIV and medical history, as well as open-ended questions allowing participants to articulate obstacles faced in obtaining prenatal care. There were 22 eligible participants aged between 18 to 65 years old, who had a total of 65 live births. Among the participants, 55% (n = 12) were HIV-positive, and the remaining 45% (n=10) were HIV-negative. 45% (n=10) had some form of prenatal care, with 58% (n=7) of HIV-positive patients receiving care compared to 30% of HIV-negative patients. 23% (n=5) of respondents cited financial as a significant barrier to prenatal care, along with issues such as lack of transportation, access to medicine and insufficient education on prenatal care. Interestingly, there was no significant difference in gestational age or birth weight between those with and without prenatal care. High prenatal care rates were observed among HIV-positive patients, with financial and educational challenges identified as key barriers. Future studies can develop targeted education programs and affordable care for pregnant women, especially those living with HIV. It would be our interest to have larger numbers of participants and repeat the study in urban settings to compare results.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Strengthening student support: Education K-5 educators on childhood grief in the classroom

Presenting author: Rylee Hendricks

Affiliation: Kansas City University - Health Service Psychology

Co-Authors and affiliations: Amy Sickel, PsyD - Kansas City University; Nichmarie Soto Bonilla, PhD - Kansas City University; Iman Williams-Christians, PhD

Abstract:

In the United States, it is estimated that one in 14 children will experience the death of a parent or sibling by the age of 18. The death of a parent, or primary attachment figure, is recognized as one of the most disruptive adversities a child may experience. Children who are grieving may exhibit significant behavioral changes, psychological difficulties, social problems, and lower educational attainment. Despite the amount of loss experienced by children, childhood grief is disregarded in the education system. 70% of teachers report having at least one grieving student in the classroom. Yet, seven percent of teachers report receiving training on grief and bereavement. The proposed research study aims to evaluate whether an online-based grief training program increases teacher's grief knowledge and confidence when supporting grieving students. Participants will include teachers recruited from elementary schools in the North Kansas City School District, Blue Springs School District, and the Springfield Public School District. Participants will participate in grief training and complete two revised measures pre- and post-training to assess their confidence level and grief knowledge. Participants will also complete a participant feedback form following the training. A paired-sample t-test will be utilized to measure the effectiveness of the training program. It is hypothesized that following the completion of grief training, teachers will show a significant increase in level of confidence from pre -to post-scores. Additionally, it is hypothesized that following the completion of grief training, teachers will show a significant improvement in grief knowledge from pre- to post-scores.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Unilateral choanal atresia in a child with prolonged nasal congestion

Presenting author: Lindsay Ussher

Affiliation: Kansas City University, College of Osteopathic Medicine

Co-Authors and affiliations: Carli David-Edward Via College of Osteopathic Medicine Randall Hansen: Otolaryngology-Head and Neck Surgery, Freeman Health System Kansas City University, Graduate Medical Education, Kansas City Alex Otto: Otolaryngology-Head and Neck Surgery, Freeman Health System Kansas City University, Graduate Medical Education, Kansas City Scott McClintick: Otolaryngology-Head and Neck Surgery, Freeman Health System Kansas City University, Graduate Medical Education, Kansas City Kent McIntire: Otolaryngology-Head and Neck Surgery, Freeman Health System Kansas City University, Graduate Medical Education, Kansas City Suporn Sukpraprut-Braaten: Kansas City University, Graduate Medical Education, Kansas City

Abstract:

Choanal atresia is characterized by blockage of the nasal passage due to abnormal bony or soft tissue growth formed during fetal development. It is a rare congenital disorder, affecting only 1 in every 7,000 live births. The clinical manifestations are more pronounced in bilateral cases, often presenting immediately after birth with respiratory distress, as newborns are obligatory nasal breathers. In unilateral cases, the condition may be diagnosed later in life, often incidentally, and is characterized by unilateral nasal obstruction and recurrent sinusitis or infections. We present a case of a five-year-old male who initially presented with a concern for nasal polyps due to nasal congestion with absent airflow out of the right nostril. Failure of symptom resolution with nasal steroids alone prompted a more thorough nasal evaluation. The patient was diagnosed with nasal turbinate hypertrophy, right more than left, and was subsequently scheduled for nasal endoscopy with inferior turbinate reduction and possible adenoidectomy. Intraoperatively, the inability to pass a catheter through the nasopharynx to reach the oropharynx was our indicator of a more serious diagnosis. Here, we report an incidental finding of right choanal atresia. The purpose of this article is to highlight the importance of including choanal atresia in the differential of a pediatric patient presenting with nasal obstruction and recurrent nasal congestion. This awareness leads to an avoidance of delayed diagnosis and treatment of choanal atresia.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Salmonella cystitis — a rare cause of UTI

Presenting author: Diana Hamdan, MSc

Affiliation: Kansas City University

Co-Authors and affiliations: J. Tyrone Adcock, DO - Kansas City University

Abstract:

Urinary tract infections (UTI) caused by non-typhoidal Salmonella (NTS) are uncommon and account for 0.01 to 0.07% of reported cases. Salmonella infections are typically contracted by the consumption of contaminated eggs, milk, or poultry and manifest as gastroenteritis (GE). NTS UTI may arise as a complication of GE, spreading either hematogenously or via direct fecal contamination of the urethra. Nonetheless, isolated NTS UTI without concomitant GE have been previously reported. NTS UTI can be asymptomatic, but in extreme cases may lead to pyelonephritis, renal insufficiency, nephrotic syndrome, nephrolithiasis, genitourinary abscesses, or chronic bacteriuria. They require a prolonged course of antibiotic treatment, owing to risk of recurrence or chronic asymptomatic bacteriuria. Predisposing factors associated with NTS UTI include immunosuppression, chronic disease, such as diabetes, and structural abnormalities of the genitourinary tract. The rarity and increased disease burden of NTS UTI make it a topic of interest given recent evidence of its rising prevalence. Our case study explores a patient presenting with NTS UTI with a noted dietary exposure to fresh farm eggs.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

The effectiveness of osteopathic manipulative techniques on reducing gastrointestinal distress in patients with neurologic disorders: a systematic review protocol

Presenting author: Joseph Peters

Affiliation: Kansas City University

Co-Authors and affiliations: Grant Runnels - KCU; Alexa Lauinger - University of Illinois; Tanner Murphy - KCU; Reed Apostol - KCU; Turner Slicho - KCU

Abstract:

Introduction: Gastrointestinal (GI) distress (i.e., constipation, incontinence, abdominal pain) is prevalent among people with neurologic disorders (ND), and may significantly contribute to diminished quality of life. Research supports the use of osteopathic manipulative techniques (OMT) for alleviating symptoms of GI distress. Preliminary evidence supports OMT's clinical utility for alleviating symptoms of GI distress in people with ND, but no systematic review has established its overall effectiveness. This project will establish a protocol for systematically assessing the effectiveness of OMT on changes in gut health and dysfunction in patients with ND. **Materials and Methods:** This systematic review will follow PRISMA guidelines in accordance with the Cochrane Handbook. A search through PubMed, Embase, Scopus, and Ovid will be queried for interventional studies examining OMT in populations with ND (i.e., stroke, spinal cord injury, multiple sclerosis, Parkinson's, brain injury, Alzheimers) experiencing GI-related distress. This review has been registered through PROSPERO (CRD: 42023495420). Two independent reviewers will screen potential studies. Data will be extracted from eligible studies including participant characteristics, OMT interventions, and OMT's effects on GI distress. Reviewers will complete a quality assessment for each included study. **Expected Results:** OMT will improve bowel function and reduce GI-related abdominal pain in patients with ND. OMT will also improve quality of life related to GI distress. Patients will experience sustained benefits from OMT following the completion of treatments. **Discussion:** The negative consequences associated with GI distress on quality of life and function for people with ND warrants this systematic review. Expected results may establish empirical support for OMT's use in populations with ND for improving GI-related distress. **Conclusion:** This review may help guide the development of future randomized controlled trials examining OMT in patients with ND, as well as train evidence-based osteopathic student doctors on best practices for developing systematic review methodologies.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Transcriptome analysis of key genes in doxorubicin-induced senescence in human bronchial epithelial cells.

Presenting author: Jacob Protopopov

Affiliation: Kansas City University

Co-Authors and affiliations: Camryn Dorch LeAnne Johnson Dr. Doug Bittel

Abstract:

Doxorubicin (Dox) is a chemotherapy drug associated with the activation of the Smad3-dependent TGF- β pathway in endothelial cells. TGF- β is a key regulator in cellular interactions and mobility as well as senescence. TGF- β is the master regulator of mesenchymal transition, where cells change from one type to another. Dox can contribute to phenotypic changes leading to cardiovascular damage. Our analysis focused on basal lung-based epithelial cells which share similar phenotypes with the heart's endothelial cells. This suggests that Dox's effects on lung cells may mirror its potential cardiotoxicity which shows the potential translational significance of our findings. We hypothesized that there are specific key genes that may have a unique susceptibility to Doxorubicin. This results in a measurable expression difference which contributes to the induced damage of lung basal epithelial cells. We used Partek Flow software to create a Transcriptomic analysis pipeline to investigate existing data downloaded from the Gene Expression Omnibus (GEO). We will report on the differential expression of key genes in Dox treated human lung basal epithelial cells. These results will help our understanding of the role that Dox plays in activating the TGF- β pathway and in facilitating mesenchymal transitions.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Assessment of changes of mRNA isoform proportion after scaRNA1 knockdown

Presenting author: Brittnei Earl

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Adriana Fritz - KCU College of Biosciences Michael Filla - KCU College of Biosciences Nataliya Kibiryeva - KCU College of Biosciences James E. O'Brien Jr. - Children's Mercy Hospital Douglas Bittel - KCU College of Biosciences

Abstract:

Embryonic development of the heart is influenced by environmental, genetic, and epigenetic factors. Even if a woman is seemingly healthy and compliant with prenatal care, her child can be born with a congenital heart defect (CHD). Mendelian and chromosomal syndromes account for a small percentage of CHD cases, but nearly 80% of CHD cases are due to idiopathic genetic mechanisms that are poorly understood. Unfortunately, even with proof that alternate splicing of mRNA plays a role in the elusive genetic mechanisms that cause CHD, little data has been found to elucidate how these alternate splicing patterns lead to such lethal and debilitating heart defects. Our previous research suggested that there are 12 scaRNAs that have reduced expression in the right ventricle of patients with Tetralogy of Fallot, leading to the alternate splicing of genes and ultimately a poorly developed heart. We wanted to see which genes were significantly affected when we knocked down each scaRNA in quail myoblast cells. After knocking down scaRNA1, our RNA-Seq analysis showed that Tjp1, Map3k7, and Sppl2a had significant alternative splice events. Importantly all three of these genes are known to play key roles in heart development. Here I present the validation with qPCR, of the spliced variants. Alternative splicing is an under appreciated mechanism for development and requires further research to define specific roles that individual scaRNA play in regulation of spliceosomal function and, in turn, development.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Gender-affirming interview for transgender mental health

Presenting author: Dana Walker

Affiliation: Clinical Psychology

Co-Authors and affiliations: Malousek, Jason, PsyD

Abstract:

Gender-affirming care is raising standards across multiple disciplines in the United States and actively reduces the number of individuals who experience distress when engaging with healthcare professionals. New clinicians are held to the same profession-wide competencies (PWCs) as all licensed mental health clinicians. As such, cultural competency is expected. Identity development models help frame clients' experiences so the clinician is better prepared to provide appropriate care. The 14-stage transgender identity development model Dr. Aaron H. Devor developed will be used to build most of the semi-structured interview questions in this dissertation. Additional questions will be built from common comorbid concerns the transgender community may experience as a tool to encompass a comprehensive understanding of the client's mental health and possible barriers to care. This project is a mixed-methods research design due to the many stages of establishing appropriate questions and the competency of the semi-structured interview being built. Three clinicians currently working with transgender clients will be recruited to review the effectiveness and validity of the semi-structured interview questions. Next, 15-20 transgender individuals over 18 years old will be recruited from LGBTQ+ community centers and administered the interview. Evaluation at each step of the research process will be necessary to establish validity of the building process; thus, for the first stage of evaluation, when clinicians rate questions and suggest revisions, a quantitative (non-parametric, spearman's r , for correlations, and a wilcoxon-signed rank instead of a paired t-test, or Mann Whitney, in place of an independent samples t-test) and qualitative (thematic) approach will be utilized. At the second stage of evaluation, a quantitative approach will be utilized. Proposed hypotheses: the semi-structured interview assists clinicians in appropriately identifying the transgender stage of development their client is currently experiencing, or the interview does not assist clinicians in appropriately identifying their client's stage of development.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Exploring the association between chronic opioid therapy and infectious outcomes in lower extremity amputation patients

Presenting author: Anjali Patel BS

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Shiva Nuti BS- University of Texas Medical Branch, John Sealy School of Medicine Vivek Patel BS- University of Texas Medical Branch, John Sealy School of Medicine Margaret Goodwin MD- University of Texas Medical Branch, Department of Orthopaedic Surgery and Rehabilitation John C. Hagedorn II MD- University of Texas Medical Branch, Department of Orthopaedic Surgery and Rehabilitation

Abstract:

Introduction: Trauma and various medical conditions can lead to a higher incidence of lower extremity amputations (LEAs). Patients with LEA can have a high incidence of opioid addiction due to sequelae from their injury. Studies show opioids modify the immune response and contribute to post-surgical infections and non-union. The exact relationship between chronic opioid use and outcomes following LEA remains unexplored. This study aims to determine if chronic opioid use relates to post-operative complications like osteomyelitis and surgical site infections after LEA. Methods: Utilizing the TriNetx database, we conducted a propensity score-matched case-control study on chronic opioid therapy patients undergoing specified procedures to explore osteomyelitis and surgical site infection incidence. “Chronic opioid therapy” was defined as three or more instances of opioid use within one day to three months prior, three to six months prior, and six months after LEA. Exclusions involved patients with opioid-related disorders and those taking methadone/buprenorphine for addiction treatment. Matched variables included age, sex, ethnicity, race, HIV status, diabetes mellitus, obesity, and use of glucocorticoids and immunosuppressants. Primary outcomes analyzed included osteomyelitis and surgical site infection incidence. Results: Each cohort had 4702 patients post propensity score matching. Statistical analysis revealed increased incidences of osteomyelitis (Gross: 1450 vs. 1194 patients; 30.838% vs. 25.393%, $p < 0.0001$); RR: 1.214, 95% CI: (1.138, 1.296) and surgical site infections (Gross: 200 vs. 75 patients; 4.254% vs. 1.595%, $p < 0.0001$); RR: 2.667, 95% CI: (2.051, 3.466) in patients on chronic opioid therapy versus the control. Conclusion: Our study suggests that chronic opioid therapy preceding LEA is associated with a significantly higher incidence of osteomyelitis and surgical site infections compared to control patients. Other studies suggest that other pain control methods including pre-operative blocks, NMDA medication, or pain management referral should be considered in LEA patients to avoid chronic opioid use.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Sun-care opinions and practices among health science graduate students

Presenting author: Kaitlyn Miner

Affiliation: Kansas City University

Co-Authors and affiliations: Athena Sdrales, Kansas City University; Crystal Guillen, Kansas City University; Hana Hamdan, Kansas City University

Abstract:

Young adults commonly demonstrate inadequate sun protective behaviors despite being most at risk for ultraviolet radiation (UVR) exposure. Sun-protective practices, such as applying broad-spectrum sunscreen and wearing protective clothing, are recommended by multiple professional organizations to minimize the risk of skin cancer development. Our aim is to identify sun-care opinions and practices among graduate health science students by assessing their foundational knowledge of sun damage and their ability to identify personal risk. An anonymous, 21-question survey was distributed to students at Kansas City University in the College of Osteopathic Medicine and College of Biosciences. Of the 150 responses, the majority answered correctly to questions assessing the risks of UV exposure and sun-protective measures. Eighty-eight percent attributed their sun protective practices to their preexisting knowledge about skin cancer and prevention of skin cancer as the primary factor for sunscreen usage. That stated, 17% of respondents do not use sunscreen, and 43% of sunscreen users report strictly seasonal use. Despite reported concerns about developing skin cancer, 36% stated they would not seek dermatological attention for a new skin lesion. Our results demonstrate a strong foundational knowledge of skin cancer and skin cancer prevention among graduate science students. However, discrepancies between sun-protective beliefs and practices continue to exist.

Category: Medical Education

Presentation mode: Poster presentation

Location: Kansas City Campus

Narcissism: A Dangerous Trait for Medical Providers

Presenting author: Sarah Taylor

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Trait narcissism is a personality trait which in high quantities may result in exhibitionism, self-sufficiency, vanity, and entitlement (Raskin & Hall, 1979). It may also result in risk-taking behaviors if one views themselves as being more talented or intelligent than they actually are (Campbell et al., 2005; Judge et al., 2009). According to previous research, perception of one's intelligence appears to be more related to narcissism than it is related to actual intelligence (Zajengowski et al., 2020). Those with high trait narcissism are likely to be drawn towards roles that are perceived as being high in prestige or power, where those potential risk behaviors could be dangerous (Nevicka et al., 2018). In specific, it has been found that doctors or others in the medical field have higher trait narcissism than those in other fields on average (Alsawalqa, 2020). Doctors who engage in life-saving behaviors have the most to lose by engaging in skill or intelligence-related risk behaviors. Previous research has found that perceived intelligence and perceived skill are related to trait narcissism, but no study has ever linked perceived intelligence and trait narcissism in doctors. There is also limited research on the trait narcissism of doctors. If there is higher trait narcissism, or higher perceived intelligence, then the current study could be important research for the future of medical professionals. The current study uses the Narcissistic Personality Index (NPI) and a perceived intelligence scale in order to determine whether trait narcissism is higher in this population, and whether the two constructs are correlated in this population. It is predicted that trait narcissism will be higher than average within this population, and that perceived intelligence will be correlated with trait intelligence. Key words: trait narcissism, medical students, perceived intelligence, Narcissistic Personality Inventory

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Effectiveness of acupuncture and osteopathic manipulative treatment in post-stroke spasticity: a case report.

Presenting author: Hannah Newland

Affiliation: Joplin OMM Fellow

Co-Authors and affiliations: Dr. Jared W. Nichols, KCU COM-Joplin

Abstract:

Approximately one-third of stroke survivors have post-stroke spasticity within three months post-stroke, leading to chronic pain and limited mobility of affected muscles. With no gold-standard in treatment, an important conversation between the patient and physician is needed to develop a unique management course. A 62-year-old Caucasian male presented to the pain management clinic with right-sided hemiparesis and spasticity after suffering two cerebrovascular accidents in 2010. The patient reported his pain as constant, achy, 8/10 in the right upper extremity and cervical spine. Time and movement worsened the pain and activity is limited due to hemiparesis. Medications include gabapentin, cyclobenzaprine, and trazadone for symptoms, but are insufficient in reducing pain. On physical exam, patient had right upper extremity and cervical muscle spasms, diminished reflexes, and diminished sensation. Various osteopathic manipulative techniques (OMT) were chosen to further alleviate symptoms, most effective being muscle energy and myofascial release. Acupuncture was performed to various trigger points in the cervical, thoracic, and upper extremity regions. The patient came to the clinic every month for the past two years and reported pain relief from 8/10 to 4/10 severity for one-month post-treatment each time. Post-isometric muscle energy performed after acupuncture was found to be more effective at improving mobility than either modality alone. OMT and acupuncture have similar mechanisms of action on the nervous system. While more research is needed to determine the efficacy of OMT on post-stroke spasticity, many studies suggest that both OMT and acupuncture release neurological peptide to reduce pain. The patient's symptoms were managed and reduced with a combination of acupuncture followed by OMT, along with medications for the past two years. With this case, it can be reasoned that OMT and acupuncture can be useful adjunct treatment tools for post-stroke spasticity.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Handcycling HIIT vs. MICT: gross efficiency in people with spinal cord injury

Presenting author: Lucia Jaquez

Affiliation: University of Illinois at Urbana-Champaign

Co-Authors and affiliations: Kaushik Perkari - University of Illinois at Urbana-Champaign Joseph Peters - Kansas City University Kellie Halloran - University of Illinois at Urbana-Champaign Michael Focht - University of Illinois at Urbana-Champaign Mariana Kersh - University of Illinois at Urbana-Champaign Ian Rice - University of Illinois at Urbana-Champaign

Abstract:

Introductions: Over 50% of people with spinal cord injury (PwSCI) exhibit cardiometabolic disease. HIIT may enhance cardiometabolic health but also carry increased injury risks. Gross efficiency (GE)—power output [PO]/energy expenditure—can be used to gauge upper-limb strain during propulsive-style movements and supports low-intensity, hand-cycling as optimal for upper-limb health. Evaluating GE during a hand-cycling-based HIIT may enable clinical researchers to gauge the safety of HIIT for PwSCI. **Purpose:** Examine GE during moderate-intensity continuous training (MICT) and HIIT to determine their impacts on upper-limb physical strain. **Materials and Methods:** Using a recumbent handcycle, open-spirometry, and SRM power meter monitored biometrics during a ramp test, HIIT, and MICT. Peak power output (PPO), obtained during the ramp test, dictated intensities for HIIT and MICT. HIIT sessions were 20 minutes with 1-minute intervals alternating between 90% PPO and 10% PPO. MICT maintained 40% PPO until an accumulated workload matched HIIT's workload. GE was calculated using the ratio: $([\text{mean power output} \times \Delta(\text{time})]/[\text{kilocalorie expenditure} \times 4184\text{J/kcal}])$. Wilcoxon signed-rank test, paired t-test, and the one-way ANOVA compared session times mean GE, and changes in GE, respectively. **Results:** Twenty participants with spinal cord injury/dysfunction (T3 or lower) completed exercise trials without adverse events. HIIT sessions were significantly shorter than MICT (20.00[.03] vs 23.35[2.77] min; $p < .01$). Mean GE during HIIT was lower than during MICT ($.27 \pm .04$ vs $.36 \pm .03$; $p < .01$), but remained stable from HIIT's first to last intervals ($p > .05$). Mean GE significantly degraded across the MICT protocol (-17% change $p < .01$). **Discussion:** GE was lower during HIIT, but may be insignificant due to GE maintenance. GE degraded across MICT, suggesting muscle fatigue. **Conclusions:** HIIT's rest periods may provide sufficient recovery and be safe for PwSCI. MICT may lead to muscle fatigue and heighten injury risk. Incorporating rest periods and limiting prolonged continuous training bouts may mitigate injury risk for PwSCI.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Expression of Mesenchymal Markers in Endothelial Cells during Doxorubicin Treatment and its Washout

Presenting author: Adam Frank

Affiliation: Osteopathic Medical Student

Co-Authors and affiliations: Shixin Tao, Nataliya Kibiryeva, Melissa Cobb, Eugene Konorev - Kansas City University

Abstract:

It is increasingly recognized that many cancer survivors have unique health care needs as a consequence of the lasting impacts of cancer treatments on their health and wellbeing. We sought to investigate cardiovascular complications of the anticancer agent doxorubicin (Dox), since this agent contributes greatly to cardiovascular morbidity in cancer patients. The previous work by the lab has shown that Dox induced endothelial damage is mediated by the canonical TGF-beta pathway. This pathway is a critical inducer of the endothelial-to-mesenchymal transition (EndMT), a process that plays a role in the development and progression of cardiovascular diseases. EndMT is also regulated by certain microRNAs. In this study, we tested the hypothesis that abundance of microRNA miR-133a is regulated by Dox and inhibitor of the TGF-beta pathway, SB431542 (SB), in treated endothelial cells. Bioinformatic analysis has shown that miR-133a is an important regulator of endothelial functions, angiogenesis and vasculogenesis, and EndMT pathway is highly enriched in genes regulated by miR-133a. During treatment of cultured human endothelial cells, Dox increased and SB reduced miR-133a expression. On the other hand, miR-133a expression was increased in endothelial cultures after Dox and SB withdrawal from the media. We have also examined expression of transgelin, one of the miR-133a targets, in Dox treated mouse hearts. Abundance of the transgelin protein was moderately increased in cardiac endothelial cells after completion of Dox therapy. In summary, both Dox and the TGF-beta inhibitor treatments modulate expression of microRNA miR-133a that may then play a role in regulation of EndMT in treated endothelial cells.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

**Assessing the Awareness of and Promoting Current Evidence-Based Treatment of
Acute Migraine among Emergency Medicine Physicians**Current guidelines
recommend certain antiemetics and sumatriptan as first-line agents,
dexamethasone for migraine recurrence, and

Presenting author: Areesha Shahab

Affiliation: Ascension Macomb Oakland Hospital

Co-Authors and affiliations: Dr. Noor Anouti, MD

Abstract:

Current guidelines recommend certain antiemetics and sumatriptan as first-line agents, dexamethasone for migraine recurrence, and avoidance of opioids and diphenhydramine. A 2022 study assessed trends in headache management in U.S. EDs and found the most prevalent combination therapy to be acetaminophen/NSAIDs, an antiemetic, and diphenhydramine. Triptans and corticosteroids were underutilized. No articles were found that surveyed EM physicians to examine their prescribing patterns or the reasons why they choose certain pharmacotherapies over others. It is presumed that the choices made by our surveyed EM physicians reflect the trends above. 13 residents and 2 staff physicians received a pre-test and a post-test questionnaire. After completing the pre-test, a brief lecture on current evidence-based guidelines for acute migraine treatment was presented. Then, participants completed the post-test which assessed their understanding of the lecture content. Data were entered into a spreadsheet and statistical analyses were performed. Our findings are in line with the trends seen in the 2022 study. NSAIDs and antiemetics are the most commonly used, as is recommended, while sumatriptan and opioids are the least used. Though the scarce use of opioids should be maintained, EDs should utilize sumatriptan and dexamethasone more often and decrease the use of diphenhydramine. Education regarding evidence-based pharmacotherapy should be implemented to all EM physicians regardless of training level.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Patients Willing To Pay For Nitric Oxide For Office Gynecological Procedures

Presenting author: Mikayla Lebo

Affiliation: Kansas City University student

Co-Authors and affiliations: Dr. Maisara Rahman- Family Medicine Associate Program Director/ Southwest Healthcare Medical Education Consortium, Assistant Professor Family Medicine Loma Linda University, Clinical Assistant Professor Family Medicine University Of California Riverside School of Medicine, Clinical Assistant Professor of Family Medicine Western University of Health Sciences Alan Tran- PGY1 Family Medicine Ibrahim Rahman- PGY1 Family Medicine

Abstract:

Background: Gynecological procedures often evoke anxiety and discomfort in patients, posing challenges to their care experience and adherence to screening protocols. Despite available interventions, patient distress persists, necessitating innovative approaches. Nitric oxide, renowned for its analgesic and anxiolytic properties, holds promise in alleviating procedural discomfort, yet its application in gynecology remains underexplored. Objective: This study aims to assess patient perceptions and willingness to pay for nitric oxide as an adjunctive therapy to mitigate pain and anxiety during routine office gynecological procedures. Methods: A survey-based study will be conducted among gynecological patients to evaluate their perceptions and experiences regarding pain and anxiety management during common office procedures, such as pelvic exams, endometrial biopsies, colposcopies and long-acting reversible contraceptive (LARC) methods (ie IUDs). Factors influencing patient discomfort were explored, alongside their willingness to invest in nitric oxide administration for procedural relief. Conclusion: Nitric oxide emerges as a promising adjunct for pain and anxiety management in office gynecological procedures. Patients' willingness to pay for nitric oxide underscores the perceived value of this intervention in alleviating patients' anxiousness during gynecological office procedures. This will enhance the patient's experience and may guide the establishment of pricing models in clinical settings. Further research is warranted to evaluate the feasibility and efficacy of nitric oxide utilization in improving patient outcomes during gynecological procedures.

Category: Medical Education

Presentation mode: Poster presentation

Location: Kansas City Campus

Assessing Millon's subtypes of borderline personality disorder in outpatient DBT clinics: prevalence and implications

Presenting author: Jocelin Linares

Affiliation: Health Service Psychology

Co-Authors and affiliations:

Abstract:

Borderline Personality Disorder is a serious mental health disorder, with 2-6% of individuals in the general population suffering with this disorder (Levy et al., 2018). This personality disorder is described as someone having unstable interpersonal relationships, identity disturbances, and impulsivity that starts in young adulthood (APA, 2022). There is a large variation among presentations of Borderline Personality Disorder, indicating a need for subtypes (Smits et al., 2017). The research on subtypes is inconsistent and no study to date has looked at Millon's four subtypes: impulsive, discouraged, self-destructive, and petulant. Individuals will be recruited from DBT clinics in Missouri and will require them to have a diagnosis of Borderline Personality Disorder, excluding those with a comorbid personality disorder. This proposed study is utilizing a descriptive research design through a self-report measure of personality: the Millon Clinical Multiphasic Inventory (MCMI-IV). Prevalence of Millon's subtypes will be assessed through looking for clinically significant personality types (i.e., a base rate of 75 – 84) on the following scales: avoidant, dependent, histrionic, antisocial, passive-aggressive (negativistic), and masochistic personalities. A hierarchical cluster analysis will be conducted to differentiate individuals into separate subtype clusters. Accurate prevalence of subtypes may offer different treatment options for different presentations of Borderline Personality Disorder, such as directly targeting specific personality features associated with each subtype. Key Words: Borderline Personality Disorder, Subtypes, Prototypes, Theodore Millon, Personality Features, Dimensional, Categorical

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

modifications to cbt to help treat symptoms of autism in autistic patients

Presenting author: David Whiteman

Affiliation: Psyd Program

Co-Authors and affiliations:

Abstract:

For this study, I plan to analyze and compare the current research on which modifications to CBT (individual or group based) are more effective in positively treating the general symptoms of autism spectrum disorder (ASD) in adults based on the DSM5-TR. The two specific symptoms will be based on the diagnosis criteria, which include criteria a) “Persistent deficits in social communication and social interaction”; and criteria b) “Restricted, repetitive patterns of behavior, interests, or activities ... currently and by history”. My study would add to the existing literature by analyzing the effectiveness of modified CBT on adults with ASD, as autism has been viewed and studied as primarily a psychological disability of children and teenagers. The current literature has already found evidence that CBT (unmodified) has at least a small to medium impact on the symptoms of ASD in both children and adults. (Weston et al, 2016, pg. 46) Also, multiple studies have also found that specific modifications to CBT (such as social skills training, and exposure tasks), have a positive impact on the social functioning of young adults with ASD, with the inclusion of psychoeducation on self-management and textual cues having been found to have a positive effect on emotional recognition of young adults with ASD. In this study, I hypothesize that individualized modifications to CBT for adults with ASD will be more effective in improving the general symptoms of ASD than group modifications.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Complementary and alternative approaches for chronic pelvic pain syndrome

Presenting author: Stephanie Marks

Affiliation: KCU

Co-Authors and affiliations: Stephanie K. Marks, KCU Nathan A. Rodriguez, KCU Anisha Shah, KCU Andi N. Garcia, KCU Leah Ritter, KCU Angela N. Pierce, KCU KCU College of Osteopathic Medicine, Kansas City University, United States

Abstract:

Chronic pelvic pain syndrome (CPPS) is a functional pain disorder characterized by ongoing pain in the absence of clinically identifiable causes. Given the current opioid epidemic, the prevalence of functional pain disorders necessitates better management of ongoing symptomatology but due to the uncertain etiology and myriad patient presentation phenotypes, reliable treatment options are difficult to identify. The purpose of the project is to investigate non-pharmacological approaches to pain management across a spectrum of clinical and pre-clinical studies to support conservative care options. This review summarizes the current evidence and proposed mechanisms for nonpharmacological treatment of CPPS specific to complementary and alternative medicine (CAM), which is widely recommended as first-line treatment. CAM includes counseling, diet/exercise, and musculoskeletal therapy. When treated with biophysical approaches involving counseling or mindfulness, patients with chronic pain report improvement in quality of life and pain tolerance, as well as reduced pain intensity. Lifestyle changes such as antioxidant supplementation, ketogenic diet, and physical exercise are efficacious due to improved states of subthreshold systemic inflammation, central/peripheral sensitization, and stress-axes dysregulation in CPPS. Neuromusculoskeletal techniques such as acupuncture, auriculotherapy, myofascial release, and phototherapy show symptom improvement that may be attributed to changes in the peripheral inflammasome and somatic origins of peripheral sensitization. Overall, this article consolidates the current state of evidence regarding the utilization of CAM-techniques for the management of chronic pelvic pain and recommends a future direction for the field to support physicians, scientists, and patients alike. Limitations to studies are included and discussed along with suggestions for future research in the field.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

The intra-arterial infusion of VBI-1, a phospholipid nanoparticle, protects against cerebellar lesions associated with severe hemorrhagic shock.

Presenting author: Kaitlyn J. Aldaz

Affiliation: Kansas City University

Co-Authors and affiliations: Philemon Shallie - University of Missouri–Kansas City School of Medicine
Nathan Carpenter - University of Missouri–Kansas City School of Medicine Prashanth Anamthathmakula -
University of Missouri–Kansas City School of Medicine Michael Moncure - University of Missouri–Kansas
City School of Medicine Cuthbert Simpkins - University of Missouri–Kansas City School of Medicine

Abstract:

Abstract: The cerebellum, renowned for its role in bodily motor functions, is particularly vulnerable to impairment during hemorrhagic shock incidents. Such impairment may result in enduring deficits linked to motor coordination and cognitive processing. Comprehending the mechanisms of this damage proves pivotal in the development of interventions aimed at ameliorating cerebellar harm and enhancing outcomes for survivors of hemorrhagic shock. Hence, our investigation sought to devise a treatment or methodology to mitigate the adverse repercussions associated with cerebellar lesions following post-hemorrhagic shock. **Materials and Methods:** We devised the Femoral Artery Catheterization and Reanimation Technique (FACART) to establish a rat model simulating clinical death and subsequent reanimation. Three different rat groups (SHAM, Blood, and VBI-1) underwent bilateral femoral vessel cannulation; for blood pressure monitoring and the other for blood withdrawal until respiration stopped. Rats were reanimated using shed blood or VBI-1 administered intra-arterially (IA). Brain tissue was collected, processed, and stained with H&E, and NeuroTrace. Cerebellar sections were imaged using a Nikon Eclipse Ti microscope at 10× or 40× objective lenses with identical settings across all experimental conditions. **Results:** The findings of the study revealed notable results regarding cerebellar pathological changes in the rats subjected to receiving their shed blood, as compared to the VBI-1 and SHAM groups. These differences were statistically significant ($p < 0.01$). The observed lesions included various histoarchitectural distortions, neuropile degeneration, vacuolations, pyknosis, and chromatolysis. The observed pathological features suggest a profound impact on cerebellar tissue integrity and cellular health due to reperfusion injury. **Conclusion:** The administration of VBI-1 and the FACART technique offers a novel strategy for addressing the complex neurological challenges encountered by survivors of hemorrhagic shock. This underscores the potential of interventions not only to enhance rehabilitation but also to preserve cerebellar function, emphasizing a promising avenue for future research and clinical application.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Exploring the temporal association of priapism with trazodone treatment

Presenting author: Rahul Shah

Affiliation: Kansas City University

Co-Authors and affiliations: Luigi Loizzo - Kansas City University Shivani Sookchand, D.O. - Florida State University

Abstract:

Priapism is a rare but serious side effect associated with trazodone, a commonly prescribed medication for various medical conditions, including depression and insomnia. This case report presents a patient with an atypical presentation of priapism as a side effect of trazodone, and will further discuss the clinical findings with treatment choices and responses. A 56-year-old male with a history significant of hypertension and schizophrenia, was tolerating Trazadone for longer than 3 months for depression when he presented to the emergency department for persistent, painful erection for 72 hours. On physical exam, the penis was semirigid, tender with extensive bruising, and complicated by paraphimosis. In the emergency department, the patient was given 4mg morphine, and corporal aspiration was performed. The diagnosis was ischemic priapism as the aspiration did yield a high flow. 2x doses of 200 mcg of phenylephrine were given with no change in symptoms. The patient was then prepped for surgery by urology. A distal Corporoglandular penile shunt was placed, corporal aspiration and irrigation of dark clotted blood was performed, and IV tubing and snake were placed down the corporal body to allow drainage which was then removed once priapism had subsided. It has been observed that priapism is most likely to occur during the initial 28 days of trazodone treatment. However, our case study examines an exceptional instance, where the patient developed a severe case of priapism long after this typical window, prompting a comprehensive investigation. This case report calls attention to the atypical occurrence of priapism associated with trazodone and emphasizes the need for heightened awareness within the medical community regarding the timing of this adverse event. Further investigation is warranted to understand the underlying mechanisms of such occurrences and to refine clinical guidelines for managing trazodone-induced priapism.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Long-term prognosis of clinically unrecognized myocardial infarction in patients with coronary artery disease

Presenting author: Nicholas Thomas, BS

Affiliation: Kansas City University-College of Osteopathic Medicine

Co-Authors and affiliations: Parag Bawaskar, MD, DM - University of Minnesota Medical School Chetan Shenoy, MBBS, MS -University of Minnesota Medical School

Abstract:

INTRODUCTION: Clinically unrecognized myocardial infarction (MI) has been shown to have worse outcomes compared with the absence of MI in population-based studies of asymptomatic people and in symptomatic patients with suspected coronary artery disease (CAD) undergoing cardiac testing. Whether the adverse prognosis is due to the direct pathologic effects of MI or simply because it is a surrogate for CAD is unknown. **METHODS:** We conducted a retrospective cohort study of consecutive patients with CAD who underwent clinical cardiovascular magnetic resonance imaging (CMR). We investigated associations between clinically recognized MI and MI on CMR, and long-term mortality. **RESULTS:** Among 2,511 patients, 1,578 (63%) had clinically recognized MI and 1,914 (76%) had MI on CMR as indicated by ischemic late gadolinium enhancement. Overall, 1,362 (54%) had both clinically recognized MI and MI on CMR, 216 (9%) had clinically recognized MI but no MI on CMR, 552 (22%) had no clinically recognized MI but MI on CMR (clinically unrecognized MI), and 381 (15%) had neither. On Cox multivariable regression analyses, patients with clinically unrecognized MI, and both clinically recognized MI and MI on CMR had a greater risk of death [hazard ratio (HR) 1.50; 95% confidence interval (CI) 1.14-1.95; $p=0.003$ and HR 1.43; 95% CI 1.11-1.83; $p=0.005$ respectively) compared with patients with clinically recognized MI but no MI on CMR and patients with neither. Patients with clinically recognized MI but no MI on CMR had no difference in mortality compared with patients with neither clinically recognized MI nor MI on CMR (HR 1.13; 95% CI 0.78-1.63; $p=0.51$). **DISCUSSION AND CONCLUSION:** Clinically unrecognized MI is associated with greater mortality independent of the presence and extent of the underlying CAD. Conversely, clinically recognized MI without MI on CMR is not associated with greater mortality compared with neither clinically recognized MI nor MI on CMR.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

The Mental Health Effects of Purity Culture on Young Adult Women

Presenting author: Maria Aaron

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

“Purity culture” is a facet of evangelical Christianity that rose to prominence starting in the late ‘70s, and gradually influenced facets of American life such as sex education and laws related to women’s bodies. In the evangelical church, many women raised with purity culture beliefs were later shown to be vulnerable to physical and sexual assault, which was compounded by the lack of knowledge surrounding consent. The associated shame and guilt of these women has been documented in research, however the experience of related mental health deficits has not. This study hopes to explore the experience of women ages 18-25 raised in purity culture and their experience with anxiety and depression, as compared to their peers who were not raised with these beliefs.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Hospitalists attitudes, skills, knowledge about OSA: the ASK survey

Presenting author: Kaitlin Barnes

Affiliation: KCU-Joplin COM 2026

Co-Authors and affiliations: Rhea Mahesh, MD candidate 2026 - University of Kansas Medical Center
Sophia Perrottas - Byram Hills High School, Armonk, NY Dr. Anya Koza, DO - Advocate Aurora Health, Milwaukee, WI Dr. Nancy Stewart, DO, MS - University of Kansas Medical Center

Abstract:

An estimated 24 million people in the United States (U.S.) have undiagnosed obstructive sleep apnea (OSA). Untreated OSA is associated with a heightened risk for atrial fibrillation, hypertension, type 2 diabetes, metabolic syndrome, dementia, and ischemic stroke. Studies conducted internationally demonstrate primary care physicians lack knowledge about OSA risk stratification and have low confidence when caring for patients on continuous positive pressure, the standard of treatment. Fortunately, educational interventions for health care workers (HCW) are shown to improve outcomes for OSA patients. No study to date has conducted a multicenter investigation of U.S. hospitalist's understanding and experience managing OSA patients in academic and community settings. The objective of this study is to determine the knowledge, attitudes, and skills of US hospitalists in identifying and treating OSA and sleep health. A self-selection survey was distributed to participating institutions via email for 10 days targeting hospitalists. Participants completed a 5 minute online survey with 65 questions about their knowledge, attitudes, perceptions, and skills when diagnosing and treating OSA patients. Preliminary results are ongoing. We anticipate deficits in a majority of domains assessed in surveyed HCW across the multicenter institutions. This study will provide a comprehensive look into the current status of U.S. hospitalists' understanding of OSA. Thus, identifying specific areas to target future OSA-education for HCW as a means to improve patient outcomes.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Perceived Social Support and it's Impact on Adult ADHD Symptomatology Expression

Presenting author: Rahi Patel

Affiliation: Health Service Psychology - Kansas City University

Co-Authors and affiliations:

Abstract:

Background: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that is characterized by a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development. ADHD cannot be diagnosed in the absence of any symptoms prior to the age of 12. Symptom expression of ADHD can vary between ages. The current literature within the field does not consider the impact that social support has on ADHD symptom expression within an adult population. **Objectives:** The purpose of the proposed dissertation explore how perceived social support (PSS) predicts adult ADHD symptom expression. The proposed dissertation aims to determine how varying sources of PSS from family, significant other/partner, and friends on the multidimensional scale of perceived social support (MSPSS) predicts the symptom expression and severity of adult ADHD scores between inattentive, hyperactivity-impulsivity motor, and hyperactivity-impulsivity verbal on the Adult ADHD Self-Report Scale (ASRSv1.1). **Method:** The design of the proposed dissertation is a correlational study. Adult participants will be recruited around the Kansas City region who have been previously diagnosed with ADHD or who have met the diagnostic criteria for an ADHD diagnosis. Validated constructs will be used to measure reports of perceived social support and ADHD symptom expression. **Results:** The proposed statistical analysis of this dissertation is Pearson's correlation coefficient (r). Furthermore, suppose a correlation has been established between the sources of social support (family, significant other, and friends) and ADHD symptom expression (inattentive, hyperactive-impulsive motor, and hyperactive-impulsive verbal). In that case, this dissertation will consider the use of multiple regression to determine if perceived social support predicts adult ADHD symptom expression.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Examining correlations between screen usage and delayed memory

Presenting author: Brendan Collins

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Research on screen usage has indicated positive correlations with screen usage and impairments in working memory among preadolescent kids. There is also research indicating that how a screen is utilized may impact these impairments depending on whether the participant actively engages with the screen or passively observes the screen. However, little is known about how screen usage is related to memory in adults. The goal of the proposed study is to examine any potential correlations between screen usage type (active and passive) and memory (auditory, visual, immediate, and delayed) in a cross sectional, quantitative design. Participants will be recruited from affiliated practicum sites of the Kansas City University's Health Service Psychology Program recruiting ideally 51 adult participants. Screen usage will be obtained using self-report measures and the subgroups of memory will be obtained using the Designs I & II and Logical Memory I & II subtests of the Wechsler Memory Scale- Fourth Edition during the testing day. Age and education level will be factored in as potential covariates to account for confounds. A two-way multivariate analysis of covariance (MANCOVA) will be used to assess for any significant relationships between screen usage and memory. It is hypothesized that active screen time will not have significant relationships with visual memory, auditory memory, immediate memory, or delayed memory in age matched adults. It is hypothesized that passive screen time will be negatively associated with auditory memory, visual memory, immediate memory, and delayed memory.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Spina bifida occulta and sacral neuromodulation for treatment of urinary and rectal incontinence

Presenting author: Bhumi Patel, B.S.

Affiliation: Kansas City University- Joplin

Co-Authors and affiliations: Jack Tyrone Adcock, D.O. - Kansas City University- Joplin

Abstract:

Introduction: Urinary Incontinence (UI) is the involuntary leakage of urine throughout the day while rectal incontinence (RI) is the incomplete control of the rectal sphincter. Sacral neuromodulation (SNM) is a minimally invasive treatment that is implanted into the patient to treat UI/RI. Siegel et al. reported that SMN had a success rate of 83% for treating an overactive bladder. Another study reports that 80% of patients with SNM had some improvement with RI. Spina bifida occulta is a neurological malformation that can commonly cause UI/RI. In a cross-sectional study, UI/RI prevalence measured a little over 60% and 34% respectively in young adults with spina bifida occulta. Minimal studies have revealed the efficacy of SNM in treating patients with UI/RI due to spina bifida occulta. Case Presentation: We present a 66 y/o female with spina bifida occulta who has notable disarrangement of the sacrum. Her chief complaints were urge UI, RI, and urinary retention. Pre-operatively, she had less leaks due to a successful stage 1 trial of SNM. Lab values and WBC counts were within normal limits. Thereby, the patient underwent stage 2 Axonics® SNM placement with programming of the device by Axonics® personnel. Areas of implantation were not infected or inflamed. Patient arrived at the OR in the supine position, was placed under general anesthesia, and flipped into the prone position for the procedure. Post-operatively, the patient was flipped back to the supine position and transferred to the PACU. She had stable vitals with spontaneous respirations. No complications noted. Upon follow up, the patient has shown significant improvement regarding UI, RI, and urinary retention. Discussion: This case demonstrates the successful outcome of SNM in treating a patient who experiences UI, RI, and urge incontinence due to spina bifida occulta.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

What can gene expression changes in the hypothalamus from prepartum and postpartum mice tell us about postpartum depression in human beings?

Presenting author: Katherine Konopka

Affiliation: KCU-College of Biosciences

Co-Authors and affiliations: Anna Grace Gibbons- KCU-College of Biosciences Brady Fritz- KCU-College of Biosciences Sydney Heydt-KCU-College of Biosciences Tristen Williams- KCU-College of Biosciences Dr. Douglas C. Bittel, Ph.D -KCU-College of Biosciences Dr. Nataliya Kibiryeva, MD- KCU-College of Biosciences

Abstract:

Significant changes in the maternal body arise in response to pregnancy. A troubling public health concern for new mothers is postpartum depression. Common symptoms of postpartum depression include, but are not limited to, insomnia, loss of appetite, intense irritability, and difficulty bonding. Evidence from past studies has determined that genetic variation contributes to postpartum depression. We selected publicly available RNA sequence data that examined gene expression changes across the following brain regions: hippocampus, neocortex, cerebellum, and hypothalamus in mice. Due to limited resources, we were unable to perform a detailed analysis of all four brain regions. Since hormone dysregulation is a frequently observed phenomenon in humans experiencing postpartum depression, we selected the hypothalamus as the primary brain region of analysis. The hypothalamus was chosen due to its substantial link to the regulation and production of hormones. In this study, we analyzed data from *Mus musculus* studies, comparing the gene expression found within the hypothalamus of mice with a list of genes found in the hypothalamus of humans with a known association to postpartum depression. While there have been decades of research on depression, it is still poorly understood. Our goal is to assess gene expression changes in the female mouse brain of virgin mice compared to postpartum mice. We predict that our analysis of mice will reveal significant genetic variation within the hypothalamus, enabling us to identify gene expressions that are associated with postpartum depression. The result from our research will establish a foundational gene expression blueprint, depicting alterations in the postpartum hypothalamus of female mice.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Quality and Usability Analysis of AI-Generated Responses to Common Patient-Centric Hand and Wrist Surgery Questions

Presenting author: Charles Marchese

Affiliation: Kansas City University

Co-Authors and affiliations: Benjamin Pautler - Kansas City University Makayla Swancutt - Kansas City University Bryan Beutel - Kansas City University

Abstract:

INTRODUCTION: The advent of, and increased accessibility to, artificial intelligence (AI)-based applications within society is altering the landscape of how people explore and acquire new information. In the clinical realm, patients are beginning to utilize AI-based applications, such as ChatGPT and Gemini, by asking questions regarding common medical issues and procedures. However, the accuracy, quality, and usability of responses created by these applications have only begun to be explored. Additionally, it is anecdotally known that these AI applications commonly give different answers to the same questions if run through the software multiple times. This study aimed to provide an assessment of the accuracy, usability, and quality of responses received from various open AI applications to patient-centric hand and wrist surgery questions. **METHODS:** Twelve common patient-centric questions regarding hand surgery (n=6) and wrist surgery (n=6) were developed by a board-certified hand and wrist surgeon. Each question was then inputted into both ChatGPT and Gemini online large language AI models, and the output responses were recorded. To better understand how these programs change their responses to the same questions, the questions were then inputted a second time, and results were similarly recorded. The quality and usability of each response were evaluated using DISCERN, Suitability Assessment of Materials (SAM), and the AI Response Metric (AIRM) instruments. **RESULTS:** A total of 48 AI responses were obtained. Quality, usability, and accuracy results, as well as statistical analyses to determine how these programs respond differently to the same questions, are forthcoming. This will also include an analysis of differences in quality between responses to hand versus wrist content. **CONCLUSION:** This evaluation is vital to understanding the implications of AI content on patient education and care as this burgeoning technology emerges as a resource and tool for both patients and physicians.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Structural Adaptations of the Anterolateral Ligament of the Knee and Associated Tissues: An Anatomical and Histological Analysis

Presenting author: Charles Marchese

Affiliation: Kansas City University

Co-Authors and affiliations: Benjamin Pautler - Kansas City University Makayla Swancutt - Kansas City University Anthony Olinger - Kansas City University Bryan Beutel - Kansas City University

Abstract:

INTRODUCTION: The anterolateral ligament (ALL) of the knee is thought to be an important secondary stabilizer of internal rotation and, due to its proximity to the lateral collateral ligament (LCL), it may play a pivotal role in lateral stabilization as well. However, much debate exists regarding its anatomy and function. Given that the ALL is not universally present in all patients, this study aimed to accurately characterize the anatomy of the ALL and associated tissues of the anterolateral complex of the knee and determine if structural compensatory adaptations exist in those patients in whom the ALL is absent.

METHODS: Sixty-two formalin-embalmed cadaveric knees were dissected to localize the ALL (if present), LCL, iliotibial (IT) band, and anterolateral capsule. The length, width, and thickness of the ALL, LCL, and IT band were measured with calibrated calipers. Samples of each of these structures (or the capsule in ALL-deficient knees) were sent for hematoxylin and eosin, and picosirius red, staining to evaluate the collagen composition and architectural arrangement of the tissues. Size measurements, cross-sectional area, and histological features were compared between ALL-present and ALL-deficient knees.

RESULTS: Anatomical measurements and histological evaluation of each of the structures, as well as statistical comparisons, are forthcoming. **CONCLUSION:** This study will determine if gross anatomical and histological differences exist in the LCL and IT band of ALL-present and ALL-deficient knees. This study will further elucidate the role the ALL may play in the stabilization of the knee and adaptations that may exist to compensate for ALL deficiency.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

High Yield Foundational Science Reviews and their Impact on Preclinical Exam and Board Score Outcomes.

Presenting author: Charles Marchese

Affiliation: Charles.Marchese@kansascity.edu

Co-Authors and affiliations: Kale Moreland - Kansas City University Benjamin Pautler - Kansas City University Minah Tariq - Kansas City University Makayla Swancutt - Kansas City University Alex Ho - Kansas City University Jennifer Dennis - Kansas City University

Abstract:

INTRODUCTION: A strong foundation in anatomy, embryology, and physiology is needed to better understand processes that underlie pathophysiology and associated pharmacology. KCU's preclinical curriculum focuses on these 5 areas utilizing a 2-pass system with the first academic year (OMS1) focusing on anatomy, embryology, and physiology to provide a foundation for their second-year courses. The second academic year (OMS2) focuses on pathology, pharmacology, and clinical application of this foundation. The second-year curriculum is designed to prepare students for board examinations (many students take both USMLE Step 1 and COMLEX Level 1), and their 3rd and 4th year clerkships. The purpose of this study is to determine if the implementation of high-yield OMS1 review lectures will benefit OMS2 students in both their block exams as well as their readiness for their respective board exams.

METHODS: High-yield, asynchronous lectures were implemented in select courses of the OMS2 curriculum related to anatomy, physiology, embryology, and histology to review content that would supplement respective blocks. Statistical analysis and comparison will be performed between the block exam scores for the class of 2026 to their counterpart from the class of 2025, as well as the full-length mock board exam taken in April.

RESULTS: Creation of the high-yield review lectures have been completed, and appropriate lectures have been released according to the 2nd year curricular schedule. Results of the respective block exams and the full-length mock board exam from the class of 2025 have been collected, and results of the block exams and the full-length mock board exam from the class of 2026, as well as statistical analyses of these results are forthcoming.

CONCLUSION. This study aims to demonstrate that the implementation of high-yield information from the OMS1 curriculum into the OMS2 curriculum will positively impact second-year medical students.

Category: Medical Education

Presentation mode: Poster presentation

Location: Kansas City Campus

Troubleshooting a bacteria-to-diatom interspecies conjugation protocol

Presenting author: Hope Keane

Affiliation: Kansas City University

Co-Authors and affiliations: Nicole Ford, PhD- Kansas City University

Abstract:

We are interested in using diatom frustules as a biomaterial source to create various silica-based biosensors to detect medically relevant materials, such as pathogens or allergens. Diatoms are a class of phytoplankton found in various aquatic environments. Marine or brackish water diatoms build repetitive, intricate, nanoporous to mesoporous siliceous cell walls (frustules). To functionalize these frustules, we will genetically modify diatoms (such as *Thalassiosira pseudonana*) to express a fusion protein containing a biosensor and biosilica targeting peptide. Our biosensor is a synthetic Camelid antibody, called a single domain antibody (sdAb). Our silica targeting peptide is Sil3T8 a fragment of the *T. pseudonana* Silaffin3 protein (a native protein residing in the frustule). To introduce a fusion protein gene to diatoms, we will refine a recently developed interspecies conjugation between *E. coli* and *T. pseudonana*. This interspecies conjugation is a two-plasmid system, one plasmid to start the conjugation (conjugative plasmid) and another to carry our fusion protein gene (cargo plasmid). To facilitate troubleshooting my cargo plasmid contains two diatom expression cassettes, neomycin resistance (for selection) and the fusion protein (Sil3T8 + green fluorescent protein, for rapid screening). Two issues will be addressed by my project: recombination of the cargo plasmid with itself and intolerance of *T. pseudonana* to bacteria. If recombination occurs (i.e., insertions, deletions, or reorganizations) any key features of the cargo plasmid can be disrupted. Additionally, unlike some diatom species, *T. pseudonana* is overly selective regarding its bacterial partners in culture and as a result the diatoms do not survive the interspecies conjugation protocol. Thus, I will test different *E. coli* strains to find one strain that can meet both needs. After optimizing the interspecies conjugation protocol, we will be able to target any biosensor desired to the biosilica.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Long Non-Coding RNA Assessment in Cardiac Organoids

Presenting author: Reema Mody

Affiliation: Kansas City University

Co-Authors and affiliations: Christian Bell - Kansas City University Aaron Allard - Kansas City University
Nataliya Kibiryevea - Kansas City University

Abstract:

The heart, one of the first organs developed, is extremely challenging to study in vivo. The best model to study early cardiac development is cardiac organoids. Cardiac organoids are generated from cardiac progenitors through a three-step Wnt signaling modulation strategy making them comparable to age-matched human fetal cardiac tissues. Development of a heart is a complex process that involves temporal and spatial coordination between various cell networks. In recent years, we have accumulated a lot of knowledge about genes involved in cardiogenesis, but epigenetic factors are still majorly understudied. The long non-coding RNAs (lnc-RNA) are an important underappreciated epigenetic regulator. One of the roles of lnc-RNA are creation of competitive endogenous RNA (ceRNA) networks with micro-RNA to regulate gene expression. The knowledge regarding the role of ceRNA networks in early cardiogenesis is limited. Here we used Partek Flow (Partek St.Louis, MO) to reanalyze previously published RNAseq data, focusing on gene expression at different points of cardiac organoid development up to day 19. In our analysis, we investigated lncRNA and ceRNA networks. We identified several ceRNA networks that are regulating important pathways such as, Wnt signaling pathway, BMP signaling pathway and Notch signaling pathway. Using organoids as a model to understand the involvement of cardiac specific ceRNA regulatory networks that are essential for early cardiac development, will help understand their epigenetic regulatory mechanisms. Those findings will eventually lead us to better understand the development origins of different congenital heart defects.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Analysis of competitive endogenous RNA (ceRNA) networks as epigenetic regulators of cardiogenesis

Presenting author: Christian Bell, M.S.

Affiliation: Kansas City University

Co-Authors and affiliations: Aaron Allard, M.S. - Kansas City University Reema Mody, M.S. - Kansas City University Douglas C. Bittel, PhD - Kansas City University James E. O'Brien Jr, MD - Children's Mercy Hospital Natalia Kibiryeva, MD - Kansas City University

Abstract:

The epigenetic regulation of human embryonic heart development is not well understood. The regulation of heart specific genetic pathways is closely controlled in temporal and spatial patterning by transcription factors and post-transcriptional modifiers. Recently, functional non-coding RNAs (ncRNAs) have been discovered to play a post-transcriptional regulatory role during organ development. Competitive endogenous RNA (ceRNA) networks are large regulatory networks formed by both coding and noncoding RNA transcripts interactions. While there are several RNA:RNA interactions that are key to ceRNA network formation, one of the most important interactions is that between long non-coding RNA (lncRNA) and complementary microRNA (miRNA) transcripts. When these interactions form, the lncRNAs function as miRNA sponges, affecting downstream messenger RNA (mRNA) expression levels. These axes of interaction are frequently denoted as lncRNA/miRNA/protein coding gene axis of regulation. Evidence is beginning to accumulate, suggesting a link between dysregulation of epigenetic processes and congenital heart defects. But yet, little is known about the function and significance of ceRNA networks during fetal heart development. We compared expression patterns of lncRNA and mRNA during different gestational time points of human cardiogenesis. We identified several ceRNA networks that appear important for proper formation of the heart. Identifying these networks will help us understand complex epigenetic regulation of morphological changes in developing heart and potentially will lead to better understanding of mechanisms involved in congenital heart defects.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Intracellular calcium regulates stromal cells response to ionizing radiation exposure

Presenting author: Jacob Protopopov

Affiliation: KCU

Co-Authors and affiliations: Clayton Bilke - KCU Kami Pearson - KCU Feng Gao - KCU Dr. Asma Zaidi - KCU Dr. Ehab Sarsour - KCU

Abstract:

Environmental and clinical exposure to ionizing radiation (IR) is associated with increased risk factors for various diseases and can lead to numerous health complications. Tissue stroma are crucial for maintaining proper function, health, and facilitating multiple physiological functions. Differentiated stromal cells, fibroblasts and microglia, are an integral part of tissue stroma. The role of calcium metabolism and homeostasis is pivotal in the health, functionality, and integrity of stromal tissues. A significant knowledge gap exists regarding the impact of IR exposure on calcium in these cell types. Using normal human fibroblasts (NHF) and microglial cells (BV2) we examined the effects of IR on intracellular calcium levels. Initially, we examined the effects of IR on cell growth comparing quiescent against proliferating cells. Our results showed a significant dose dependent (0.5-4 Gy) decrease in cells numbers in both NHF and BV2 proliferating cells while no significant decrease in cell numbers was observed in quiescent cells after IR exposure. Using flow cytometry and green fluorescent calcium dye (Fluo-4AM), our results demonstrated a significant increase in intracellular free calcium levels in response to IR, with maximal change 24 hours after IR dosage of 4 Gy in both NHF and BV2 cell types. An immunoblotting assay was used to examine the levels of Stromal Interaction Molecule-1 (STIM1) protein, a key regulator of cellular calcium storage and mobilization. Our results were not conclusive, and it is under further investigation. These results suggest that intracellular calcium plays a role in proliferating cell response to IR exposure. Understanding the relationship between calcium and IR exposure in tissue stroma have the potential to develop radio protective therapies which can be used to mitigate and protect against IR exposure in clinical settings and from environmental hazards.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Design and construction of a novel competitive chemotaxis chamber.

Presenting author: Dennis W. Wolff

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

A longstanding means of measuring cancer cell migration and invasion involves the use of Transwell inserts, tiny cups with a membrane bottom containing 8-micron pores. Over several hours, cells migrate/squeeze through these pores in response to a chemoattractant and adhere to the underside. Staining of these cells is followed by a typically labor-intensive counting process for each well that I have used previously. The question for those cells was, “Do I stay or do I go?” However, I have always been far more intrigued by the question of where cancer cells would go if they had choices. Many cancer cells express smell and taste receptors. With an otherwise similar established chemotactic signal, would they migrate toward umami and away from bitter, for example? To examine this question, I purchased an 8K Elegoo resin printer and used FreeCAD to make a novel chemotaxis chamber printed with SirayaTech Blu resin. The chamber has sieves on either end of a 2 mm deep x 20 mm wide x 40 long clear gellan gum gel slab between microscope coverslips with inlet and outlet ports permitting laminar flow of a diluent (e.g., cell culture media without chemotactic factor). Embedded on one end of the gel slab are four re-fillable point sources for the chemotactic factor plus an agonist for smell and/or taste receptors indicated as present on these cells by proteinatlas.org. Cells will be cultured in a portable microenvironment chamber and their movement from a common well will be recorded by images snapped at 1-minute intervals with a USB macro-zoom microscope web camera. Preliminary prototype testing is now underway. Adaptations of this for salivary flow cell studies of the oral microbiome are also envisioned. Current progress will be shared at the KCU Research Symposium.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Exploring the Correlation Between Catecholaminergic Activity in the Cervical Vagus Nerve and signs of Cardiac Remodeling: implication for Vagus Nerve stimulation therapy

Presenting author: Aadhya Subhash

Affiliation: Missouri Southern State University

Co-Authors and affiliations: Dhavni Patel, Eryn Wagoner, Mary Kilmer, Shelby Kuhnert, Alla Barry

Abstract:

The process of cardiac remodeling (CR), triggered by heightened sympathetic outflow, involves changes in heart geometry and accumulation of connective tissue (CT) within the myocardium. These alterations lead to impaired ventricular functions and the progression of heart failure. Simultaneously, parasympathetic outflow, through cardiac branches of the Vagus Nerve (VN), exerts cardioprotective effects, reducing the risk of CR. Recent studies revealed the presence of catecholaminergic fibers (CF) in the cervical VN. These newly discovered CF, likely postganglionic sympathetic, challenge the current understanding. The aim of our study was to explore the correlation between the quantity of CF within the cervical VN and indicators of CR. Cervical VN samples were obtained from 10 formalin-preserved adult human cadavers (male n=5, female n=5). All sections were prepared using Luxol fast blue and anti-Tyrosine Hydroxylase (TH) antibody. Superior Cervical Ganglia were examined for TH-reactivity to confirm the quality of TH detection. Myocardium was stained with trichrome. TH+ areas and CT were measured using ImageJ and analyzed using PAST 4.11. Analysis revealed the presence of TH+ fibers bilaterally or unilaterally in 9 of 10 examined donors, with varying prevalence ranging from 0% to 15%. Upon conducting linear regression analysis, no statistically significant correlation was observed between the quantity of vagal CF and indicators of CR. However, a trend towards significance emerged in the relationship between the quantity of CF and abnormal thickness observed in the left ventricular wall and interventricular septum ($p=0.056$). Our study reinforced the understanding of the persistent presence of CF within the cervical VN. The findings indicated a lack of correlation between the quantity of TH+ fibers and extent of CR. However, several trends for statistical significance were detected. Further investigations with an expanded sample size are warranted to enhance the robustness of our conclusions.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

To BPD or Not to BPD: A Comparison of the 2022 versus 2011 NICHD Web-Based Risk Estimator for Bronchopulmonary Dysplasia

Presenting author: Jake Schneider

Affiliation: Kansas City University

Co-Authors and affiliations: Mitch Kinkor - Children's Mercy Kansas City Farhath Sulthana - University of Missouri-Kansas City Janelle Noel-Macdonnell - Children's Mercy Kansas City Alain Cuna - Children's Mercy Kansas City

Abstract:

Background: Early prediction of which preterm infants will develop bronchopulmonary dysplasia (BPD) aids in individualizing treatment. Objective: To compare the predictive accuracy of the 2022 versus 2011 National Institute of Health BPD Estimators for identifying infants at high-risk for BPD Methods: We conducted a single-center retrospective study of infants < 32 weeks' gestation. Demographic and respiratory support data were used to calculate risk for BPD or death by the BPD estimators. Our outcomes of interest included (1) treatment with systemic steroids for BPD and (2) composite outcome of death or highest severity of BPD at 36 weeks postmenstrual age (PMA). C-statistics and area under receiver operator characteristic curves (AUC) were used to compare accuracy of the BPD estimators. Results: A total of 165 infants (mean gestational age 26 weeks, mean birth weight 837 g) were included. Steroid treatment for BPD occurred in 65 infants. We found that predictive accuracy was similar for both 2022 and 2011 BPD estimators (c-statistics 0.88), indicating good-to-excellent accuracy for predicting steroid treatment. Twenty-one infants had death or grade 3 BPD based on definitions used in the 2022 estimator, while 71 infants had death or severe BPD based on definitions used in the 2011 estimator. Overall, we found that the 2022 estimator had higher AUC values in predicting death or severe/grade 3 BPD compared to the 2011 estimator (2022 estimator: AUC range 0.628 – 0.786); 2011 estimator: AUC range 0.588 – 0.691). Conclusions: The 2022 BPD estimator demonstrates similar good-to-excellent accuracy to its 2011 predecessor for identifying infants at high risk for steroid treatment, while offering improved performance for predicting death or highest severity of BPD. Incorporating the 2022 BPD estimator can enhance prediction of BPD severity and mortality risk in an objective manner, facilitating targeted interventions to infants at highest risk of disease.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Alternative splicing of OPTN(E50K) as a potential mechanism for the onset of glaucoma

Presenting author: Omar Diaz Rios

Affiliation: Kansas City University

Co-Authors and affiliations: Emma Taylor - Kansas City University Alicia Olsen - Kansas City University Salahaldeen Jaradat - Kansas City University Douglas C. Bittel - Kansas City University Natalia Kibiryeva - Kansas City University Joseph Schaffer - Kansas City University

Abstract:

Glaucoma is the worldwide leading cause of irreversible blindness characterized by the progressive degeneration of retinal ganglion cells and their axons. It has recently been demonstrated that significant changes in the OPTN gene (specifically the E50K mutation) leads to neurodegenerative properties. Although these changes contribute to the progression of disease-related phenotypes in glaucoma, the mechanism leading to these changes remains unknown. It is of interest to determine if other changes to the protein structure (as might happen with alternative splicing of the mRNA) might also cause glaucoma. By using techniques such as RNAseq, changes in coding exons within the OPTN gene can be evaluated and structural predictions for the protein can be made. In this study, we aim to evaluate whether alternative splicing, an important form of transcriptional regulation, may play a role in the functional manifestation of glaucoma. Sequencing samples of interest were obtained from the Gene Expression Omnibus (GEO) database. These RNAseq files were derived from differentiated human pluripotent stem cells (hPSCs) consisting of 4 samples with glaucoma-associated OPTN(E50K) astrocytes and their isogenic controls. We conducted analysis of these RNAseq datasets using the Partek Flow interface with specific interest in identifying mRNA splice variants within the transcriptome across subjects. Thorough analysis of structural protein variations of OPTN(E50K) due to alternative splicing were evaluated using ENSEMBLE, Phyre2, and ClinVar. These findings will provide a better understanding of glaucoma pathogenesis. Results may further support the use of early therapeutic interventions such as gene editing to target identified variants associated with the onset of glaucoma and its progression.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Design and construction of a portable programmable microenvironment cell incubator.

Presenting author: Dennis W. Wolff

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Laboratory incubators for mammalian cell culture are large multi-shelved chambers that maintain temperature at 37°C and utilize filtered room air supplemented with 5% CO₂ to maintain a pH of 7.4 in the bicarbonate-buffered cell culture media. These are shared with different cell lines often grown side-by-side. Fundamental problems with this approach are usually ignored. First among these is that normal tissue oxygen tension is usually around 5% like that of CO₂, not the supraphysiologic ~19% of a typical mammalian cell incubator. Cancer cells are often cultured. Due to poor perfusion of their aberrant vasculature, oxygen tension in cancerous tumors is usually 1-2%. Moreover, the extracellular cancer microenvironment is typically acidic with a pH of ~6.8 rather than 7.4. Inspired by others who built an inexpensive portable incubator, I recently replicated key elements of their incubator to regulate temperature, CO₂ and O₂ levels. I am currently re-building this to make it more self-contained and locally programmable. The mobile chamber consists of a Bauer modular rolling toolbox lined with foam-board and spray foam insulation. Holes cut into the lid reveal insulated compartments for CO₂ and N₂ gas cylinders. A small ZROR Aqua CO₂ cylinder is user-refillable with citric acid, baking soda and water as typically used for aquariums. The small Kegco aluminum N₂ cylinder is typically used by homebrewers. A Vivosun temperature controller and heating mat for gardening provides chamber heat. An Arduino Mega 2560 Rev3 with an ExplorIR CO₂ sensor, Gravity O₂ sensor and DHT22 temperature/humidity sensor and adaptation of the sensor software libraries monitors these chamber parameters. An attached HiLetgo touchscreen display shows these values and has screen buttons for selecting the desired CO₂ and O₂ setpoints, with software-activated solenoid-controlled valves regulating the delivery of CO₂ and N₂ to drive the measured values to those set-points.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Lipolysis regulates metabolic plasticity and chronological lifespan of aging human fibroblasts

Presenting author: Elise Freij

Affiliation: Kansas City University

Co-Authors and affiliations: Dr. Ehab Sarsour - Kansas City University Kami Pearson - Kansas City University Dr. Asma Zaidi - Kansas City University

Abstract:

Aging is a global issue, with a projected 21% (2 billion) of individuals over the age of 65 by 2050. Aging is a critical risk factor for numerous health issues, leading to unsuccessful health interventions and a deterioration in the quality of life for aging individuals. Aging impacts the integrity of the human body and its tissues, down to the cellular level. Fibroblasts (NHF) play a pivotal role in the growth, repair, and physiological functions of virtually every tissue and organ system in the body. We have previously shown that aging fibroblasts undergo a lipid metabolic shift towards increased lipolysis. This shift is associated with an increase in the release of free fatty acids by NHFs, leading to impaired wound healing and repair activity. The diminished wound healing activity results from a decrease in the recruitment of proliferation-competent NHFs into the wound area. In this study, we investigated if pharmacologically targeting lipolysis in NHFs can enhance wound healing activity and repair. Using a real-time cell imaging wound healing assay, we examined the wound healing activity of NHFs in response to treatment with the FDA-approved hyperlipidemia and anti-lipolytic drug, Acipimox. Our results showed a significant increase in the wound healing index in NHF cells from individuals of different ages treated with Acipimox compared to untreated controls. These results suggest that targeting lipolysis during the wound healing process using a pharmacological approach is a viable therapeutic strategy to enhance wound healing and repair, ultimately improving the quality of life for aging wound patients.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Innovative pharmaceutical treatment for Duchenne Muscular Dystrophy.

Presenting author: Madeline Meyer, B.S., M.S. Cand.

Affiliation: Kansas City University, College of Biosciences

Co-Authors and affiliations: Staton McBroom, B.S., M.S. - Kansas City University, College of Biosciences
Tommy To, B.S., M.S. Cand. - Kansas City University, College of Biosciences
Robert White, M.S., PhD - Kansas City University, College of Biosciences

Abstract:

Duchenne Muscular Dystrophy (DMD) is one of the most common neuromuscular X-linked recessive disorders that affects approximately every 1 in 3500 male births. Mutations in the dystrophin gene lead to the complete absence of muscle dystrophin protein in skeletal muscle. We are investigating a potential novel treatment for DMD using retinal dystrophin, an isoform of dystrophin protein, to replace the absent dystrophin in skeletal muscle of DMD patients. Our focus is to identify the retinal dystrophin promoter with the goal of finding a potential drug or biological compound that could activate it in skeletal muscle of DMD patients. We are currently working on a preliminary experiment where we are exposing WERI-Rb cells (retinoblastoma-derived cells) to methylprednisolone to assess whether there is an increase in retinal dystrophin expression. We plan on treating our DMD model and control mice with methylprednisolone to determine if this induces any expression of retinal dystrophin in their skeletal muscle. We have four potential DNA segments that have been predicted to possibly contain the promoter for retinal dystrophin. The first two segments have been cloned into a luciferase plasmid, and the third and fourth are currently being cloned. We will generate stably transfected WERI-Rb cell lines with luciferase plasmids that will be used in a reporter assay to determine which DNA segment includes the retinal dystrophin promoter. We will then stably transfect that construct into human embryonic kidney cells which will be used to identify drugs or biological compounds that yield the greatest retinal dystrophin promoter activity. The long-term goal of this research is to find a potential drug or biological compound that will induce retinal dystrophin expression in skeletal muscle of DMD patients to replace the absent muscle dystrophin and potentially provide an effective treatment for these patients.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

The Role of Character Strengths on Quality of Life in Cystic Fibrosis

Presenting author: Jacob T West

Affiliation: Kansas City University

Co-Authors and affiliations:

Abstract:

Cystic Fibrosis is a lifelong chronic illness which significantly affects daily life. Due to the enormous treatment burden that accompanies this disease, much research has focused on quality of life and how this may impact psychopathology. Despite the enormous adversity faced by this population, research has found low rates of psychopathology and high self-perceived quality of life. Although several studies have conducted research exploring what factors could lead to the development of psychopathology, very few studies have investigated specifically how the presence of certain character strengths could affect one's quality of life. This Dissertation seeks to explore this phenomenon through the lens of positive psychology utilizing the Values in Action Inventory of Character Strengths. Participants (NA) will include adults with a diagnosis of Cystic Fibrosis and no current or prior diagnosis of another mental health disorder. Participants will be asked to complete a quality-of-life (QOL) survey and the VIA inventory of character strengths. The VIA lists the top five-character strengths present in an individual and those will be shown to the participant. Participants will be asked to rank order these traits in which they feel contributes most to their QOL. It is hypothesized that certain character strengths of the participants will reliably predict QOL. It is also hypothesized that participants' most highly self-ranked character strength will contribute the most to their QOL. If these hypotheses are supported, it will indicate that the presence of certain character strengths play a significant role in QOL and how an individual's perceived strengths affect their QOL.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Notch 3 is overexpressed in the lung tissue of marfan syndrome mouse model

Presenting author: Kate Schulte

Affiliation: Kansas City University

Co-Authors and affiliations: Timothy Baxter, Trevor Meisinger, and Wanfen Xiong University Nebraska Medical Center (all)

Abstract:

Marfan syndrome is an autosomal dominant mutation in the Fibrillin-1 gene that causes bone overgrowth, thoracic aortic aneurysm, and distal airspace enlargement, commonly known as lung emphysema. Previous work on the Marfan syndrome (MFS) mouse models shows altered expression levels of Notch 3, Krupel-like Factor 4 (KLF4), and Smooth Muscle Actin (SMA) in aortic smooth muscle cells. We hypothesized that these genes were also expressed differently in the lung tissue of MFS mice. This may explain the decrease in septation and distal airspace enlargement that has been observed in MFS mouse models. The H&E staining of 1 week MFS mouse lungs shows that our model has lowered levels of septation. We then performed IHC staining for Notch 3, a developmental gene, and found it was expressed at higher levels. RT-PCR analysis of the 1 week MFS mouse lungs supports the findings of the Notch 3 IHC staining. We continued to examine downstream genes of Notch 3 and found that SMA, KLF4, and Lunatic Fringe (LFNG), a Notch 3 activator in lung development, were over-expressed in MFS mice. While we have established a correlation between the over-expression of these genes and the distal airspace enlargement in Marfan model mice, more research is required to determine if it is the cause.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

An Unusual Morphologic Finding in the Anterior Jugular Vein in Congestive Heart Failure.

Presenting author: Alexander Ho

Affiliation: Kansas City University

Co-Authors and affiliations: Jacob Welsh- KCU Dr. Sara Sloan- KCU Dr. Anthony Olinger- KCU

Abstract:

INTRODUCTION. Anatomical variations of the anterior jugular vein have been documented, but the characterizations of these veins are limited. Assessing the anterior neck for structures that may obstruct the surgeon's access to cervical structures is critical to patient safety. Limited studies have described a midline, single anterior jugular vein. This case report aims to bolster current knowledge of the variations in the anterior jugular veins. **RESOURCES.** One human cadaveric subject was obtained from the Kansas City University Gift Body Donor program. Measurements were taken using a digital caliper to assess lumen circumference and diameter. Images were taken of the anterior jugular vein for descriptive value. **DESCRIPTION.** In this case report, a 95-year-old male donor with congestive heart failure presented an enlarged, single anterior jugular vein. Previous documentation of a single anterior jugular vein variation has been noted, but none have described a midline variation. **SIGNIFICANCE.** Percutaneous cricothyrotomies and thyroidectomies are common procedures that require extensive anatomical knowledge of the head and neck along with their vascular patterns. This case showing the rare morphology of the anterior jugular vein may suggest further considerations during pre-operative care to avoid iatrogenic injury of patients who may have similar anatomical variations within the anterior cervical region, particularly those with congestive heart failure.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Efficacy of amniotic suspension allografts in the treatment of knee osteoarthritis

Presenting author: Mirza Baig

Affiliation: Kansas City University

Co-Authors and affiliations: Ayub Ansari - Kansas City University Yazan Tanbour - Kansas City University Kazi Syed - Kansas City University Yunus Ahmed - Kansas City University Bryan G. Beutel, MD - Kansas City University, Sano Orthopedics

Abstract:

Introduction: Amniotic suspension allografts (ASA), a novel regenerative therapy rich in growth factors and mesenchymal stem cells, represent a promising frontier in the treatment of knee osteoarthritis (OA), a debilitating condition affecting over 16% of the global adult population over 30 years-of-age. With OA's pathophysiology now understood to involve pro-inflammatory mediators, ASA offers a potential countermeasure to the disease's catabolic effects. In response to the growing interest in ASA's therapeutic potential and the burden of knee OA, our study aimed to comprehensively evaluate ASA's efficacy and safety. **Materials and Methods:** We conducted a systematic review adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. This included an exhaustive search on PubMed and Embase databases between 8/1/2023 and 8/27/2023, targeting all studies that investigate ASA's impact on adults diagnosed with knee OA. The review focused on outcomes related to pain reduction and improvement in physical function, employing validated scales such as the Visual Analog Scale (VAS) for pain assessment and other established metrics for physical function improvement. Our inclusion criteria were broad, encompassing randomized controlled trials, quasi-experimental studies, and prospective cohort studies, with an interest in studies that highlighted ASA's effectiveness and safety profile. **Results:** Ten studies (including over 700 patients) with final follow-up between 3 - 15 months were included in this review. The preliminary narrative synthesis, chosen due to the expected diversity in study designs and patient demographics, suggests ASA's potential in surpassing traditional treatments. ASA shows promise in reducing pain and improving functional outcomes for knee osteoarthritis (OA) patients. **Discussion and Conclusion:** This study's data collection and analysis are ongoing, underscoring the need for further research to explore ASA's role in knee OA management and enrich the existing literature on OA treatment strategies.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Comparing Intubation Techniques of Klippel-Feil Syndrome Patients: A Systematic Review

Presenting author: Andrew Simonsen OMS-1

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: i. Mitchell Fisher OMS-1, Kansas City University College of Osteopathic Medicine ii. Christopher Stewart OMS-1, Kansas City University College of Osteopathic Medicine iii. Alex Otto DO, Freeman Health System Department of Otolaryngology iv. Randall Hansen DO, MBA, Freeman Health System Department of Otolaryngology v. Abigail Niewchas OMS-1 Kansas City University College of Osteopathic Medicine vi. Salma Alkhatib OMS-1 Kansas City University College of Osteopathic Medicine vii. Suporn Sukpraprut-Braaten PhD Kansas City University Graduate Medical Education

Abstract:

Introduction Klippel Feil Syndrome (KFS) is a rare congenital abnormality characterized by cervical vertebral fusion. Patients typically present with a triad of short neck, low posterior hairline, and limited cervical range of motion. Location and quantity of vertebral fusions in KFS makes airway management challenging. Anesthesiologists select intubation methods based on perceived difficulty, making this paper essential to the field. The purpose of this study is to analyze first-attempt intubation success on KFS patients. **Methods** This is a systematic review of all case reports on PubMed in the last 10 years using keywords "Klippel-Feil Syndrome", and subsequently screened searching "anesthesia" and "intubation". Examiners reviewed the remaining 27 articles for fusion abnormalities and intubation techniques used. The articles detail Fiberoptic, Direct, Laryngeal Mask Airway (LMA), and Video-guided intubation techniques, and success rates were analyzed. **Results** Of the 1,234 KFS articles found, 657 were case reports with 157 being in the last 10 years. After review, 27 case reports presenting 30 cases were included. The average age reported was 25.4 ± 21.6 and 73.3% were female. Direct (n=10), Fiberoptic (n=12), Video-guided (n=6), and Laryngeal Mask Airway (n=2) were the chosen first-attempt intubation maneuvers. Fiberoptic and video-guided intubations reported 83% success while Direct and LMA reported 50% success. Higher success rates were found in patients with 2 cervical segment fusions (70%) when compared to 3+ fusions (33%). Inferior vertebral fusions (C5-T1) reported higher success than mid-cervical fusions (C3-C5), with 100 and 33 percent respectively. Mallampati class 4 had the highest success (100%), although further analysis showed fiberoptic intubation was used in each case. **Conclusion** Fiberoptic and video-guided intubation in KFS patients offers the best results. Though there may be confounding variables, fiberoptic should be considered the gold standard when intubating KFS patients.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Ethnic Variability in Ascending Aorta Dimensions: A Systematic Examination

Presenting author: Kazi Syed

Affiliation: Kansas City University College of Medicine

Co-Authors and affiliations: Ayub Ansari- Kansas City University College of Medicine Mirza Baig- Kansas City University College of Medicine Yazan Tanbour- Kansas City University College of Medicine Abdullah Baghdadi- Michigan State University College of Human Medicine Aisha Ansari- San Jose State University Nada Aymen MD- University of Missouri School of Medicine, Columbia

Abstract:

Introduction: Ethnic differences significantly affect the morphological features of the ascending aorta, impacting the assessment and management strategies for aortic dilatation. This systematic review aims to dissect the influence of ethnicity on the diameter and dilatation rate of the ascending aorta, highlighting the necessity for ethnicity-specific clinical guidelines in cardiovascular care. **Materials and Methods:** Adhering to PRISMA guidelines, we reviewed 11 studies from various databases to explore the ethnic impact on ascending aorta dimensions. Studies utilizing transthoracic echocardiography, computed tomography, and magnetic resonance imaging for measuring aortic dimensions across different ethnicities were included. **Results:** Analysis revealed variations in ascending aorta diameters among ethnic groups. While some studies reported no significant difference between Asian and Caucasian participants, others observed that Chinese individuals had larger aortic diameters compared to Caucasians, with African Americans presenting smaller diameters. For instance, one study identified that Chinese participants' aortic diameters were on average 3.2 mm larger than those of Caucasians. Dilatation rates also varied, with certain non-white populations, particularly younger cohorts, showing higher rates. The annual growth rate in Vietnamese individuals was found to be 0.5 mm/year, higher than the Caucasian cohort at 0.3 mm/year. The prevalence of aortic dilatation spanned from 1.2% to 7.5% among Caucasians, 0.9% to 6.4% in African Americans, and 0.8% to 5.9% in Asians. **Discussion/Conclusion:** The findings underscore the need for incorporating ethnic considerations into the clinical assessment and management of ascending aorta dilatation. These variations suggest an interplay of genetic, environmental, and socioeconomic factors influencing cardiovascular health. The study advocates for personalized medical approaches and further research into the ethnic-specific cardiovascular risk factors, aiming to enhance clinical outcomes and reduce health disparities. Future research should address limitations, such as the heterogeneity of measurement techniques in the included studies.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Visual plasticity and beyond: investigating if the brain adjusts to distortions in vision caused by prism goggles.

Presenting author: Sara Ataallah

Affiliation: Framingham State University

Co-Authors and affiliations: Andrea Kozol- Framingham State University

Abstract:

Visual adaptation to distortions in vision caused by prism goggles is an example of neural plasticity that is driven by the cerebellum and the parietal lobe. To determine whether prism goggles cause a shift in vision and whether visual plasticity leads to prism adaptation, we conducted a throwing study with a paper target in three different throwing conditions using prism goggles: pre-goggles, with goggles, and post-goggles. We found that prism goggles cause horizontal and vertical displacement in vision. We also found that after a few trials, visual plasticity leads to the correction of these displacements (whether after wearing the goggles or after taking them off). Even though prism adaptation can be induced in healthy individuals, its importance lies in the role it plays in treating spatial neglect in patients who had a stroke. Thus, our results add more evidence to the knowledge we have about prism adaptation and the role prism goggles play in spatial neglect therapy.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Does meeting physical activity guidelines for people with multiple sclerosis improve cognition in people with multiple sclerosis?

Presenting author: Tanner Murphy

Affiliation: Kansas City University

Co-Authors and affiliations: Peters Joseph - Kansas City University, Truong Ethan - University of Illinois, Abou Libak - University of Michigan

Abstract:

Introduction: Multiple sclerosis is an auto-immune neurodegenerative disease leading to declines in cognition. Research supports the benefits of physical activity for improving health, function, and cognition in people with multiple sclerosis (PwMS); however, no systematic review has examined the impact of meeting physical activity guidelines for PwMS (PAG-MS) on cognition. This study will examine the effectiveness of PAG-MS on improving cognition in PwMS. **Materials and Methods:** This systematic review adhered to Cochrane Handbook and PRISMA guidelines and is registered through PROSPERO (CRD: 2020168229). >From August 2023, a search was conducted via Pubmed, Embase, Web of Science, Scopus, CINAHL, SPORTDiscuss, and PsycINFO using terms related to physical activity, multiple sclerosis, randomized controlled trials (RCT), and cognition. Potential studies were screened by two independent reviewers to see if RCTs met PAG-MS and examined changes in cognition. Data on patient demographics, features of physical activity interventions, and impact of physical activity on cognition were extracted from eligible studies. **Results:** All studies included an exercise routine that met PAG-MS, but were heterogeneous in exercise modality. 8 RCTs (multi-modal=3, aquatic=2, aerobic=3, yoga=1) with 361 participants with MS (Expanded Disability Status Score range: 1.5-5.0) were included in this review. One RCT compared two interventions that both met PAG-MS. 80% of studies significantly improved cognition from baseline to post-test (multi-modal=8-32%, aquatic=33%, aerobic=14%-16%, yoga=37%). **Discussion:** Results indicate that the inclusion of exercise—regardless of mode or intensity—can significantly improve cognition in PwMS. Exercise of lower intensities like aquatic training and yoga appear to provide the greatest improvements in cognition. The small sample of studies warrants further investigation. **Conclusion:** While this study suggests PAG-MS improves cognition in PwMS, more research is needed to confirm. Future research should compare changes in cognition based on exercise types and intensity, as well as identify potential physiological mechanisms underlying cognitive improvements.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

The Effects of Teaching Emotional Granularity through Emotion Words on Well-being, Emotional Regulation, and Emotional Perception

Presenting author: Sam Kalmus

Affiliation: KCU, PSYD 2nd year

Co-Authors and affiliations: Samuel Kalmus, PSYD Maureen McKillip, PSYD Himani Goel, COM Sana Ismail, COM Helenna Shcherbinin, KU student volunteer Ryan Anderson, COM Payton Chance, COM Leigh Cox, COM & Jennifer Fugate, Ph.D. PSYD department

Abstract:

People differ in how they effectively discriminate emotions, known as emotional granularity (EG). We hypothesized that participants assigned to learn emotion words (compared to control), would show increases in their EG that would increase their emotion regulation and well-being. Participants (n = 47) completed two measures of EG(1,2), two measures of emotional regulation(3,4), and two measures of well-being(5,6). Participants also were asked about their word knowledge (accuracy, understanding, and usage of words). All measures were collected initially (session 1) and after 21 days (session 2). Between the two sessions, participants received either an emotion word (1x per day) or control words. Participants also completed experiential sampling (ESM) in which they used an app to record their mood 5x day. The ESM data was also used to derive a behavioral measure of EG. We performed a robust mediation analysis on both word-learning conditions separately using difference scores between sessions. The input variables were word knowledge variables; output variables were well-being and emotion regulation variables. EG measures from the surveys and the ESM data served as the mediating variables. Both word-training (emotion and control) groups increased their vocabulary and use of respective words, showing proof of concept of training. For participants in the emotion word learning group, increasing emotion word accuracy and understanding (and in one case, use) were associated with increases in emotion regulation and well-being, and less difficulties in emotion. There were no mediating effects of EG. For the control word learning group, increased control word accuracy was associated with less difficulties in emotion, and increased understanding with better well-being. However, other aspects of control word knowledge led to worse outcomes. Only one measure of EG and the ESM from positive emotion words mediated some outcomes in the control word group. Implications and a new model of EG are discussed.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Diagnosis and treatment of recurrent episodic dizziness from the patient perspective

Presenting author: Donald Keating III

Affiliation: Kansas City University

Co-Authors and affiliations: Kristen K. Steenerson, MD - Stanford University Peter L. Santa Maria, MD, PhD - Stanford University

Abstract:

Our study aims to assess patient attitudes toward existing standards of treatment and diagnosis for episodic dizziness and explore receptiveness to a novel at-home diagnostic device. A cross-sectional survey consisting of 22-questions was conducted on 250 participants. All participants were recruited from Survey Healthcare Global, an online healthcare database, from December 2021 to January 2022. Inclusion criteria included participants aged 18 years or older who answered 'yes' to the question 'Do you ever experience dizzy attacks?'. The main outcomes measured included patient satisfaction with current diagnostic and treatment methods for episodic dizziness and their interest in a novel at-home diagnostic device. Of the 250 respondents (79 males, 171 females), patients were categorized by their dizzy attack frequency: infrequent (<1/month, 16%), monthly (16%), weekly (48.8%), and daily (19.2%). Participants experiencing weekly attacks reported the lowest satisfaction (22.1%) with current treatment options, contributing to an overall satisfaction of 27%. Among those with monthly, weekly, and daily attacks, satisfaction with existing diagnostic tools stood at 30%, 27%, and 38%, respectively, with an overall satisfaction of 33%. When presented with an image of a potential wearable at-home dizzy attack monitor, 74% of all respondents and 90% of daily attack respondents expressed a likelihood to try the device. Overall, most patients express dissatisfaction with existing standards to treat and diagnose dizzy attacks, particularly those experiencing a higher frequency of attacks. Most patients are positive toward a new at-home dizzy attack monitor. A noticeable disparity exists between patient experiences and the current diagnostic and treatment options available for episodic dizziness. This underscores a need for medical professionals to be educated on patient perspectives and the potential benefits of innovative diagnostic tools.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Engulfed trachea: anesthetic management of a mediastinal mass in metastatic breast cancer

Presenting author: Donald Keating III

Affiliation: Kansas City University

Co-Authors and affiliations: Jonathan Bulta, BS - KCU Joplin Hussein Fardous, MD - Ascension Macomb-Oakland Hospital

Abstract:

The mediastinum is a central component of the thoracic cavity, separating the lungs and containing vital structures such as the heart, its major vessels, and the trachea. The management of mediastinal masses in the operating room is challenging due to potential cardiovascular and airway compromise. We present the case of a 50-year-old female with a history of right breast carcinoma, treated with partial mastectomy, radiation, and chemotherapy, who required two operations: 1) bronchoscopy to evaluate a mediastinal mass, and 2) spinal decompression due to widespread metastatic disease to the thoracic spine. The mass encased her trachea at the carina level, obstructed the right mainstem bronchus causing near-total atelectasis of the right lung, and encircled the left mainstem bronchus, leading to a significant rightward shift of the heart and mediastinum. The mass's size and location posed significant anesthetic concerns perioperatively. Current anesthetic guidelines for managing mediastinal masses suggest using sedation to permit spontaneous breathing, thereby reducing the risk of airway compromise. Considering the mass's obstructing nature and the patients' precarious airway, anesthesia for the bronchoscopy was safely achieved using a combination of ketamine, dexmedetomidine, and topical/nebulized lidocaine while preserving spontaneous respirations. A multidisciplinary discussion was had regarding the management of the patient's metastatic spinal canal stenosis, with the recommendation to postpone spinal surgery and the need for a general endotracheal intubation. The decision was made to incorporate neoadjuvant interventional radiation aimed to reduce the mass size and decrease anesthetic and operational risks before proceeding with a general endotracheal anesthetic. This report highlights the crucial role of interdisciplinary communication and anesthetic strategies in maintaining airway patency with extensive mediastinal compromise. We underscore the complexity of care regarding tailoring strategies for such patients and emphasize the need for collaboration and support between various medical specialties for optimal care.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Investigating the genetic effects of estradiol and tamoxifen and the implications on Alzheimer's Disease

Presenting author: Kimberly Barga

Affiliation: Kansas City University

Co-Authors and affiliations: John Paulowski - Kansas City University Amanda Gardner - Kansas City University Owen Freeman - Kansas City University Doug C. Bittel - Kansas City University Nataliya Kibiryeva - Kansas City University

Abstract:

Alzheimer's Disease (AD) is a progressive neurodegenerative disorder hallmarked by beta-amyloid plaques and Tau protein tangles in the brain that lead to neuronal damage and cognitive decline. With age as a major risk factor and women making up a significant demographic of the AD population, the decline of estrogen associated with menopause may present as an upstream modifier of disease progression. Prior studies have indicated the neuroprotective effects of estrogen on nerve signal conduction and gene regulation. Our study focuses on genetic effects of restoring estrogenic activity in the brain via estrogen-modulating therapies (EMTs) and selective estrogen receptor modulators (SERMs). We analyzed RNA-Seq data extracted from a prior study that treated rats (*Rattus norvegicus*) with estradiol and tamoxifen—two drugs showing increased estrogenic activity in the brain. We present analyses of alternatively spliced mRNA isoforms and differential gene expression of the rat models when compared to controls to provide insights on estrogenic pathways associated with Alzheimer's progression. This study aims to further our understanding of Alzheimer's risk mitigation in women and mechanisms through which EMTs and SERMs modulate disease progression. In an effort to provide therapies beyond conventional symptom management, our findings may contribute to a shift in Alzheimer's Disease management grounded in the nuanced interactions between aging, hormones, and genetics.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Utilizing the Visia Camera for Analyzing 5-Fluorouracil Treatment Efficacy

Presenting author: Emily Woolhiser

Affiliation: OMS III C/O 2025

Co-Authors and affiliations:

Abstract:

The VISIA camera is a novel device that captures images of the skin using a rotating camera with both UV and polarized light to assess the condition of the skin by imaging the surface and beneath it. It provides patients with an easy-to-understand analysis helping them understand their skin's problem areas to target further treatment. Actinic Keratoses (AKs) are precancerous lesions that are diagnosed by use of the naked eye and the dermatoscope. We believe it would be beneficial to use the VISIA camera for AK patients to get an indepth look at the effects of sun exposure on their skin, providing motivation to undergo field treatment of AKs using 5-Fluorouracil (5-FU) for patients with hesitancy. We are conducting an observational study with results reported here on a male patient diagnosed with diffuse AKs who was prescribed and had consented to go through 5-FU treatment on the scalp. An initial photo was taken on the VISIA prior to treatment, 5-FU was applied twice daily to the scalp for 4 weeks and a follow up photo was obtained 1 week post-treatment. Results using the UV spot filter, feature count decreased from 706 to 676 and percentile reduced from 83% to 42%. Spot filter produced the same percentile of 9% for both photos affirming the VISIA's efficacy in detecting UV damage-related areas. This study enhances patients' understanding of 5-FU's effectiveness on their AKs and provides a positive example of treatment success for future patient education and treatment adherence.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Evaluating the impact of undergraduate institutions on dermatology matching success for osteopathic applicants

Presenting author: Jennifer Anne Nguyen

Affiliation: Kansas City University

Co-Authors and affiliations: Sino Mehrmal - Saint Louis University Saniya Shaikh - Saint Louis University

Abstract:

Introduction: Dermatology is a highly competitive specialty for osteopathic applicants to match into; thus, examining influencing factors is essential. Recent journalism highlighted an advantage for children from high-income families in gaining acceptance into elite colleges, subsequently propelling students into elite graduate programs. Given the recent deemphasizing of standardized testing and the push for holistic application reviews, it is important to identify factors contributing to successful dermatology residency matches. Our study explores the undergraduate programs of allopathic and osteopathic dermatology applicants, aiming to extrapolate their potential impact on dermatology residency matching. **Materials/Methods:** The ACGME and FREIDA databases were used to compile accredited dermatology programs from the 2023-2024 year. Residency program websites were utilized to identify residents' undergraduate institutions, and respective websites were reviewed to distinguish between public and private. **Results:** Of the 142 accredited programs listed, 58 (41%) disclosed residents' undergraduate institutions, totaling 657 residents. Among MD residents, 49.9% attended public colleges (307/615), while 69% of DO residents attended public colleges (29/42). **Discussion:** While our sample size is limited, with only 41% of programs disclosing resident data, a higher percentage of DO residents attended public colleges compared to private ones. Previous research shows little difference in in-training dermatology residency exam scores between allopathic and osteopathic applicants. While more DO candidates may have completed undergraduate training at public institutions, it remains unclear if this alone impacts their matching likelihood. We continue to advocate for the holistic review of DO and MD dermatology residency candidates to ensure a diverse applicant pool. **Conclusion:** Our results suggest a higher percentage of DO dermatology residents attended public undergraduate institutions. However, the impact on their chances of matching compared to counterparts from private institutions remains uncertain. Further research is needed to elucidate the relationship between undergraduate programs and successful dermatology residency matching for osteopathic applicants.

Category: Medical Education

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Challenges in differential diagnosis: unraveling the overlapping symptoms of hemophagocytic lymphohistiocytosis, atypical kawasaki disease, and MIS-C in a pediatric case

Presenting author: Alexandra Simon

Affiliation: Kansas City University

Co-Authors and affiliations: Rahul Shah- Kansas City University Stephanie Slagle- Lee Health

Abstract:

Hemophagocytic Lymphohistiocytosis (HLH) is a rare and potentially life-threatening immune system disorder characterized by uncontrolled activation of immune cells, leading to widespread inflammation, organ damage, and hemophagocytosis, particularly in the bone marrow. The incidence of secondary HLH may be underreported. This case report presents a 13-year-old female with Down syndrome who initially presented with prolonged fever, weakness, shaking, refusal to walk, and poor appetite. She was admitted with suspicion of atypical Kawasaki Disease, then MIS-C. Despite treatment and discharge, the patient returned with recurrent fever and weakness. Further evaluation raised suspicion of Hemophagocytic Lymphohistiocytosis (HLH) rather than MIS-C, leading to consultation with Pediatric Hematology/Oncology. Laboratory findings revealed leukocytosis, hepatitis, thrombocytopenia, and elevated ferritin. Bone marrow aspiration demonstrated hemophagocytosis. Subsequent testing revealed elevated CD25 (sIL-2), while CD107 and perforin were within normal limits. Imaging ruled out lymphoma and splenomegaly. Diagnostic criteria for HLH were met with 5/9 criteria. Episodes of tachypnea and pulmonary edema were managed with diuresis. Despite treatment, the patient's clinical status deteriorated, prompting the initiation of IVIg and low-dose methylprednisolone. Clinically, she showed significant improvement, but persistent inflammation was observed in laboratory results. Anakinra was considered due to the lack of improvement with IVIg. This case underscores the challenge of distinguishing between atypical Kawasaki Disease, MIS-C, and HLH, given overlapping clinical features. Clinicians managing patients with prolonged fever and cytopenias should be vigilant for these conditions. A multidisciplinary approach involving Hematology/Oncology consultation and comprehensive laboratory and imaging studies is crucial for accurate diagnosis and timely intervention due to the fact that HLH has a mortality rate of 40%, especially when faced with ambiguous clinical presentations. Further research is warranted to explore optimal therapeutic strategies for such complex cases and to enhance our understanding of the underlying pathophysiology.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Test anxiety, attention & cognitive control – An ERP study

Presenting author: Rochely Negrón

Affiliation: Weber State University - Undergraduate Research

Co-Authors and affiliations: Aminda J. O'Hare - Weber State University

Abstract:

Previous research has found that individuals with higher levels of test anxiety produce larger N200 responses to stimuli that require behavioral inhibition (Wei et al., 2021). This indicates that test anxiety can interfere with executive attention and cognitive control even outside of a traditional academic testing environment. This study seeks to replicate this effect using a modified No-Go Flanker task while also examining the relationship among anxious apprehension, test anxiety, and cognitive control using 64-channel EEG. Participants (n = 64) were found to have larger N200 responses to No-Go trials compared to incongruent and congruent trials; however, levels of trait anxiety nor levels of anxious apprehension were related to this effect. Delayed P3a and P3b responses to incongruent and no-go trials compared to congruent trials were also found, and as individuals increased in anxious apprehension the latency of the P3a and P3b responses to incongruent trials got later. This indicates that anxious apprehension may be the stronger driver underlying the effects of test anxiety on cognitive and attentional control. In particular, anxious apprehension seems to delay task orientation, continued processing, and context updating of incongruent trials.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Lymphocytic esophagitis is increasing in incidence.

Presenting author: Grace Howell

Affiliation: KCU OMS-3

Co-Authors and affiliations: Yuquimpo, Kyle DO Altfillisch, Charlie MD Stetson, Rachel BS Decino, Andrea MD Unegbu, Fortune MD Hamo, Falak MD Hamza, Ameer MD Samo, Salih MD, MSc

Abstract:

Background: Lymphocytic esophagitis (LyE) is a rare inflammatory esophageal disease associated with variable esophageal symptoms. The prevalence or incidence of LyE in the United States is not well known. The aim of this study was to assess for the incidence of LyE on esophageal biopsies over time. **Methods:** Esophageal biopsies obtained from January 2019 to August 2022 were reviewed. Patient demographics, clinical indication, history of autoimmune disease or inflammatory bowel disease (IBD), histological diagnosis were collected. The diagnosis of LyE was considered when it was either described as the primary pathologic diagnosis or listed as a differential diagnosis. Patients with concomitant candidiasis, eosinophilic esophagitis, or achalasia were excluded. Incidence rate was calculated and normalized per 100 cases reviewed for 2 periods: 1) from January 2019 to August 2020, and 2) from September 2020 to August 2022 (an esophagologist who asks for assessment of LyE on all esophageal biopsies joined the practice during the second period). **Results:** A total of 3177 esophageal biopsies were reviewed. Overall, 39 cases of LyE were found: 13 before September 2020 and 26 after. More than 75% of these patients were female and >50 years old and the incidence rate of LyE gradually increased from 2019 to 2022. Prompting to rule out LyE occurred in 25% of cases after September 2020. Five patients were reported to have LyE after September 2020 with previous biopsies reported as negative for LyE. **Conclusion:** The incidence rate of LyE on esophageal biopsied appears to be rising. Our data suggest that the incidence may be higher if LyE evaluation is specifically requested when obtaining esophageal biopsies. LyE appears to have a high association with autoimmune/IBD disease.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Efficacy of Different Tenotomies in the Treatment of Lateral Epicondylitis: A Systematic Review

Presenting author: Dania Shoaib

Affiliation: Kansas City University

Co-Authors and affiliations: Yazan Tanbour - Kansas City University Ayub Ansari - Kansas City University Charles Marchese - Kansas City University Benjamin Pautler - Kansas City University Sara Sloan D.C - Kansas City University

Abstract:

Introduction: Lateral epicondylitis, or tennis elbow, impacts 1-3% of the population. It is more prevalent in certain occupational groups and affects nearly half of all tennis players, primarily due to repetitive forearm muscle use leading to pain at the lateral elbow, particularly at the extensor carpi radialis brevis tendon (2, 3, 5). While conservative treatments are effective for the majority of cases, about 4-11% of patients with persistent pain eventually require surgery (7). Tenotomy, which comes in forms such as open, arthroscopic, percutaneous, or ultrasonically assisted TENEX, is the gold standard in these situations, but research comparing the benefits of specific types of tenotomies is lacking. **Methods:** PubMed and Embase searches were conducted for articles relating to the four aforementioned tenotomy types. Inclusion criteria allowed for the use of RCTs, prospective cohort studies, and comparative observational studies, while exclusion criteria included meta-analyses. All articles were exported into Rayyan, where an abstract screen followed by a full text screen took place. Information was then extracted from the remaining full-length articles into a spreadsheet. **Results:** Following the Prisma guidelines, the initial search resulted in 2,327 articles. Once inclusion and exclusion criteria were applied, 1,702 articles went through abstract screening. 232 articles went through full length screening, resulting in 72 articles undergoing data extraction. The primary outcomes under investigation are pain relief measured by VAS (visual analog scale), functional improvement assessed via grip strength, DASH Questionnaire scores, patient reported satisfaction, and quality of life enhancements. Secondary outcomes include procedural complications, recurrence rates, and long-term effects. **Discussion:** Data extraction and statistical analysis are underway, and results are forthcoming. This systematic review aims to illuminate the comparative efficacy of the different tenotomies, providing insights for clinical practice and underscoring the need for further research to corroborate initial findings and refine treatment approaches for lateral epicondylitis.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Level of engagement of Chinese, Vietnamese, and Hmong American participants with COVID health education through INFORMED study website

Presenting author: Feng Ming Li, BS

Affiliation: Kansas City University, University of California, San Francisco

Co-Authors and affiliations: Janice Tsoh, PhD*, Susan Stewart, PhD****, Michelle Luu, BA*, Edgar Yu, BS*, Nancy Burke, PhD**, Joyce Cheng, MS***, JiWon Choi, RN, PhD*, Minji Kim, PhD*, Tung Nguyen, MD*, Mai Pham****, Chia Thao, PhD**, Ching Wong*, Justin Wong*, Alan Wu, PhD* (*)University of California, San Francisco, (**)University of California, Merced, (***) Chinese Community Health Resource Center, (****)Immigrant Resettlement and Cultural Center, Inc. (IRCC), (*****University of California, Davis

Abstract:

Introduction: During the peak of the pandemic, limited English proficiency, misinformation, and mistrust were barriers that prevented many Asian Americans from obtaining reliable COVID-19 information. COVID INFORMED (INdividual and Family-Oriented Responsive Messaging Education) is designed to support participants in making informed decisions about getting tested for COVID-19. This project provides in-language COVID information to Chinese, Hmong, and Vietnamese Americans through text messages and lay health educator (LHE) intervention. Methods: LHE recruited and enrolled participants (n=247) who were randomly assigned to receive either text messages only or the LHE intervention (text, Zoom educational sessions, and follow-up calls). All participants received 12 weekly messages with embedded links to access in-language COVID-19 information on a study website. We assessed website engagement by the percentages of participants who viewed the website, submitted ratings (“like” or “dislike”), and/or comments. Results: The 247 participants (34% Chinese, 34% Hmong, and 32% Vietnamese) had a mean age= 41.6 (ranged 18-96 years), including 48% with limited English proficiency, 58% participated in Chinese/Hmong/Vietnamese languages. Analyses showed that 60% (n=147) of participants viewed the website. Among those who visited the website, 51% (n=75) rated at least one core message, and 33% (n=49) commented. Of the 229 ratings, 98% (n=224) were likes and 2% (n=5) were dislikes. On average, participants rated 3 out of the 12 core messages with either a “like” or “dislike”. Among those who commented, an average of 5 comments were made by each participant. Conclusion: Engaging participants in the study website through an in-language text messaging intervention proved to be a promising way for the Chinese, Hmong, and Vietnamese American communities to access COVID information. Future analyses will examine participants’ characteristics and their association with levels of engagement to help guide future interventions to better engage under-resourced communities in health promotion.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Targeting of scaRNA1 to investigate epigenetic programming of the spliceosome

Presenting author: Madeleine Brown

Affiliation: Kansas City University

Co-Authors and affiliations: Michael Filla BS, College of Biosciences, Kansas City University Nataliya Kibiryeva, MD, College of Biosciences, Kansas City University James E. O'Brien Jr. MD, Ward Family Heart Center, Children's Mercy Hospital Douglas C. Bittel PhD, College of Biosciences, Kansas City University

Abstract:

Congenital heart defects (CHDs) affect ~1% of babies. A clear genetic cause for CHDs has yet to be identified, but small Cajal body-specific RNAs (scaRNAs) appear to play a role in spliceosome function and regulation of heart development. scaRNAs are small non-coding RNAs that target the RNA subunits of the spliceosome for biochemical modification. Our research team identified 12 scaRNAs that were reduced in the right ventricle of babies with tetralogy of Fallot (TOF, a CHD). We subsequently showed that mRNA splicing was deregulated and furthermore we showed scaRNA played a direct role in the regulation of mRNA alternative splicing. We hypothesize that scaRNAs influence mRNA splicing and are important for heart development. scaRNA1 is responsible for the pseudouridylation of U89 of the U2 small nuclear RNA and is one of the aforementioned 12 identified scaRNAs. I am using CRISPR-Cas13d and a guide RNA (gRNA) and other tools to target the scaRNA1 transcript for knockdown (KD) in quail QM7 cells. These experiments will contribute to our understanding of a novel epigenetic regulatory mechanism that appears to be critical for vertebrate heart development.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Assessing barriers to implementing HPV vaccination in rural Guatemala to prevent cervical cancer

Presenting author: Dagny Gould

Affiliation: KCU OMS4

Co-Authors and affiliations: Gautam J. Desai, DO, FACOFP dist. - KCU

Abstract:

Introduction: In Guatemala, cervical cancer is the second most frequently diagnosed cancer and a national HPV vaccination program began in 2018; however, limited literature exists on the barriers to HPV vaccination in rural Guatemala. **Materials and Methods:** After KCU IRB approval, a 27-question survey was administered to patients who presented for free care at KCU's Global Health Outreach in Guatemala in February 2024. Descriptive statistics were analyzed from 79 surveys. **Results:** Of 79 participants, most were female (84.4%), indigenous (69.9%) and ages ranged from 26-30 years (28.2%), 21-25 years (16.7%), and 31-35 years (14.1%). Most participants knew of cervical cancer (73.4%), that it's preventable (85.9%), knew of the HPV vaccine (89.6%), and felt the vaccine is effective at preventing cancer (86.1%). Most had no previous opportunity to get the HPV vaccine (81.1%). Many (58.9%) want the HPV vaccine and some (28.8%) said maybe. Most want their daughters (88.2%) and sons (84.4%) to be vaccinated; however, many daughters (73.3%) and sons (75%) are unvaccinated. Barriers to vaccination include cost (33.3%), availability (29.6%), other (20.4%), and age (11.1%). Challenges cited by participants who did not want the vaccine included difficult to get (21.2%), concern about side effects (21.2%), lack of information about the HPV vaccine (18.2%) and about cervical cancer (15.2%). Most (64.4%) have worries or concerns about the HPV vaccine. Almost all are interested in learning more about cervical cancer (96.1%) and the HPV vaccine (97.4%). **Discussion:** Most participants could still benefit greatly from the HPV vaccine or have children that can receive the vaccine within the decade. There is a high interest in vaccination despite desire for more education. **Conclusion:** Public health efforts to decrease cervical cancer could focus on improving education about cervical cancer and the HPV vaccine across rural Guatemala along with re-evaluation of the national campaign's criteria.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Radiation exposure on neuroimaging, what clinicians need to know

Presenting author: Hasan Ahmed

Affiliation: Kansas City University

Co-Authors and affiliations: Lawrence Ku - Kansas City University Warren Reuther - Kansas City University Clinical Teaching faculty

Abstract:

Objective: To describe the amount of radiation exposure and potential risks associated with common imaging modalities utilized by clinical neurologists in the management of their patients. **Background:** Patients are becoming increasingly aware of the repercussions of neuroimaging, and neurologists are often asked questions from patients regarding radiation exposure and the possible negative impact on their health. It is important that neurologists and referring clinicians can explain the total amount of radiation exposure and associated risks to their patients in a language that will be easy for them to comprehend. **Design/Methods:** We reviewed common modalities such as CT brain with and without contrast, CT angiography, MRI with and without contrast, and their associated radiation exposure. Moreover, we also reviewed the ALARA (as low as reasonably achievable) principle to compare the radiation exposure from these commonly used imaging modalities to non-medical activities such as airline flights in order to help clinicians better convey the risks to their patients. **Results:** CT Brain with and without contrast resulted in an approximate effective radiation dose of 1.6 mSv. Which was significantly less compared to CT Angiography which had an approximate effective radiation dose of 8.7 mSv, but less than MRI which had no associated radiation exposure. These numbers can be effectively related to the radiation exposure from commercial flights which is approximately 0.003 mSv per hour. **Conclusion:** CT brain, CTA and MRI are commonly used each year in the United States for the diagnosis of different neurological conditions. Although each imaging modality has associated levels of radiation exposure, it is important to convey this information to patients in a language they will comprehend. When clinicians utilize comparisons between radiation exposure of imaging modalities to common everyday activities, patients are better able to understand the risks associated with each diagnostic procedure.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Assessing epigenetic variations in tumor cells from high functional connectivity regions vs. low functional connectivity regions in glioblastoma patients

Presenting author: Madeline Meyer, B.S., M.S. Cand.

Affiliation: Kansas City University, College of Biosciences

Co-Authors and affiliations: Manbir Sanghera, B.S., M.S. Cand. - Kansas City University, College of Biosciences Gabrielle Paras, B.A., M.S. Cand. - Kansas City University, College of Biosciences Joshua Reyes, B.A., M.S. Cand. - Kansas City University, College of Biosciences Nataliya Kibiryeve, MD - Kansas City University, College of Biosciences Doug Bittel, PhD - Kansas City University, College of Biosciences

Abstract:

Glioblastomas are malignant tumors of the brain found primarily in the frontal lobe but may also form in other lobes (American Brain Tumor Association). Gliomas, which are tumor cells that stem from glial tissue in the nervous system, can create connections between regions in the tumor and the rest of the brain. Tumor regions that demonstrate increased synaptogenesis and nervous tissue growth with the rest of the brain are referred to as high functional connectivity (HFC) regions, while regions that demonstrate less synaptogenesis and nervous tissue growth are referred to as low functional connectivity (LFC) regions. Patients with HFC regions are more susceptible to tumor progression, cognitive impairment, and a decrease in survival rate. Our project aims to assess alternative splicing of mRNA, long noncoding RNA expression levels, and epigenetic regulation between the high and low functional connectivity regions. We used tumor cells derived from glioblastoma patients due to the potential significance of these variables in cancer cell proliferation. Using the European Nucleotide Archive, a database that provides transcriptome sequence data, we downloaded RNAseq data from four glioblastoma samples derived from two patients. These paired tumor samples represented both high functional and low functional connectivity regions. The data was imported into Partek software for genetic analysis. These analyses will help in our understanding of the differences in alternative splicing, lncRNA, and epigenetic regulation activity between these regions.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

MRI Artifacts: A Headache

Presenting author: Hasan Ahmed

Affiliation: Kansas City University

Co-Authors and affiliations: Lawrence Ku - Kansas City University Warren Reuther - Kansas City University Teaching Faculty

Abstract:

Objective: To delineate the common MRI artifacts seen in neuroimaging that clinical neurologists should be aware of. Background: MRI artifacts in neuroradiology and intracranial imaging can be confusing and unfortunately mistaken for pathology. It is important to be aware of limitations of the MRI modality and artifacts in imaging associated with neurological patients when forming a diagnosis. Design/Methods: We reviewed 534 MRIs of the brain and 621 MRIs of the cervical, thoracic and lumbar spine for artifacts that could potentially be misinterpreted for pathology. Moreover, we focused on CSF pulsation and susceptibility artifacts that could be problematic on diffusion weighted imaging, as well as chemical shift artifact on spin echo sequence and gradient echo sequence MRI and aliasing artifacts due to misregistration of field of views. Results: MRI artifacts can be seen commonly in the neurology workflow and we will present pictorial results of our retrospective review. Reviewed by board certified CAQ neuroradiologist. Conclusion: Common artifacts seen on neuroimaging can be interpreted as pathology and potentially lead to the misdiagnosis of neurological patients by clinicians. It is important that neurologist be aware of common artifacts, clinical presentation and common locations when deciding how to best manage their patients.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Endometriosis of the bladder as a cause for cyclic dysuria

Presenting author: Taylor Karpeles

Affiliation: KCU - Joplin, Freeman Health System

Co-Authors and affiliations: Taylor Karpeles - KCU-COM Joplin Amy Keller - KCU-COM Joplin Jack Adcock, DO, FACOG

Abstract:

26 yo female, G0P0 underwent laparoscopy for cyclic dysuria and pelvic pain. Patient presented with chief complaint of cyclic bowel changes and dyspareunia. Laparoscopy demonstrated large implant of endometriosis extending from anterior uterus to the peritoneum overlying the bladder. Intraoperative cystoscopy demonstrated lesions in bladder consistent with endometriosis. This case illustrates midline endometriosis consistent with the theory of coelomic metaplasia. This metaplastic implantation is consistent with Mullerian development. Theories of endometriosis are discussed as well as treatment options for endometriosis.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

The role of emotion vocabulary knowledge on emotion regulation and emotion perception

Presenting author: Himani Goel

Affiliation: KCU, COM 2nd year

Co-Authors and affiliations: Shcherbinin, H, KU student volunteer McKillip, M, PSYD Chance, P, COM Seymour, S., PSYD & Fugate, J.M.B., Ph.D, PSYD

Abstract:

People are different in how they effectively discriminate emotions, known as emotional granularity (EG). What is unknown is whether a person's emotion word knowledge (accuracy, usage, and understanding) mediates EG to affect well-being, emotion regulation, and emotion perception. We hypothesize that participants with a higher word knowledge will show improved emotional granularity, which will increase well-being and emotion regulation, as well as affect the emotion perception task (i.e., more accurate and faster reaction times). An initial 24 English-speaking participants completed assessments of their emotional vocabulary, EG(1,2), emotional regulation(3,4), and well-being(5,6). To assess emotion perception, participants completed computerized trials in which they viewed ambiguous emotion faces and were asked whether two faces (separated in time) matched. Prior to emotion faces, participants were primed with a basic emotion word or a highly granular word. We performed a boot-strapped (n = 500 ML estimator) mediation analysis with emotion word knowledge measures as the predictors, and both measures of EG as the mediators. The other measures served as outcomes in the model. Emotion knowledge variables and measures of EG currently show different effects on emotion regulation and well-being outcomes. However, we are finding effects of granularity for prime within the emotion perception task: Basic primes (compared with highly granular primes) result in faster and more accurate perception, based on the nature of the relationship between stimulus and response face. Specifically, highly granular primes are likely to engage additional conceptual knowledge on the part of the perceiver which diminishes the ability to accurately recall visual percepts. More data are being collected and will be included in the final presentation.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Identifying LINC01133 Isoforms in Colorectal Cancer and Pancreatic Cancer to Provide Insight into Downstream Effects

Presenting author: Cheyenne Bellis

Affiliation: Kansas City University

Co-Authors and affiliations: Darcie Mecum - Kansas City University Peyton Berardi - Kansas City University Matthew Bennett - Kansas City University Dr. Doug Bittel - Kansas City University Dr. Nataliya Kibiryeve - Kansas City University

Abstract:

Cancer is responsible for one in every six mortalities, making it a leading cause of death world-wide. Colorectal and pancreatic are common cancers, each having poor prognoses. Long Intergenic Non-Coding RNA 01133, or LINC01133, plays a role in both types of cancers. LINC01133 has four known isoforms that are the result of alternative splicing. LINC01133 is also known to act as either an oncogene or a tumor suppressor gene. In colorectal cancer, LINC01133 acts as a tumor suppressor gene by binding to proteins in the cytoplasm and nucleus. In pancreatic cancer, LINC01133 acts as an oncogene by binding to proteins or DNA primarily in the nucleus, or by binding to miRNA in the cytoplasm by way of a competitive endogenous RNA, or ceRNA, network. Using Partek and other bioinformatic tools to analyze RNA-seq data we determined the active isoforms of LINC01133 in colorectal cancer and pancreatic cancer to understand the role these may play in cancerous pathways. Our data shows a significant difference in the expression of LINC01133 isoforms between colorectal cancer tissue and pancreatic cancer tissue. The complex interplay in isoform ratios expressed suggests that LINC01133 has a sophisticated regulatory function. We will report on the possible downstream effects of LINC01133 and each isoform as a potential insight into why LINC01133 can have oncogenic, tumor suppressive, or both properties.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

A depressing duet: 3-hydroxyanthranilic acid and the neuronal plasma membrane Ca²⁺ ATPase in the pathogenesis of major depressive disorder

Presenting author: Kimberley Beier, BS

Affiliation: Kansas City University

Co-Authors and affiliations: Kami Pearson, MS - Kansas City University Dr. Asma Zaidi, PhD - Kansas City University

Abstract:

Major depressive disorder (MDD) is one of the most debilitating mental health disorders affecting 8.3% of the US population. Evidence demonstrates shifts in tryptophan metabolism, a biochemical pathway known to generate serotonin, a key mood-regulating neurotransmitter. Under conditions of chronic stress and inflammation, there is a skew towards the kynurenine pathway (KP) of tryptophan metabolism. This may lead to MDD due to shunting of tryptophan away from the serotonin pathway. In addition to diminished serotonin production, KP-intermediates such as 3-hydroxyanthranilic acid (3-HAA) also possess significant oxidative potential. This project aims to determine the effects of 3-HAA on the plasma membrane Ca²⁺ ATPase (PMCA), an essential calcium transporter that maintains neuronal calcium homeostasis. Given the vulnerability of PMCA to oxidative stress, we hypothesize that 3-HAA will inhibit PMCA activity and cause oxidative damage to the protein. We used SH-SY-5Y cells, which were cultured and exposed to 3-HAA (10-250 μ M) for 24 hours. Cell viability was measured using propidium iodide; PMCA activity was monitored by the generation of inorganic phosphate from Ca²⁺-dependent ATP hydrolysis. PMCA protein levels were measured by immunoblotting performed under non-reducing and reducing conditions and detected by a pan-PMCA antibody. Our results indicate a biphasic response of PMCA activity when exposed to 3-HAA, with an activation observed at low concentrations and inhibition at high concentrations. Immunoblots revealed significant PMCA aggregation, which was reversed under reducing conditions, indicative of the oxidation of cysteine residues to form disulfide bonds. Loss of PMCA will lead to chronically elevated intracellular Ca²⁺ levels, which may desensitize neurons to the physiologic Ca²⁺ influx required for neurotransmitter release. Our findings underscore significant implications for understanding the biochemical pathogenesis of MDD. Neurotoxic effects of 3-HAA warrant further investigation at a molecular level and may lead to the identification of therapeutic targets for MDD interventions in the future.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Anatomical characterization and topographic mapping of the ulnar nerve and its peripheral branches: a cadaveric analysis

Presenting author: Benjamin Pautler

Affiliation: Kansas City University

Co-Authors and affiliations: Charles R. Marchese III - Kansas City University Makayla M. Swancutt- Kansas City University Bryan Beutel- Kansas City University Anthony Olinger- Kansas City University

Abstract:

INTRODUCTION: The ulnar nerve originates from the brachial plexus and travels distally to innervate various muscles and cutaneous regions of the upper extremity. Injuries to the ulnar nerve can be particularly debilitating for patients due to loss of function in several intrinsic muscles of the hand. One treatment option for high ulnar nerve lesions is nerve transfer from the anterior interosseus nerve (AIN) to the deep motor branch of the ulnar nerve. The transfer requires a working knowledge of the internal fascicular relationships. This study aims to thoroughly map the peripheral branch patterns and internal topography of the ulnar nerve. **METHODS:** Fifty-three cadaveric upper extremities were dissected from the level of the forearm to the hand to expose the ulnar nerve and its peripheral branches, including the dorsal cutaneous (DCB), volar sensory (VSB), and motor branches. The motor branch underwent additional internal neurolysis to reveal the topographic orientation of the first dorsal interosseous (FDI), abductor digiti minimi (ADM), and flexor pollicis brevis (FPB) fascicles. Utilizing a standardized grid system, the branch point location of each terminal branch was measured relative to the hook of the hamate, and the diameter of each structure was measured 10 centimeters proximal to the hypothenar base, using electronic calipers. **RESULTS:** Select branches of the deep ulnar nerve (FDI, FPB, VSB) have displayed a degree of geographic variability, while other branches (ADM, DCB) were more consistent. Fascicle diameter variability was nominal. **DISCUSSION/CONCLUSION:** Previous studies have demonstrated the potential for unbalanced rehabilitation in a fascicle-specific pattern following an AIN transfer. This study provides a complete characterization and mapping of the distal ulnar nerve and its peripheral branches. A reliable topography of the fascicles within the ulnar nerve, specifically its deep motor branch, may assist surgeons with their transfer placement and lead to improved patient outcomes.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Individual factors contributing most to an association with post-COVID conditions

Presenting author: Abhinav V. Raju

Affiliation: Kansas City University College of Osteopathic Medicine, Kansas City, Missouri

Co-Authors and affiliations: Nagavijaya Oruganti, MD - PatientsFirst Family Practice, Nashville, Tennessee; Preeti A. Kumar, MBBS - Meharry Family Medicine Clinic, Nashville, Tennessee; Millard D. Collins, MD - Meharry Family Medicine Clinic, Nashville, Tennessee; Gautam J. Desai, DO - Kansas City University College of Osteopathic Medicine, Kansas City, Missouri

Abstract:

Introduction Coronavirus disease (COVID-19) caused by the SARS-CoV-2 virus has been in the spotlight worldwide for its infectious nature and post-infection complications. The incidence of Long COVID was initially a debated topic but has now been accepted by the Centers for Disease Control and Prevention as legitimate. Studies have been conducted to determine what factors are associated with contracting Long COVID, but they have not been conclusive. Materials and Methods This study aimed to identify possible contributory factors such as demographics, COVID-19 strain, medical history, vaccination status, or lifestyle attributes to Long COVID. After Kansas City University (KCU) IRB approval, a 16-item survey instrument containing queries pertaining to these factors was administered to patients of PatientsFirst Family Practice, the Meharry Family Medicine Clinic, and individuals at KCU. Results 49 respondents (out of 65 total) stated they had previously tested positive for COVID-19. 35% of COVID-19 positive respondents (n=49) indicated they had fatigue, making it the most common and a universal symptom that lasted after 2 months. 60% of those hospitalized for COVID-19 (n=5) and 56% of those with a history of depression (n=9) were the most likely to state they experienced the Long COVID symptom of fatigue, weakness, and poor endurance. Due to the small sample size, statistical significance was not achieved. Discussion A previous study noted that hospitalized COVID-19 patients were twice as likely to have Long COVID when compared to outpatients. Additionally, mental health conditions including depression and anxiety raise the risk of Long COVID by 50%. The findings in this research study correspond with available literature about risk factors. Conclusion Study limitations included a small sample size. These findings guide future implications on the risk factor associations, course of Long COVID experience, and understanding of challenges in the scientific community signifying a need for more information.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Reinforced augmentation of revision patellar tendon reconstruction using Achilles and tibialis anterior allografts

Presenting author: Alan Lam

Affiliation: Kansas City University

Co-Authors and affiliations: Alexander Ignatenko - Rocky Vista University Oscar Noel, DO - Center for Spine and Orthopedics

Abstract:

Introduction: Patellar tendon ruptures are uncommon but debilitating injuries that can occur most frequently in patients under 40 year of age. Surgical intervention remains the gold standard for treatment. Various surgical techniques have been described in literature that suggest either repairing or reconstructing the patellar tendon. Although rare, re-rupture of the tendon repair can occur, with a failure rate of 2%. Case: A 29-year-old male presented with a failed primary patellar tendon repair after a motor vehicle accident, complicated by arthrofibrosis and an attempted manipulation under anesthesia. Magnetic resonance imaging scan was performed, which indicated near full-thickness retearing of the proximal patellar tendon at the patellar attachment. We performed a modified technique of a revision patellar tendon reconstruction with two-fold augmentation using Achilles tendon and tibialis anterior allografts after the primary repair. At his most recent follow-up visit, the patient demonstrated a pain free range of motion of 0°-125° with improved quadriceps strength, no extensor lag, and no limitations to his daily activities. Discussion: Compared to the traditional Ecker technique often used for patellar reconstruction, our technique uses tibialis anterior allograft augmentation in place of a wire cerclage so implant removal is not necessitated. While one instance of a reinforced patellar tendon reconstruction has been described using an Achilles tendon allograft for double augmentation, our technique does not involve creating a tibial trough to fit the calcaneal bone block and instead uses suture anchors for fixation. This preserves the proximal tibial bone stock and reduces risk of microtrauma that can cause stress fractures. To our knowledge, the presented technique involving two-fold augmentation with bone preservation has not been described before. Conclusion: Reinforced, two-fold augmentation of a patellar tendon revision reconstruction using Achilles tendon and tibialis anterior allografts has shown to be an effective treatment option with good functional outcomes postoperatively.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Examining the Journey for Underrepresented Students in Medicine Program (JUMP-Start) initiative in supporting underrepresented students in medical school applications and increasing matriculation: A longitudinal study

Presenting author: Vikita Patel

Affiliation: Kansas City University

Co-Authors and affiliations: Nu N. Bui - Kansas City University Lauren Van Winkle - Kansas City University Rahul Shah - Kansas City University Qwynton Johnson - Kansas City University Deborah Dele-Oni - Kansas City University Samantha Cooley - Kansas City University Reetom Bera - Kansas City University Ginger Chant - Kansas City University Alexis Kirk - Kansas City University Mira Bausino - Kansas City University Larry Segars - Kansas City University

Abstract:

Introduction: The representation gap in medical education significantly impacts prospective students and physicians. JUMP-Start aims to increase diversity at KCU and in medicine by supporting marginalized pre-medical students through workshops and mentorship. This study investigates the program's efficacy in preparing underrepresented students in medicine (URiM) for medical school applications and evaluates admission outcomes. We hypothesize that upon program completion, participants will report increased understanding and self-confidence in the application process, and increased knowledge and skills that will benefit participants during application cycles. **Materials and Methods:** The study consists of 2 surveys: a post-program survey and follow-up survey. Nineteen undergraduate participants were recruited for the program via emails to counselors and interest groups. Survey data collected from willing participants includes demographics, confidence and understanding related to skills and knowledge from workshops, and satisfaction with mentorship (both pre-existing connections and those made at JUMP-Start). **Results:** Among 16 post-program survey respondents across two cohorts, 64% represented underrepresented racial/ethnic groups, with 19% identifying as LGBTQIA+. 100% expressed satisfaction, with 19% very satisfied, in their understanding of the application process after JUMP-Start. Notably, 69% ranked the personal statement workshop and anatomy session as most helpful. Overall, 94% felt confident in personal statement writing and satisfied with current mentorship. Additionally, 73% no longer view personal identifiers as hindrances to a successful medical school application, with 94% extremely likely to pursue medical school. **Discussion:** JUMP-Start participants overwhelmingly represent URiM groups, reporting high levels of confidence and satisfaction in the medical school application process upon program completion. Future surveys will address disabilities, an overlooked demographic. Analysis of follow-up surveys and 2024 program data will provide further insights into the program's lasting impact. **Conclusion:** The JUMP-Start program successfully exposes URiM students to medicine, medical professionals, mentorship, and hands-on workshops, increasing self-confidence and knowledge in the medical school application process.

Category: Medical Education

Presentation mode: Live podium presentation

Location: Kansas City Campus

The role of aortic root anatomy in transcatheter aortic valve replacement: a cadaveric study

Presenting author: Chloe Maye

Affiliation: Kansas City University

Co-Authors and affiliations: Cameron Smith, MS - Kansas City University Swathi Sridhar, MS, MPH - Kansas City University Dominic Maiuro, MS - Kansas City University Robert Hillard, MD - Kansas City University

Abstract:

Introduction: Coronary circulation is known to vary by geographic region. Coronary ostial obstruction (COO) after transcatheter aortic valve replacement (TAVR) is associated with significant mortality. An American Midwestern cadaveric study characterizing the aortic root was performed for the purpose of better understanding the risk of COO. **Materials and Methods:** The aortas of forty-seven cadavers from a Midwestern donor program were dissected. Triplicate measurements were taken, including aortic annulus (AA) circumference, sinotubular junction (STJ) circumference, sinus of Valsalva (SOV) circumference, right and left coronary ostial heights, aortic cusp heights, and the distance between the right and left coronary ostia and their respective cusp. Diameter and area were calculated from circumference measurements. Data was compared across biometric information using Welch's t-tests (sex and history of cardiovascular disease [CD]) and linear regression models (body mass index [BMI] and age). **Results:** The average heights of the left coronary ostium (LCO) and right coronary ostium (RCO) were 12.71 ± 2.51 mm and 14.81 ± 3.06 mm, respectively. Comparing measurements across sex revealed significant differences for AA area, STJ diameter, SOV diameter, and RCO height, in which the averages of these measurements were lower in females than males (p-values all <0.025). No statistical significance was seen with respect to CD, BMI, or age. **Discussion:** Our average LCO height fell below the minimum accepted cutoff (≤ 14 mm) for increased risk of COO following TAVR procedures, as given by a current artificial valve manufacturer. Lower average values for AA area, STJ diameter, and SOV diameter are known to be associated with COO following TAVR, thus the values observed in females from the study population would put them at higher risk for COO. **Conclusion:** This study contributes to our understanding of the aortic root and raises concern of COO following TAVR in a Midwestern population.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Joplin Campus

Evidence Quality For Guideline Statements for Urinary Incontinence for Males Versus Females

Presenting author: Katherine Wu

Affiliation: Kansas City University

Co-Authors and affiliations: Kuemin Hwang - Houston Methodist Hospital Annie Chen – Houston Methodist Hospital Tarek Dawamne – School of Engineering Medicine at Texas A&M University Haley Clark - School of Engineering Medicine at Texas A&M University Kathleen Kobashi – Houston Methodist Hospital

Abstract:

Approximately 44% of American Urological Association (AUA) guidelines rely on expert opinion or clinical principle, underscoring the need for stronger evidence. Post-prostatectomy incontinence (PPI) affects 4-31% of men, with an average of 16%, while stress urinary incontinence (SUI) impacts over 35% of US women. Given SUI occurs much more frequently than PPI in men, we expect higher quality evidence to exist for SUI. In this study, we aim to assess the comparative evidence quality in AUA guidelines for female SUI versus male PPI. Guideline statements for SUI (updated 2023) and PPI (updated 2019) were assessed based on AUA-assigned evidence grades, weighted (A=3, B=2, C=1), and reviewed. Clinical principle (CP) and expert opinion (EO) were assigned a weight of 0 per AUA nomenclature. Aggregate evidence strength and recommendation grades (conditional=1, moderate=2, strong=3, CP/EO=0) were calculated by summing weighted statements and compared using student t-tests for numerical variables. In the SUI guidelines, 5 of the 24 total statements (20%) were evidence-supported, while the remaining 15 (80%) relied on CP/EO, including one statement with dual evidence strengths. PPI guidelines, with 36 total statements, had 24 (67%) statements backed with evidence and 12 (33%) CP/EO statements. Overall, PPI guidelines exhibited stronger evidence strength (0.34 vs. 0.15, $p=0.20$) and recommendations (0.48 vs. 0.17, $p=0.05$). SUI's strongest recommendations were in treatment and diagnosis; weakest were in initial evaluation, follow-up, and patient counseling. PPI's strongest recommendations were in pre-treatment and treatment; weaker in post-prostatectomy treatment, evaluation of incontinence, surgery complications, and special situations. Despite the high prevalence of SUI in the female population, SUI guidelines had only 20% of their statements supported by any level of evidence, and overall demonstrated weak evidence strength and recommendations when compared to PPI. These findings highlight opportunity to focus on high quality studies for SUI.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Fighting for Insight: A Comparative Study of “Traditional” Versus ”Spoken Word” Poetry/Biblio Therapy with American Veterans

Presenting author: Rachael Ramirez, MA

Affiliation: Kansas City University

Co-Authors and affiliations: Esperanza Anaya, PhD - Kansas City University

Abstract:

US Veterans experience more loneliness and poorer physical/mental health outcomes compared to the civilian population. Interventions for veterans have been attempted throughout the years, yet specific interventions that target loneliness have been lacking. Poetry/Bibliotherapy has found benefits for individuals and groups, providing improved insight, mood, and decreased feelings of loneliness. This is little empirical research on outcomes of Poetry/Bibliotherapy with veterans. In addition, the utilization of Spoken Word Poetry (SWP), poetry written with the intention of verbal performance, has yet to be studied as a therapeutic intervention. Poetry/Bibliotherapy includes the use of selected-literature, structured writing prompts, and optional, but encouraged, sharing of written works. For the proposed research, SWP Therapy, includes the use of selected Spoken Word videos, structured writing prompts, and required performance of spoken word poems. The purpose of the proposed dissertation is to determine whether SWP therapy is more or as effective than traditional poetry/bibliotherapy when created for a military population experiencing loneliness and depression. This dissertation will compare pre-post data regarding psychological well-being between the poetry/bibliotherapy group, spoken word poetry therapy group, and a control group. A minimum of 28 veterans will be recruited from the Midwest area to participate in a traditional poetry/bibliotherapy group (N=9), a spoken word poetry group (N=9), or a control group (N=10) over the course of 7 weeks. T-tests will be used to compare pre-post psychological well-being responses. Qualitative analysis will also be utilized. It is hypothesized that U.S. Veterans enrolled in a spoken word poetry therapy group will report significantly fewer feelings of loneliness and depressive symptoms, as measured by the UCLA Loneliness Scale and BDI-2, following a 7-week intervention, compared to a traditional poetry therapy group.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Utilizing deep breathing exercises to reduce perioperative anxiety: a review of literature

Presenting author: Brian Wi

Affiliation: KCU-COM

Co-Authors and affiliations: Alex Phu, Thomas Parpana, Suhan Lee, Jennifer Nguyen, Jennifer Song, KCU-COM

Abstract:

Surgery can be an extremely distressing time for many patients, causing high levels of anxiety and sympathetic stimulation. Perioperative anxiety is highly prevalent and often leads to unfavorable surgical outcomes such as increased anesthetic requirement, prolonged recovery and impaired immune system response. Deep breathing exercises have been found to be a popular method to balance the interplay between the autonomic nervous systems and bring homeostasis to the body. Deep breathing is unique in that it is a bodily function that we can consciously take control of, allowing us to manually control our mind and body connection. By extending our exhalations, we can stimulate our vagal tone and decrease heart rate and respiratory rate, shifting an anxious state of mind to a calmer state of mind. Our goal was to analyze the literature to determine if deep breathing exercises can be useful for treating perioperative anxiety. A systematic review of literature was completed by reviewing prior studies on deep breathing exercises and perioperative anxiety. This review was completed with Journals including "Frontiers in Public Health", "Cell Reports Medicine" and "Neuron". There is evidence from prior studies that utilizing deep breathing exercises and other physiological techniques to stimulate vagal tone can reduce perioperative anxiety in a variety of surgical procedures. Cyclic breathing, diaphragmatic breathing, and 4-7-8 breathing techniques have been found to reliably reduce anxiety. There is evidence that deep breathing exercises and other physiologic modalities can be used to reduce anxiety related to a variety of surgical procedures, although further studies must be completed to further support the use of these exercises.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Detection and Localization of Neuropeptide Y in *Biomphalaria glabrata*, a freshwater snail

Presenting author: Ishita Agarwal

Affiliation: Lawrence University, Appleton WI

Co-Authors and affiliations: Dr. Judith Humphries, Associate Professor of Biology at Lawrence University in Appleton, WI

Abstract:

The freshwater snail *Biomphalaria glabrata* is best known as a host to *Schistosoma mansoni*, a parasitic worm that causes schistosomiasis in humans, the second most prevalent parasitic disease in the world, after malaria. Understanding the mechanisms by which *S. mansoni* operates in *B. glabrata* can enhance the presently limited understanding of the snail-host and parasite relationship. Neuropeptide Y (NPY) is an energy budgeting neuropeptide present across a wide number of species, vertebrates and invertebrates alike, which regulates life-sustaining activities like feeding, growth, and reproduction. NPY was recently identified in *B. glabrata*, but not much else is known about it. The goal of this research was to conduct a deeper investigation into it since it was shown to be important in a similar host-parasite relationship. The aim of this study was to detect the presence and localization of NPY in *B. glabrata* embryos, juveniles, and adults. There is evidence for consistent presence of NPY in 7–8-day old embryos, juveniles of all ages, and adults. Prior to this research, NPY had only been identified in the central nervous system of adult *B. glabrata*, making the results of this research a novel addition to the growing understanding of NPY in *B. glabrata*.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Smartphone thermal angiography screening for carotid stenosis: a cadaveric study

Presenting author: Cameron Smith

Affiliation: Kansas City University

Co-Authors and affiliations: Omer Riyadh MS-Kansas City University, Morgan Watson Stewart MS-Kansas City University, Chloe Maye-Kansas City University, Dominic Maiuro MS-Kansas City University, Swathi Sridhar MS, MPH-Kansas City University, Robert Hillard MD-Kansas City University, Lyon Hough PhD-Kansas City University, J Patrick Brooks MD-Missouri State University

Abstract:

Introduction: Previous investigations into the use of thermal imaging have demonstrated its potential utility in angiography. However, no published literature has explored the application of thermal imaging in the detection of carotid stenosis in a cadaveric population. This study aims to be the first to investigate the use of smartphone thermal imaging for the detection of carotid stenosis and classification based on current standard levels of stenosis: mild (<49%), moderate (50-69%), severe (>70%). **Methods & Materials:** Twenty-four human cadavers were used to investigate forty-seven carotid arteries. Dissection was performed to expose the carotid triangle of the neck where the common carotid artery was accessed with an angiocatheter. Cooled and/or heated water was injected to simulate differences between operating room and human core temperatures. Thermal carotid angiography was recorded using a FLIR One Edge Pro thermal imaging camera attached to an iPhone, and suspected stenosis locations were marked on the carotid surface. After completion of the thermal angiograms, the carotid bifurcations were resected and serially sectioned into 3 mm slices for gross pathological evaluation of the degree of stenosis using the established NASCET criteria. **Results:** Moderate stenosis was detected in six carotids and severe stenosis was detected in seven carotids. Compared to gross assessment of carotid sectioning, thermal angiography was 100% sensitive and specific for both moderate and severe stenosis with no false positives recorded. **Discussion:** High sensitivity and specificity were achieved in the detection of moderate to severe stenosis with user-friendly equipment and limited angiography experience. Potential applicability may include completion angiography, or the assessment of vascular anastomosis sites and arterial runoff in peripheral vascular surgical procedures. **Conclusion:** Thermal angiography shows promise as a low-risk, non-contrast evaluation of vascular anatomy of the carotid bifurcation.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Joplin Campus

Painless vision loss secondary to ocular manifestations of syphilis

Presenting author: Sydney Christensen

Affiliation: Kansas City University-Joplin Campus

Co-Authors and affiliations: None

Abstract:

As the prevalence of syphilis in the United States increases, it is important to be aware of the numerous manifestations of the disease. While prevalence of neuro-ocular involvement of syphilis is rare, it may continue to be increasingly seen as a complication of syphilis. In this case report, I present a unique case of a 44 year old, HIV-negative male with bilateral painless vision loss secondary to neurosyphilis with ocular involvement. He initially presented to the emergency department with bilateral painless vision loss for one week and bilateral papilledema. Results of laboratory testing revealed an elevated rapid plasma reagin test and positive fluorescent treponemal antibody absorption test. Once the diagnosis was made, the patient was started on intravenous penicillin G. As this is an underappreciated manifestation of syphilis, diagnosis can be challenging. Delay in diagnosis or a missed diagnosis of neurosyphilis with ocular involvement can lead to irreversible vision loss. Due to this, it is important to be aware of this unique presentation of syphilis.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Inpatient Management of Delusional Parasitosis – A Case Report

Presenting author: Cecilia Read

Affiliation: KCU - Joplin

Co-Authors and affiliations: Ozge Williams, MD - Ozark Center Psychiatric Residency Program /
Nauman Ashraf, MD - Ozark Center Psychiatric Residency Program

Abstract:

Delusional parasitosis is a rare condition in which a person has a false fixed belief of being infested with parasites. In this case study, a patient presented voluntarily to the emergency department for worsening pruritus and agitation secondary to physical symptoms, which had been occurring for the past two months. The patient ascribed symptoms to acquiring parasites from her cats and believed that the spread of infestation had also extended to her partner. However, multiple prior outpatient encounters and routine investigations at her current presentation failed to determine any underlying organic cause. The patient reported multiple co-morbidities and a thorough psychiatric assessment revealed that the delusions had led her to miss healthcare appointments, stop regular home medications, and engage in self-harming behaviors as a means of alleviating her physical symptoms. The patient was admitted and restarted on home medications with the addition of Invega Sustenna. She was eventually discharged after noted improvement. This case study provides insight into the challenges of managing delusional parasitosis in an inpatient setting. We found that rapport-building and medication management are critical to engaging patients who otherwise would reject the psychiatric origin of their symptoms. By encouraging positive interactions and medication compliance, providers can improve hospitalization outcomes for these patients.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Blue collared-white coat: the medical student conundrum when choosing a career specialty

Presenting author: Janice Wang

Affiliation: Kansas City University

Co-Authors and affiliations: Brock Halling - Kansas City University

Abstract:

For medical students, choosing a field of postgraduate training is a decision that is motivated by more than just interest in a field of study. It has become a process that resembles one of strategy, informed by expectations of work-life balance, financial aspects, and perceived levels of prestige, with specialty positions promising higher pay and better work hours. With this, there has been a growing number of open residency spots for programs in primary care while specialty positions remain competitive and desirable. In medical school many students share a common narrative when it comes to their reason for pursuing medicine, that is to help people. Throughout our medical education we are taught about inequities in healthcare, social determinants of health, the importance of care for underserved populations and a physician's integral role in advocacy. However, the path towards equitable care for many seems at odds with achieving a life that is desired by students in financial aspects amidst specialty wage gaps, especially with the financial burden of increasing medical school tuition. Here lies the quandary of the decision process: the feeling of compromising one's purpose as a physician to choose a path that promises more individual benefits. In the United States, healthcare is provided through a mixed system largely characterized by a private health insurance market which incurs great costs and benefits—innovation and cutting-edge technology at the expense of accessible and affordable care for all. Thus, the specialty-driven healthcare system seems to be nearly incompatible with the goal of equitable care for all. We hope to start a conversation acknowledging this moral dilemma that medical students may experience. We wish one day for a change that encourages medical students to make career decisions aligned with their goals and purpose in medicine without the influence of an inter-specialty hierarchy.

Category: Bioethics

Presentation mode: Poster presentation

Location: Kansas City Campus

Phenibut Withdrawals: A Systematic Review of an Online Supplement

Presenting author: Christopher Stewart

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Savitha Satyasi: Ozark Center Psychiatry Addiction Medicine Fellowship Program Kaushal Parimi: Washington University in St. Louis Yassar Odhejo: Ozark Center Psychiatry Addiction Medicine Fellowship Program Allison Smith: Ozark Center Psychiatry Addiction Medicine Fellowship Program Nauman Ashraf: Kansas City University Graduate Medical Education Consortium Suporn Sukpraprut-Braaten: Kansas City University Graduate Medical Education Consortium

Abstract:

Background: Phenibut is a substance developed in Russia in the 1960s as a treatment for anxiety, depression, PTSD, and insomnia [1]. It is a GABA-mimetic, which stimulates GABA receptors [2]. It is not currently registered in Western countries but is easily accessible online as a supplement [3]. Methods: This is a systematic review study to review case reports published in PubMed between January 2010 and October 2023 and written in English. Descriptive statistics, odds ratio, and chi-square test are used to analyze the results. Results: A total of 269 articles were identified with the keyword “phenibut” in Pubmed. Sixty-five articles are human articles published between January 2010 and September 2023. Twenty-one case report articles were screened. The average age of patients with phenibut addiction reported in these publications is 32 (SD=12) years old, and 15 cases (83%) were males. The average dosage is 12 g/day (SD=8), ranging from 1.5 to 28.5 g/day. presented at an emergency department, and three cases (17%) were presented at a clinic setting facility. The most common history of patients who took phenibut is alcohol or drug abuse (73%). The majority of the cases also had a history of anxiety and depression (60%). Conclusions: The majority of the cases took phenibut to help to stop their alcohol or drug abuse. Educating all physicians about potentially harmful supplements available to patients and their biological mechanisms is essential. This review highlights the importance of collecting a thorough patient history, including supplements, to help prevent phenibut overdose and subsequent withdrawals.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

Online database for score1 data management

Presenting author: Justin Zheng

Affiliation: Kansas City University College of Biosciences

Co-Authors and affiliations: Hao Pham - Kansas City University College of Biosciences, Joseph Shaffer PhD - Kansas City University

Abstract:

Online databases are used to store and analyze information for many research projects and clinical scenarios. Crucially, sensitive information must be de-identified when generating the data. In this project, we aim to build a prototype workflow design that will allow for more efficient data collection and to manage that information for future analysis. We will use REDCap as our workflow methodology and will longitudinally record participant screenings and report the data while keeping participants anonymous. This project is still in its initial phase, but we hope to expand on our prototype to show that browser-based databases can be an effective and safe method to collect and store healthcare data.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Kansas City Campus

Racial disparities in the incidence and survival of myeloma patients with advanced bone disease— a community practice experience

Presenting author: Julia Kirkland, MS

Affiliation: Kansas City University

Co-Authors and affiliations: Racquel D. Innis-Shelton, MD . Affiliations are MD School of Medicine, University of Alabama at Birmingham, International Myeloma Foundation, W Montague Cobb Institute NMA Health, and Birmingham Hematology and Oncology Associates, L.L.C Sejong Bae, PhD. Affiliations MD School of Medicine, University of Alabama at Birmingham.

Abstract:

Outcomes in myeloma have improved over the last decade due to highly active novel agents, however the rate of improvement in survival outcomes is lagging in non-Hispanic black (NHB) patients^{1,2,3}.

Extraction of data from large national databases, have identified underutilization of immunomodulators, proteasome inhibitors, and autologous stem cell transplant in NHB patients.^{4,5, 6, 7} The reasons these treatment options are either delayed or not offered are multifactorial, and difficult to elucidate. When potential causes are reviewed, NHB do not tend to have more aggressive cytogenetics, or display inherent resistance to highly effective medications.⁸ The paradox of what happens to NHB from the time of diagnosis to the time of death that results in the outcome gap, continues to allude myeloma investigators. We noted Alabama is not included in large registries typically used for myeloma outcomes data, and NHBs comprise >25% of the Alabama population. We conducted a retrospective observational analysis of survival outcomes in NHB and Non-Hispanic white (NHW) myeloma patients presenting with aggressive clinical features including advanced lytic disease, hypercalcemia, and renal failure stratified by race in a community practice with multiple service locations surrounding Birmingham, Alabama. There were no disparities in patients presenting with advanced bone disease, however over half of the patients with early death (< 30 months of diagnosis) had this disease characteristic. There was a trend toward more renal failure at presentation in NHB patients, however there were no identifiable disparities in use of highly active triplet regimens upfront or transplant referrals. Although the data set is small, trends identified in our study may challenge current theories, that the racial disparities in myeloma survival are due to under-utilization of highly active therapy and transplant. Exploring the interplay of advanced disease burden at presentation and comorbid factors may provide insight into why disparities persist in myeloma.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Automated anatomical labelling of Bipolar Disorder brain imaging

Presenting author: Omer Riyadh

Affiliation: Kansas City University

Co-Authors and affiliations: Joseph Shaffer - Kansas City University

Abstract:

Bipolar disorder (BD) is a severe psychiatric disorder that is characterized by alternating episodes of depression and mania. Numerous studies have shown that there are significant differences in brain tissue volume between individuals with BD and healthy controls (HC). These differences may serve as potential markers for both the presence and development of the disorder, especially in individuals at high familial risk. While previous studies have frequently identified differences in prefrontal and limbic regions, the results have been contradictory, possibly due to the effects of lithium treatment and the small sample size of studies. The need to manually perform anatomical segmentation to identify and label brain regions limits the sample size and introduces rater biases in many structural imaging studies. Automated brain segmentation techniques are computationally-expensive but have the advantage of allowing for the segmentation of a larger number of brain imaging samples while eliminating certain types of rater bias. To overcome these limitations, we suggest employing automated anatomical brain segmentation on a vast dataset sourced from the NIMH data archive, which comprises brain images of hundreds of people with bipolar disorder and healthy individuals. We will initially use known automated brain segmentation tools such as Free-surfer, FSL, and MAPS to determine discrepancies and limitations among these tools in brain parcellation. Subsequently, using this segmented data, we will recognize differences in brain structure that can be leveraged to classify whether brain images are from someone with bipolar disorder.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Joplin Campus

CRISPR-Cas9 deletion in scaRNA1

Presenting author: Amanda Gardner

Affiliation: COB

Co-Authors and affiliations: Doug C. Bittel, PhD, Nataliya Kibiryeva, MD, Michael Filla, James E. O'Brien Jr., MD

Abstract:

The epigenetic impact of noncoding RNA (ncRNA) on alternative splicing of mRNA and their association with congenital heart defects have been documented. The mechanism by which ncRNAs [specifically small Cajal- body specific RNA (scaRNA)], cause these effects has yet to be fully explored. scaRNA1 directs the pseudouridylation of spliceosomal RNA at U89. We endeavor to study how changes in scaRNA1 expression level alters the function of the spliceosome. We hypothesize that reducing or eliminating scaRNA1 will result in a change in spliceosomal function which in turn will alter splicing of messenger RNA (mRNA). We plan to use a CRISPR-Cas9 enzyme complex to cause a deletion within the scaRNA1 genomic sequence, which is located in the second intron of the gene PPP1R8 gene. Initially, to validate that the knock-out occurred, we will use PCR to amplify scaRNA1 and flanking sequences from genomic DNA isolated from cells that have been transfected with our CRISPR-Cas9 constructs. Once cells with the deletion are identified, we will evaluate pseudouridylation levels compared to wild type. If pseudouridylation is altered we will then analyze mRNA splicing using RNA-Seq. This research aims to further our understanding of the differential expression of scaRNA1 and its potential impact on regulatory pathways during cardiac development contributing to congenital heart defects.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Circle of Willis variation and associated stenosis in a midwestern (United States) cadaveric population

Presenting author: Swathi Sridhar

Affiliation: Department of Pathology and Anatomical Sciences (DAPS), Kansas City University

Co-Authors and affiliations: Farida Mehrhoff- DAPS, Kansas City University Chloe Maye- DAPS, Kansas City University Dominic Maiuro- DAPS, Kansas City University Cameron Smith- DAPS, Kansas City University Phil Sheridan- DAPS, Kansas City University Robert Hillard- DAPS, Kansas City University

Abstract:

Introduction: The circle of Willis (CoW) provides critical cerebral perfusion but often shows variation. Investigation of cadavers with a focus on CoW variation and associated stenosis was performed.

Methods: Twenty-five adult cadaveric CoWs were dissected from Midwestern-sourced cadavers and photographed utilizing a dissecting microscope. Length, diameter, and percentage of stenosis were obtained through ImageJ software and statistically analyzed using R-studio software. CoW variations were classified by a recent comprehensive classification system.

Results: Twenty-three cases (92%) of variant CoWs were present, with eight variants not seen in the classification system, including an uncommon variant with bilateral A2 segment duplication. Within variants, frequently involved vessels included the posterior communicating artery (68%, PComA), anterior communicating artery (56%), and anterior cerebral artery (48%). Overall, PComA hypoplasia (≤ 1 mm diameter) was the most common variation seen (62%). There was a negative correlation with variant posterior CoW vessel diameter compared to stenosis in the efferent cerebral arteries ($p = 0.004$, $r = -0.57$). Most stenosis in efferent stenotic vessels was in the middle cerebral artery (36%, MCA). Furthermore, as the PComA diameter decreased, efferent stenosis increased ($p = 0.05$, $r = -0.5$). Additionally, the increase in stenosis was greater in the ICA when PComA hypoplasia was present bilaterally compared to unilateral PComA hypoplasia ($p = 0.03$).

Discussion: Unique variants to a comprehensive classification system were identified, which would add to the literature. The association between variant CoWs and atherosclerotic disease in the ICA and major efferent vessels may be caused by hemodynamic changes due to decreased diameter, especially in the PComA (i.e., hypoplasia). Such PComA hypoplasia may lead to turbulent blood flow predisposing to MCA and ICA atherosclerotic disease, which explains the observed results.

Conclusion: Our study contributes to the literature on CoW variants and associated atherosclerotic disease in the Midwestern population.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Joplin Campus

National Student Perspectives of Abortion Education in Osteopathic Medical School Curriculum

Presenting author: Priya Thakur

Affiliation: Kansas City University

Co-Authors and affiliations: Rachel Steffes- Kansas City University Stephanie Cox- Kansas City University Charlie Adams- Kansas City University Jennifer Dennis- Kansas City University Bradley Creamer-Kansas City University

Abstract:

Background: Approximately 1 in 4 females will have an abortion at some point in their life, indicating its importance in medical education. Due to the ruling of Dobbs v. Jackson medical student curriculum on abortion is often limited. **Objective:** To explore abortion education offered to osteopathic medical students in the United States, their desire for abortion education, and perception of abortion procedural preparedness. **Methods:** A self-administered questionnaire survey was distributed to osteopathic medical students in the US. Abortion education offerings and perceptions of curriculum were tested using a 12-item survey. Descriptive statistics and logistic regression models were used in the analysis. **Results:** A total of 256 responses from 38 osteopathic medical schools were collected. 43% of students were preclinical students and 57% were in their clinical years. 72.1% attended a medical school located in a state with limited access to abortion. 52.4% indicated their school had abortion contraception curriculum, 20.4% had optional training, and 27.2% had none. For respondents with optional education, the majority (59.5%) of students chose to participate. The two most frequent topics covered were “pathophysiology of spontaneous abortion” and “pharmacology of abortion.” 39% of respondents reported abortion education was less than one hour of their curriculum. The majority of students felt abortion content being included in their curriculum was either important (23.7%) or very important (60.5%). 36.8% of respondents were “not at all satisfied” and 7% were “very satisfied” with the amount of time allotted in their curriculum. 61.7% of respondents felt “somewhat competent” on the topic. **Conclusions:** The majority of osteopathic medical students support abortion education, yet most receive less than one hour of dedicated instruction on the subject. To further increase student satisfaction and improve competency, osteopathic schools should consider furthering their education on abortion.

Category: Medical Education

Presentation mode: Live podium presentation

Location: Kansas City Campus

Identifying Biomarkers for Critical Illness-Related Corticosteroid Insufficiency (CIRCI)

Presenting author: Jessica Gerczynski

Affiliation: Kansas City University

Co-Authors and affiliations: Nataliya Kibiryeva - Kansas City University Lori Erickson - Children's Mercy Jennifer, Marshall - Children's Mercy Janelle Noel-Macdonnell - Children's Mercy

Abstract:

Critical illness-related corticosteroid insufficiency (CIRCI) is affecting 33% of neonates with congenital heart disease that undergo cardiopulmonary bypass during reconstructive surgery. Normal level of cortisol is above 18 mg/dl, where severe CIRCI is classified as having a cortisol level below 4.5mg/dl and mild CIRCI with a cortisol level between 4.5-18 mg/dl. CIRCI manifests as sudden acute hypothermic circulatory arrests and may contribute to hemodynamic instability and pulmonary hypertension. Left untreated, this condition will lead to increase in morbidity and mortality. Glucocorticoids are first line treatment for CIRCI but must be administered as early as possible after surgery. Identifying patients with genetic predisposition to CIRCI will improve patient outcome after cardiac surgery. Currently, there is no genetic screening for CIRCI to identify patient in need of earlier interventions. Previously, using a small sample size, we identified several gene mutations potentially linked to CIRCI, with the most prominent gene mutation in STX1A. Here, we are validating our previous findings on a larger cohort of patients (32 patients with CIRCI, 33 patients with mild CIRCI, and 15 patients with no CIRCI). Using QIAGEN Clinical Insight translational (QIAGEN 2013-2024), we will look in rare single nucleotide variants with pathologic, potential pathologic, and unknown significance effects on protein function that are present only in severe CIRCI group compared to mild CIRCI. Further filtering will include only genes with known function in pulmonary hypertension and hemodynamic stability regulation. Our findings will be used to create a genetic biomarker panel to identify neonates that are more susceptible to CIRCI before undergoing congenital heart surgery, so that those patients can start earlier cortisol replacement therapy before complications arise. This will lead to decreased surgical morbidity and mortality rate of neonates with congenital cardiac heart defects.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Accuracy, quality, and readability of online health information for interstitial cystitis

Presenting author: Kale Moreland

Affiliation: Kansas City University-KC

Co-Authors and affiliations: Casey Kowalik, MD. KUMC Department of Urology Colby Souders, MD. KUMC Department of Urology Charles R Marchese. KCU DPAS Benjamin Pautler. KCU DPAS Jennifer Dennis, PhD. KCU DPAS

Abstract:

INTRODUCTION: Using the internet to access health information is becoming more commonplace, as previous reports have shown that up to 61% of adults use the internet for information regarding their health. With this in mind, the quality and accessibility of such information are of utmost importance. This study aims to assess the accuracy, quality, and readability of online health information for interstitial cystitis. **METHODS:** Two search engines, Google and Bing, were queried using the search terms “interstitial cystitis treatment” and “bladder pain syndrome treatment.” The first 20 websites from each search were recorded. Duplicate websites between searches were removed, and a predetermined set of inclusion and exclusion criteria were applied to screen websites. Two fellowship-trained Urologists assessed the accuracy of websites on a 1-5 Likert scale. The readability of websites was assessed using the Flesch-Kincaid Reading Ease (FKRE), Flesch-Kincaid Reading Level (FKRL), and SMOG indexes. The quality of websites was assessed using the DISCERN tool. **RESULTS:** After screening, 25 individual websites were included for assessment. The accuracy of websites was reasonably high, with a median accuracy rating of 4 (accuracy of 75-99%). The quality of the websites was fair, with a median score of 42 (scale: 1-75). The readability of websites was poor, with a median FKRE of 45.8 (scale: 1-100), median FKRL of 10.6 (indicating a 10th-grade reading level), and SMOG of 13 (indicating a college reading level). **DISCUSSION:** Our readability findings are troubling, considering that up to 90 million Americans have low health literacy. These patients are more likely to be elderly or of low socioeconomic status, and online information of low readability can disproportionately affect them by acting as an additional barrier to accessing optimal care for their condition. Further efforts should ensure that online health information is formatted at an appropriate reading level.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Kansas City Campus

Exploring complex connections between SARS-CoV-2 and Parkinson's Disease and potential neuroprotective agents Metformin and Imatinib: a transcriptomic analysis

Presenting author: Samantha Ellender

Affiliation: Kansas City University - College of Biosciences

Co-Authors and affiliations: Arti Church Michael Kinoyan Markus Mikulas Dr. Doug Bittel Dr. Nataliya Kibiryeva

Abstract:

The SARS-CoV-2 pandemic of 2019 caused acute symptoms for many patients such as respiratory symptoms, anosmia, and ageusia, but long-term effects are still poorly understood. Yang et. al (2024) established a relationship between SARS-CoV-2 infectivity and dopaminergic (DA) neurons, concluding that SARS-CoV-2 infectivity results in DA neuron inflammation and senescence. Parkinson's Disease (PD) is a disease known to result from decreased dopamine causing slowed movements, called bradykinesia. Recent studies on PD explore the correlation of neuronal cell senescence in neurodegenerative diseases. Yang et. al also explored the impact of metformin and imatinib on DA neuron senescence, concluding that these two therapeutic agents have potential to provide neuroprotective effects during viral infection. Other studies have explored the potential for metformin and imatinib to become treatment options for Parkinson's Disease. Our research aims to understand the genetic impact of SARS-CoV-2 infectivity in genes associated with Parkinson's Disease. In particular, we explore alternative splicing of mRNA as well as alternative gene expression patterns that may occur as a consequence of metformin or Imatinib therapy. We hypothesize that genes ALDH1A1 and FOXA2 are susceptible to SARS-CoV-2 infectivity and will share similar alternative splicing profiles as in Parkinson's Disease. Previous studies have linked these genes with Parkinson's disease, but we will also perform unsupervised transcriptomic analysis in search of genes with a novel connection to Parkinson's disease. Our results should help to identify genetic profiles shared between SARS-CoV-2 infected DA neurons and genes associated with Parkinson's Disease that are impacted by metformin or Imatinib.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

The kynurenic acid chronicles of depression: cautionary tales of calcium ATPase under the influence

Presenting author: Thornton Mardis MA

Affiliation: KCU

Co-Authors and affiliations: Kami Pearson MS - KCU Asma Zaidi PhD - KCU

Abstract:

Depression is the second leading cause of disability worldwide, with an estimated financial burden of \$92.7 billion spent on the treatment of major depressive disorder (MDD). Despite decades of research, the precise biochemical mechanisms underlying the pathogenesis of depression have yet to be elucidated. Reduction of the mood-stabilizing neurotransmitter serotonin plays a key role, as evidenced by the efficacy of anti-depressant medications (selective serotonin reuptake inhibitors). Tryptophan metabolism is the major pathway for serotonin synthesis. Recent research has implicated that chronic stress and inflammation shifts tryptophan metabolism towards the kynurenine pathway (KP), which plays a role in the onset of MDD. KP generates various metabolites such as kynurenic acid (KYNA), a neuroprotective molecule. The purpose of this project is to investigate the effects of KYNA on the plasma membrane calcium ATPase (PMCA), a neuronal calcium transporter that maintains calcium homeostasis. We hypothesize that KYNA will enhance PMCA activity. SH-SY-5Y cells were exposed to increasing concentrations of KYNA (10-250 μ M) for 24 hours. Cell viability was measured with propidium iodide. PMCA activity was measured through Pi generated via Ca²⁺-dependent ATP hydrolysis. PMCA protein was quantified through Immunoblotting and tagged using a pan-PMCA antibody. Preliminary results showed no evidence of cell death when treated with KYNA. PMCA activity showed a bell curve distribution, with the highest activity observed at 10-25 μ M KYNA, followed by inhibition. Immunoblots showed no change in PMCA protein levels, suggesting that alterations in activity occur via conformational changes in PMCA. Increased PMCA activity at moderate KYNA concentrations may maintain low neuronal calcium concentrations which may confer cellular resistance to oxidative stress. These results shed light on this delicate biochemical balance, dysregulation of which leads to MDD. The protective benefits of KYNA and the interplay between other metabolites of KP may be strategic in the development of novel pharmacological MDD treatments.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Clinical Utility of Broad Range PCR at a Midwestern Tertiary Care Institution

Presenting author: Omid Sharifi

Affiliation: University of Kansas Health System

Co-Authors and affiliations: Alexander Rimmington- UKHS Robert Hamilton-Seth - UKHS Julia Hankins- UKHS

Abstract:

Increasingly, broad-range PCR and other molecular studies (plasma cell-free DNA) are being used to detect pathogens in patients for whom standard of care testing is negative or cannot be safely obtained. However, the ideal niche for these tests remains somewhat controversial; although they allow for detection of broad classes of pathogens, questions remain about their sensitivity in the patient populations in which they are typically employed. Given the high propensity of these expensive tests to return negative or with clinically unhelpful results, we determined patient factors and clinical scenarios that predisposed to positive or otherwise impactful results at the University of Kansas Health System. Retrospective chart review was performed on a continuous series of “broad spectrum” studies (n=101), defined as 16S (n=77), 28S and ITS (n=19), or plasma cell free DNA (n=5) from 1/1/2017 to 12/1/2023. Of the tests reviewed, 21.8% were positive for an organism. We employed linear regressions and chi-square/Fisher’s exact tests with FDR correction to explore which factors were associated with successful detection of pathogens and clinically impactful results ($P=0.05$). Of the potential positive predictive variables for broad-range PCR that were found suitable ($P<0.10$) for multivariate logistic regression analysis, only the presence of the organism in pathology specimens was found to predict a positive result, and no other patient factors, including immunosuppression and steroid use were found to be significant. Positive broad range PCR tests were correlated with an escalation of antibiotics ($P=0.034$), with 27.3% leading to antimicrobial escalation and 4.5% leading to antimicrobial de-escalation. Our work contributes to the identification of predictive variables for positive broad range PCR tests. It highlights the effect of broad range PCR testing on antibiotic changes and may help institutions set standards for when testing is appropriate, especially in settings where results may not be available in a clinically useful timeframe.

Category: Clinical Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

Rapid Detection of Fearful Facial Expressions by Infants

Presenting author: Sabrina Bartley

Affiliation: PsyD Department, Kansas City University

Co-Authors and affiliations: Kayley Clements, PsyD Department, Kansas City University
Nicki Zieber, PsyD Department, Kansas City University

Abstract:

Emotion detection (i.e., perceiving the presence of an emotion in faces or other physical mannerisms) occurs rapidly in adults and is thought to occur outside of conscious awareness. We sought to determine whether emotion detection could be demonstrated with 7.5-month-old infants. In a preferential looking procedure, an actor's emotional expression (happiness, fear, or anger) was paired with the same actor's neutral expression side-by-side. We tested what level of exposure was necessary for infants to detect emotion, as indicated by systematic differences in looking to the emotional side. Experiment 1 (online) found that, across 4 durations, there was only a marginal effect of Emotion ($F(2, 1236) = 2.40, p = .09$). This was due to the overall mean for Fearful being marginally different than chance (50%), $t(454) = 1.80, p = .07$, but the means for Angry and Happy not differing from chance. Infants looked significantly longer to the Fearful target than the Angry target ($t(1235) = -2.14, p = .03$). There was also a significant preference to look to the left side. This task was challenging for infants (durations, male and female faces, target side, and orientations alternated throughout the trials). In Experiment 2 ($N=27$), we simplified the eyetracker study by using upright, female faces presented at 100ms (subliminal) and at 700ms (supraliminal). Preliminary results found a main effect of Emotion ($F(2, 549) = 3.18, p = .04$). Fear is significantly detected (compared to 50% chance) regardless of length of the stimulus duration ($M = 56.86, t(549) = 2.11, p = .03$), and there is a preference overall to look to the left. These studies show that infants of 7-8 months exhibit evidence of detection of fearful expressions (presumably even when presented below their conscious threshold), which is line with a well-documented fear bias emerging at 7 months of age.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

A severe axonotmetic injury superimposed on a preexisting diabetic polyneuropathy: A Case Report

Presenting author: Jacob Peters

Affiliation: Kansas City University

Co-Authors and affiliations: Scott Primack DO - Kansas City University

Abstract:

Introduction: This case report demonstrates the utilization of ultrasound and electrophysiologic testing to make a rapid diagnosis of a patient with extremely complex neuromuscular pathology. **Case:** A 56-year-old male was referred to PM&R clinic for evaluation of a left leg injury. He was an avid hiker until four months prior, when he began to experience recurring shin splints. This injury progressed to the point where he incurred rhabdomyolysis secondary to compartment syndrome. Physical therapy and fluid resuscitation did not help his symptoms. His medical history was significant for diabetes. The patient reported difficulty ambulating without his ankle-foot orthoses (AFO). In the preceding weeks he had 10/10 pain in the LLE but is currently pain free. He denied any radiating symptoms. He had 0/5 strength in left ankle dorsiflexion and 4/5 in plantarflexion. Without his AFO, he walked in a steppage gait pattern. Sensation was diminished in the distribution of his left common fibular nerve. Straight leg raise and pelvic compression test were negative. Sonogram revealed scarring at the level of the left common fibular and superficial fibular nerves. There was profound muscle atrophy and hyperechoic signal at the left anterior tibialis. The electrophysiologic study showed no response in the left superficial sensory and left fibular motor nerve. There was diminished amplitude of the right fibular motor nerve (.88 mV) and tibial motor nerves bilaterally (R3.7 mV L1.13 mV). The left tibialis anterior muscle showed increased insertional activity. **Discussion:** The patient's clinical and electrophysiologic exam indicated both a preexisting diabetic polyneuropathy and severe axonotmesis to the left common fibular nerve. His treatment options include maintaining his AFO with permanent foot drop, tendon transfer surgery, or peripheral nerve surgery. **Conclusion:** The patient's complex neuromuscular pathology was quickly and accurately diagnosed with utilization of in office ultrasound and electrophysiologic studies.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Kansas City Campus

Increasing emotional granularity to improve clinical insight and reduce schizophrenia symptoms

Presenting author: McRoy, Yvette, M.S.

Affiliation: Kansas City University

Co-Authors and affiliations: Fugate, Jennifer, Ph.D. - Kansas City University

Abstract:

Schizophrenia (SCZ) is a heterogeneous disorder with varying symptomology and pervasiveness. Specifically, negative symptoms of SCZ are less responsive to treatment and result in poorer outcomes. Individuals with SCZ experience deficits in emotional granularity (EG), the ability to differentiate emotional states. The first purpose of this dissertation is to examine the association between SCZ symptom type and severity and patient awareness of these outcomes (clinical insight). Sixteen in-patient individuals diagnosed with SCZ will serve as the participants. The clinician will fill out the Scale for the Assessment of Positive Symptoms (SAPS) and the Scale for the Assessment of Negative Symptoms (SANS) to measure symptom type and severity in patients. In addition, patients will also fill out the scales (adjusted). I predict that negative symptoms (vs. positive symptoms) of SCZ will be associated with more symptom severity, and that patient's clinical insight of symptoms will be lower than clinician's ratings. Additionally, the purpose of this dissertation is to see whether improving EG over a 12-week period decreases symptoms and their severity and increases patient's clinical insight. To do this, I will be administering an emotion-word learning intervention during in-patient group therapy. To measure changes in EG, patients will complete before the training and after the training two subscales from the Toronto Alexithymia Scale and one subscale from the Range and Differentiation of Emotional Experience Scale. Additionally, clinicians and patients will complete the SANS and SAPS after training. Finally, patients will be asked about specific emotion words after the training so that changes in EG can be directly linked to emotion word learning. Specifically, I propose that individuals with SCZ will show an increase in EG after training, which should predict fewer and less severe symptoms (as reported by the clinician). Additionally, I propose patient's awareness of outcomes will increase after training.

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Aortic dissection causes diagnosis treatment and case report

Presenting author: Maneesh Singh

Affiliation: KCU

Co-Authors and affiliations:

Abstract:

There are three layers of the aorta: the intima, media and adventitia. Aortic dissection is defined as a tear in the intima, causing blood to separate the intima and media layers creating a false lumen. The aortic dissection Stanford classification type A involves the ascending aorta or the aortic arch. This type is treated with surgery. Type B involves the descending aorta and is treated with beta blockers to control hypertension. There is a high surgical mortality with type B aortic dissection. A CT scan, MRI or transesophageal echocardiogram are used for diagnosis. Blood pressure may be unequal in both arms and a chest x-ray may show widening of the mediastinum. There are two options for surgery open heart surgery and endovascular surgery. Open heart Surgery is generally indicated for type A aortic dissection or intramural hematoma. Vascular surgery is a possible option for patients with descending aorta involvement. A patient who survived an aortic dissection had symptoms that began with nonspecific lower back pain and then progressed to lower extremity weakness. He said he felt a chest pain that radiated to his back. Physicians in the OR performed an open heart surgery, and he survived.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Correlation of the plantaris muscle and plantar fascia

Presenting author: Kathrine M. Spear

Affiliation: Kansas City University

Co-Authors and affiliations: Rebekah Swayko - Kansas City University Samin Durrani - Kansas City University Farida Mehrhoff - Kansas City University

Abstract:

Introduction: The plantaris is a short bellied, fusiform muscle with a long tendon. In humans, this muscle has variable insertion in the calcaneal region. However, in arboreal primates, the plantaris transitions into the plantar fascia. The muscle has been described as a vestigial muscle with minor flexor action, and as a proprioceptive organ. Previous studies have focused on morphology and biomechanics. In this investigation, the gross anatomy and histology of the plantaris and the plantar fascia were examined to explore possible interconnections along with structural variations. **Materials & Methods:** The plantaris muscle and tendon, and plantar fascia were fully dissected in a proximal to distal approach on 26 prosected cadavers. Samples were collected from the distal muscle belly, central tendon, and proximal fascia. H&E stains were used on muscle, tendon, and fascia samples. Vimentin staining was used on tendon and fascia samples to visualize fibroblasts. Verhoeff staining was used on fascia samples to visualize elastic fibers. **Results:** 50 legs were dissected, 38 muscles were true fusiform in morphology, 7 could be best described as unipennate, and 2 could be best described as bipennate. There were 3 instances of absent plantaris muscle. Plantaris origin was consistent throughout. We classified insertions into four categories in reference to the calcaneal tendon: posterior, conjoint, medial (inserting abruptly onto the calcaneal tubercle), and membranous medial (spreading into the soft tissues of the medial calcaneal region). 40 tendon insertions were visualized: 3 posterior, 10 conjoint, 18 medial, and 9 membranous medial. Histological analysis is in progress and results will be added to the research. **Conclusion:** Our data reveals that this muscle not only has a variable insertion, as previously reported, but also has variable muscle belly morphology. Visualization of the microscopic features of these tissues could provide links to understanding their anatomical associations and physiological features.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Prevalence of disease among KC's unhoused population at Care Beyond the Boulevard

Presenting author: Nathan Ng

Affiliation: Kansas City University College of Osteopathic Medicine

Co-Authors and affiliations: Carmen Tong - Kansas City University College of Osteopathic Medicine Kazi Syed - Kansas City University College of Osteopathic Medicine Alexandra Pearson - Kansas City University College of Osteopathic Medicine Matthew Oubre - Kansas City University College of Osteopathic Medicine Jessica Morehouse - Kansas City University College of Osteopathic Medicine Anila Katragadda - Kansas City University College of Osteopathic Medicine Ray Newman, MD - Kansas City University College of Osteopathic Medicine

Abstract:

It is well documented that unhoused populations suffer poor health outcomes due to a variety of factors, including limited access to healthcare. Care Beyond the Boulevard (CBB) is a Kansas City organization that aims to bridge this gap by providing free, high-quality healthcare to people experiencing homelessness in the community. Kansas City University College of Osteopathic Medicine's (KCU-COM) Student-Run Clinic has partnered with CBB to provide student volunteers the opportunity to serve these populations and gain real-world clinical experience. Student volunteers work with a KCU-COM faculty preceptor to serve within CBB's free clinics: collecting histories, performing physical exams, and determining treatment plans for patients. With limited resources at CBB, it would be beneficial to understand the most frequent ailments affecting this underserved population. Through a retrospective chart review, data was collected to determine chief complaints, age, and sex/gender of the patients that KCU-COM students have been seeing at CBB. Quantifying patient demographics and the prevalence of disease would provide insight on how to better allocate finite resources (ie. medication stock), improve prevention and treatment strategies, and modify current protocols to tailor care to the unhoused patient population.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Kansas City Campus

Unmasking health risk behaviors as predictors of face mask usage

Presenting author: Chrison Lam

Affiliation: Kansas City University

Co-Authors and affiliations: Lam, Chrison OMS11; Zins, Amber OMS11; Wang, Yuhao OMS21; Maturino, Kassandra MPH, PhD Student^{2,3}; Smith, Jamie MS³; Kevin Everett PhD³; Jane A McElroy PhD³ 1. Kansas City University College of Medicine, Joplin Campus; 2. University of Missouri Sinclair School of Nursing; 3. University of Missouri, Family and Community Medicine Department;

Abstract:

Introduction While mask use has been shown to effectively deter SARS-CoV-2 transmission, mask mandates and guidelines have been controversial since the beginning of the COVID-19 pandemic. Our study aims to explore the relationships between face mask usage and risky health-related behaviors or lived experiences related to COVID-19. **Methods** A 46-item anonymous survey measuring demographics, alcohol, cannabis, and tobacco usage, vaccination status, and face masking habits was administered at 8 Pride festivals in Missouri. Participants reported on mask-wearing situations (required, asked, feel at risk, always, at work, another reason) or never. Descriptive analyses characterized the sample. Predictive analysis of ever vs never wearing a mask was modeled using demographic and health behavior covariates. **Results** In our sample, the majority were less than 50 years old (84%), white (75%), college graduate (44%), never married (56%), and self-identify as a sexual minority (62%), 27% used nicotine products, 42% used cannabis, and 86% were COVID-19 vaccinated. The strongest predictors of wearing a mask are: COVID-19 vaccinated (OR 3.16, 95% CI: 2.25-4.42) and worried about long COVID (OR 2.52, 95% CI: 1.85-3.43). Bisexuals compared to heterosexuals were more likely to wear a mask (OR 1.71, 95% CI: 1.17-2.49). Those with HS education/GED compared to college graduates and current nicotine users are less likely to mask. **Discussion** Being vaccinated and worried about long COVID-19 are strongly associated with wearing a mask although confirmed COVID-19 diagnosis was not. Of health risk behaviors measured, only nicotine use was associated with never wearing a mask. SGM status was not a predictor of never wearing a mask. **Conclusion** A better understanding of who will adopt a new health behavior versus who will adopt health risk behaviors and who will need more targeted interventions is important and this knowledge can aid health professionals in their interactions with patients.

Category: Basic Science

Presentation mode: Poster presentation

Location: Joplin Campus

Seven-Month-Olds' Perception of Emotion from Male and Female Faces

Presenting author: Rahi Patel

Affiliation: PsyD Department, Kansas City University

Co-Authors and affiliations: Rachael Ramirez, PsyD Department, Kansas City University Rylee Hendricks, PsyD Department, Kansas City University Nicki Zieber, PsyD Department, Kansas City University

Abstract:

In the first year of life, infants are quickly developing expertise with the type of faces they experience most often, which for most infants is that of a female primary caregiver. While the ability for infants to process emotion in the first year of life has been studied, very few studies use both male and female faces. As infants have difficulties processing different identities of male faces, it may be that the additional effort of encoding male faces affects emotion perception. The development of efficient processing of emotional information is a precursor to later social outcomes, and studying how emotion is perceived from male compared to female faces is relevant to our understanding of the development of social knowledge. The current study presents infants with one male or one female face posing either anger, fear, or happiness until they accumulate 30 seconds of looking time. Subsequently, a new model of the same sex posing the familiarized emotion is presented side-by-side with the same model posing a novel emotion. Looking to the novel emotion is measured across two, 10-second test trials. The percent preference for the novel is compared to 50% chance looking. In a current study with 7-month-old infants ($N=23$), we have found differences emerging in the direction of preference for female versus male faces at test (difference; $t(23) = 1.71$, $p = .10$), with the mean for female faces leaning toward a novelty preference ($M = 57.36\%$, $SD = 0.24$), and the mean for males approaching a familiarity preference ($M = 40.18$, $SD = .26$). While neither mean is different from chance yet, the study is ongoing. This research is in line with previous studies that have suggested a familiarity preference may reflect more superficial encoding and memory for either more complex or less familiar objects (e.g., male faces).

Category: Health Service Psychology

Presentation mode: Poster presentation

Location: Kansas City Campus

Malarial relapse in the setting of primary HIV infection in young male Venezuelan migrant

Presenting author: Laura Schreck

Affiliation: Kansas City University

Co-Authors and affiliations: Haley Newport, DO. HCA HealthONE/Sky Ridge Medical Center Resident

Abstract:

Introduction: Given the increasing number of migrants entering the United States (US), doctors must understand how to diagnose and treat endemic diseases not previously common in the US population. This case explores concurrent HIV and malarial infections in a young Venezuelan man who traveled by foot from Venezuela to the US. While both HIV and malaria are rare diagnoses in the US, the combination presented itself in a Denver hospital. Case: A 28-year-old male with no significant past medical history presented with new-onset fever, chills, and vomiting. He had presented to the ED ten days prior with acute rash of the face and torso, which was to mites at the time. Seven months prior, the patient traveled by foot from Venezuela to the US, passing through Columbia, Panama, Costa Rica, Nicaragua, Honduras, Guatemala, and Mexico. Upon presentation, he met SIRS criteria. CT revealed mild hepatosplenomegaly and hepatic steatosis. CMP showed elevated ALT and TBili, with lab alert of abnormal appearing CBC, recommending a peripheral smear. Further analysis showed malarial type was an infection with two or more of Plasmodium vivax, malaria, or ovale. Additionally, HIV screen was positive and confirmed with an HIV-1 RNA viral load of 1,940,000 copies/mL. Treatment included atovaquone/proguanil for three days, with plan for curative primaquine course and HIV treatment outpatient. Discussion: Timelines and incubation periods determined that the patient likely acquired malaria in South America and contracted HIV in the US. The acute HIV infection caused immunosuppression, providing the setting for malarial relapse. The rash ten days prior may have been a symptom of HIV infection. Conclusion: This case highlights the importance of keeping a high-grade suspicion of malaria diseases in certain patient populations. Furthermore, it is important to evaluate potential causes of immunosuppression in symptomatic malarial patients outside the initial incubation period.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (Student at distant location)

Location: Joplin Campus

Resolution of essential tremor in a DBS patient after failed HIFU

Presenting author: Paul Abdo

Affiliation: KCU-COM Kansas City

Co-Authors and affiliations: Dr. Saulena Shafer, DO; Hoag - Pickup Family Neurosciences Institute
Belinda Stewart-Burger, MSN, RN, CRRN, CNRN, SCRNI; Hoag - Pickup Family Neurosciences Institute

Abstract:

Introduction: High-Intensity Focused Ultrasound (HIFU) and Deep-Brain stimulation (DBS) are two approaches that have been procedural choices for the treatment of essential tremor, with DBS being an established treatment since 1997 and HIFU gaining approval in 2016. **Case:** We present a case of a 75 year-old male who had a HIFU procedure done that improved his tremor for 3 years. However, the tremor returned with the same characteristics he had prior to the procedure, with an additional obstacle of being refractory to medical treatment. DBS was considered and approved for treatment. The device was programmed one month post-operation, and the patient had dramatic improvement of his symptoms. **Discussion:** Essential tremor is a relatively common condition with multiple treatment modalities. For patients that have a potentially drug-resistant condition, DBS and HIFU are approaches that have both been shown to generally provide symptomatic relief. DBS is typically not an option in patients who have had ablative therapies such as the HIFU procedure the patient underwent, but after presentation to a DBS approval committee and extensive review of ethics, benefit, and risk, he was approved for a DBS placement procedure with beneficial results. **Conclusion:** This is a unique case of a patient who was able to have two procedures done to alleviate essential tremor. With the results achieved for the patient, further discussion of the potential of DBS procedures after failed ablative therapies may be warranted.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Kansas City Campus

Cadaveric exploration of the relationship between posterior arthroscopic shoulder portals and the axillary nerve.

Presenting author: Dominic Maiuro

Affiliation: Kansas City University

Co-Authors and affiliations: Cameron Smith - Kansas City University. Swathi Sridhar - Kansas City University. Chloe Maye - Kansas City University. Robert Steele - Kansas City University and Freeman Hospital Systems. Melissa Zolnierz - Kansas City University. Delaney Hirst - Kansas City University. Nikolas Vukotic - Kansas City University.

Abstract:

Introduction The axillary nerve originates from the posterior cord of the brachial plexus, moving posteriorly. Variation can be observed upon exiting the quadrangular space to supply the deltoid and teres minor. The axillary nerves' close association with the posterior lateral aspect of the shoulder puts it at risk of injury with trochar insertion. Some studies have identified the anatomy of the posterior shoulder, but many fail to fully explain safety of the axillary nerve when performing arthroscopic surgery. **Methods** Fifty-two shoulders from twenty-six formalin-embalmed cadavers were dissected on the Joplin campus of Kansas City University. Prior to dissection, researchers simulated the placement of four portals on the posterolateral aspect of the shoulder in accordance with descriptions from the American Academy of Orthopaedic Surgeons. Portal placement was simulated by sticking a needle through the skin until a pop was felt, indicating introduction into the glenohumeral cavity. Following dissection of the posterior shoulder, axillary nerve variations were classified using the system set forth by Leechavengvongs et al. Measurements were collected from the body landmarks to the portal and axillary nerve branches using ImageJ. **Results** The distance between posterior portal and axillary nerve was the largest. The axillary nerve ran far inferior to the axillary pouch portal. The posterolateral portal was the second closest, as the portal's and axillary nerve's standard deviation came within 1 cm of one another. The average distance between the posteroinferior portal and axillary nerve was 5mm. **Discussion** The close proximity of less than one millimeter apart between the posteroinferior portal and axillary nerve put it at risk of injury. The greatest distance was observed between the posterior portal and the axillary nerve, thus indicating that this is the safest portal placement. **Conclusion** The posterior inferior portal should be used with extreme caution.

Category: Clinical Science

Presentation mode: Poster presentation

Location: Joplin Campus

What's your source? Trajectory of trusted sources for COVID-19 vaccine information

Presenting author: Yuhao Wang

Affiliation: KCU

Co-Authors and affiliations: Maturino, Kassandra MPH, PhD Student - University of Missouri, Sinclair School of Nursing; University of Missouri, Family and Community Medicine Department Zins, Amber OMS1 - KCU Lam, Chrison OMS1 - KCU Smith, Jamie MS - University of Missouri, Family and Community Medicine Department Everett, Kevin PhD - University of Missouri, Family and Community Medicine Department McElroy, Jane PhD - University of Missouri, Family and Community Medicine Department

Abstract:

Introduction Effective campaigns for facilitating COVID-19 vaccination uptake remain elusive. This project's purpose is to bring improved understanding of trusted sources for COVID-19 vaccination information. **Methods** An anonymous survey measuring demographics, trusted source for COVID-19 vaccination information, and COVID-19 vaccination status was administered at community events in Missouri. An analytic plan included simple descriptive statistics to characterize the sample and five logistic regression models to identify associations between trusted sources of COVID-19 information (i.e. CDC/government, doctors/healthcare providers (HCPs), family members/friends, nobody, and other), demographics, vaccination status, and three time periods characterizing the pandemic (vaccines and boosters available, bivalent shot available, and pandemic emergency officially ended). **Results** Among 6,221 participants, 70% of the sample was 18-49 years old, 82% white, and 63% cisgender female, and 75% completed surveys in the third time period. Twenty-two percent were unvaccinated. CDC/government and HCPs were the most trusted sources during the timeframes, with trust in CDC/government (OR 6.51, 95% CI: 4.81-8.80) increasing over time and decreasing for HCPs (OR 0.37, 95% CI: 0.30-0.46). Trust in HCPs was 63% less likely in the last time period compared to the first time period. Vaccinated participants are significantly more likely to trust CDC/government or HCPs while unvaccinated are significantly more likely to trust family/friends or nobody. **Discussion** Considerable heterogeneity in trusted resource was observed during the first time period, but once bivalent shots were available, large majorities of vaccinated participants relied on CDC/government or HCPs for information. In contrast, unvaccinated participants continued to rely on potentially less credible sources (e.g., family members, nobody) signaling a need for healthcare providers to be prepared to address medical mistrust and misinformation. **Conclusion** Understanding who patients view as trusted sources for COVID-19 vaccination information, especially among unvaccinated patients, provides important information for clinicians when engaging with these patients.

Category: Quality Improvement

Presentation mode: Poster presentation

Location: Joplin Campus

Methylation levels of C62 in snRNA U6 after suppression of SNORD94 utilizing CRISPR in quail cells

Presenting author: Daniel A. Barchers

Affiliation: Kansas City University COB

Co-Authors and affiliations: Doug Bittel - KCU Michael Filla - KCU Nataliya Kibiryeva - KCU

Abstract:

Small noncoding RNAs (sncRNAs) play an essential role in regulating gene expression during embryonic heart development. A subclass of sncRNAs, termed small cajal body RNAs (scaRNAs) have a key regulatory function in maturation of the spliceosomal machinery. These scaRNAs covalently modify spliceosomal machinery via methylation or pseudouridylation at specific sites in the RNA components of the spliceosome. One scaRNA investigated here is SNORD94 or U94. The role of SNORD94 is to guide methylation on a cytosine (C62) on the spliceosomal RNA U6. Our previous research demonstrated that reducing the expression of SNORD94 in human cells and in zebrafish embryos resulted in reduced methylation of C62 in RNA U6, altered splicing, and developmental damage to the heart. Precise spatiotemporal regulation of alternative splicing during embryonic heart is required for normal heart development. Here we investigate more precise tools (CRISPR-Cas13) for regulating scaRNA expression using the quail animal model. Quail embryos have a unique advantage over human cells and zebrafish because they develop four chamber hearts. I will present the impact on C62 methylation resulting from CRISPR facilitated knockdown of SNORD94.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Knockdown of Snord94 in quail cell line using CRISPR-Cas13

Presenting author: Jaden Roe

Affiliation: Kanas City University

Co-Authors and affiliations: Dr. Douglas Bittel Dr. Nataliya Kibiryeva

Abstract:

Spliceosomal regulation of alternative splicing during embryonic development in vertebrates is only partly understood, yet is gaining evidence that it plays an important role. Previous studies have shown that genes go through different alternative splicing events during fetal development. A subset of small noncoding RNAs known as scaRNAs (small cajal body associated RNAs) is involved in spliceosomal maturation and guides covalent modifications of spliceosomal RNAs by either methylation or pseudouridylation. However, it is not clear what the significance of these modifications is. Our focus is one specific scaRNA known as SNORD94, which guides methylation at one cytosine (C62) on the spliceosomal RNA U6. This nucleotide is located in catalytic region and potentially has a role in the spliceosomal function. Our lab has previously showed that knocking down expression of SNORD94 in human cells or zebrafish embryo with antisense oligonucleotides leads to alternative splicing of several genes important for organogenesis. To evaluate those findings and to explore the role of the spliceosomal regulation during organogenesis we need to create an animal model. Quail is a perfect model organism because the embryos are sheltered inside the eggshell and a small window in the shell is ideal for visualizing the embryos and performing different interventions. Eventually, we will use CRISPR-Cas13 to knockdown U94 in a quail embryo. However, we need to start our experiments in quail cell line to validate this technique. We used quail myoblast 7 cell line and co-transfect it with CRISPR-Cas13 and different synthetic guide RNA targeting SNORD94 and assess level of SNORD94 knockdown by qPCR. Our results indicated that CRISPR-Cas13 is a viable method to knockdown SNORD94 in quail cell line. Therefore, we could use this technique to create an animal model to study spliceosomal regulation during fetal development.

Category: Basic Science

Presentation mode: Poster presentation

Location: Kansas City Campus

Unraveling uniqueness: a case study on an uncommon variation in the brachial plexus of a human cadaver.

Presenting author: Swathi Sridhar

Affiliation: Kansas City University

Co-Authors and affiliations: Dominic Maiuro, Kansas City University Chloe Maye, Kansas City University
Cameron Smith, Kansas City University Lyon Hough, Kansas City Univeristy

Abstract:

Introduction: The brachial plexus is an intricate network of nerves originating from the ventral primary rami of spinal nerves C5-T1. This nervous plexus begins to form in the 5th week of embryonic life via a dynamic and tightly regulated process, during which anomalies can occur, leading to a diverse range of anatomical configurations among individuals. This study explores one such variation in the brachial plexus, its associated embryology, and its significance in undergraduate medical education. **Case:** During a routine medical school cadaveric dissection of the left upper limb of a 78-year-old female, an anomalous brachial plexus was observed unilaterally. Dissection involved making an incision in the axilla to reveal the branching pattern of the brachial plexus. Contrasting with the classic anatomy, a bifurcation of the musculocutaneous nerve giving rise to an accessory branch that looped back to pierce the left coracobrachialis muscle was observed. The second branch of the musculocutaneous nerve was observed entering the bicep brachii and brachialis muscles and giving rise to the lateral cutaneous nerve of the forearm. **Discussion:** Anomalies involving duplication of an entire nerve or one of its branches may be due to defective differentiation of neural crest cells or improper guidance of signaling factors responsible for controlling ventromedial myotome growth, during the critical window of nerve development. The constancy of these signaling factors is known to influence the fiber size and the number of nerves being created during development. Any variability in these factors could result in typical plexus variation, explaining the observed musculocutaneous nerve duplication. **Conclusion:** While the brachial plexus is inherently variable, anatomy instruction mainly focuses on classical textbook presentations. Variations, such as those presented in this study, provide the opportunity for educators and students to discuss the associated embryological process of uncommon anatomy.

Category: Case Reports and Studies

Presentation mode: Poster presentation

Location: Joplin Campus

Quinolinic Acid, PMCA, and The Road Less Traveled: A Divergence of Tryptophan Metabolism and The Complexities of Major Depressive Disorder

Presenting author: Bryan Munoz

Affiliation: Medical Student / Author

Co-Authors and affiliations: Kami Pearson, MS - Research Associate Asma Zaidi, PhD - PI and Mentor

Abstract:

Major depressive disorder (MDD) is a complex mood disorder of multifactorial origin estimated to affect 350 million people worldwide. It is responsible for increased morbidity and even mortality, including suicide, adverse health behaviors, lost work productivity and increased health care utilization. Approximately 40% of patients do not respond to traditional therapy, a testament to how poorly the mechanisms underlying MDD are understood. Tryptophan metabolism, the major pathway in the synthesis of serotonin, has been extensively studied for its implications on depression. When stressed, abnormal microglial activation causes inflammation and dysregulation of the serotonin pathway, leading to increased activation of the kynurenine pathway (KP). This causes the production several metabolites at the expense of serotonin, some of which are neurotoxic. This shift results in the formation of reactive oxygen species (ROS), oxidative stress, neurotoxicity, and implicated in the onset of depression. The current project focuses on a downstream metabolite of the KP, quinolinic acid (QA) and its effect on the Plasma Membrane Ca^{2+} ATPase (PMCA). QA is a known neurotoxin, but its impact on neuronal calcium regulation is not well understood. The PMCA is critical in the regulation of calcium homeostasis. Ca^{2+} is essential for normal neuronal function including neurotransmission, but excess Ca^{2+} leads to excitotoxicity and neuronal death. By exposing SH-SY-5Y cells to increasing concentrations of QA ranging 10-250 μM for 24 hours and measuring the generation of inorganic phosphate from Ca^{2+} -dependent ATP hydrolysis, we have determined that QA has an inhibitory effect on the PMCA. Preliminary immunoblotting of the PMCA with a pan-PMCA antibody has revealed minimal degradation of the PMCA between conditions. These findings implicate that while the PMCA is being inhibited, it is not degraded. This merits further investigation which will contribute to our understanding of the complexities surrounding depression.

Category: Basic Science

Presentation mode: Live podium presentation

Location: Kansas City Campus

KCU-Graduate Medical Education (GME) Consortium

Keracis in the Treatment of Necrotizing Fasciitis: A Case Report

Presenting author: Jacob Frisbie, DO

Affiliation: Kansas City University/HCA-KC Research Orthopedic Surgery Resident

Co-Authors and affiliations: Katherine Manseau, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident; Robert Garner, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident; Charles Orth, DO, FAOAO, Kansas City University/HCA-KC Research Orthopedic Surgery Residency Program Director

Abstract:

Introduction: Necrotizing fasciitis is a life-threatening infection that requires emergent irrigation and radical debridement of affected tissues. This rapidly spreading bacterial infection, even when recognized quickly, often leaves patients with large disfiguring areas, and holds a mortality rate of 32%. One of the challenges surgeons face, is how to provide healthy coverage of these defects. Keracis SurgiClose, an intact fish skin with similarities to human skin, has anti-inflammatory properties and high concentration of omega-3 fatty acids that promote wound healing. **Case Presentation:** 39 year old female with a history of drug use presented with one week history of left knee pain. She had a small wound with erythema and warmth that began spreading down the extremity. Broad based antibiotics were initiated, and orthopedics was consulted for evaluation of septic arthritis. Orthopedic provider evaluated patient and found her LRINEC score of to be 9, which has a 90% predicted positive value for necrotizing soft tissue infection. Patient was emergently taken to the operative room for thorough irrigation and debridement and wound vac application. She had a large area of non-viable tissue down to the level of bone, measuring 15cm x 8cm located over the patella and patellar tendon. Intra-operative cultures demonstrated *Streptococcus pyogenes*. After extensive hospital course with multiple procedures, patient began to show signs of improvement and was ready for soft tissue coverage. We chose Keracis for our split thickness graft which has shown positive results. **Discussion:** This case demonstrates the importance of early diagnosis of necrotizing fasciitis and successful treatment outcomes. Keracis has been shown to be effective in the management of soft tissue defects requiring skin graft coverage. Keracis utilizes North-Atlantic Cod skin, which has properties similar to human skin, proving to be an effective choice for skin regeneration in large defects.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: HCA KC-Research Medical Center

True Bicuspid Pulmonary Valve and Pulmonary Artery Aneurysm: A Case Report and Literature Review

Presenting author: Xixi Cao, MD

Affiliation: Kansas City University/St. Anthony Hospital Surgery Resident

Co-Authors and affiliations:

Abstract:

Introduction Pulmonary artery aneurysm (PAA) and bicuspid pulmonary valve are two rare entities, reported in association, and usually attributed to hemodynamic alterations caused by the bicuspid pulmonary valve. Case Description A 52-year-old female patient presented with severe shortness of breath, which was progressively increasing over seven years. On CT angiography, she was found to have markedly dilated main pulmonary artery measures 5.1 cm transversely, while the thoracic aorta in the same image measures 2.9 cm transversely (Figure 1). Cardiac magnetic resonance imaging for morphology and function was performed, with findings of residual mass measuring 13 x 16 mm in the anterior cusp of the bicuspid pulmonic valve most consistent with thrombus based on no enhancement on late gadolinium imaging (Figure 2). Balancing potential risks and benefits, corrective cardiac surgery had been proposed to the patient with subsequent procedure performed with our team on May 25, 2022 (Figure 3, 4). At one month, six months and one year follow up, the patient did not report any symptoms and was satisfied with the result. Unfortunately, she contacted COVID 19 in November 2022, and was hospitalized. She experienced significant coughing spells, and suffered separation of her manubrium, and since January 2023 she has had some non-debilitating upper chest discomfort, which was healing in the 15-month follow up. Conclusion The isolated finding of a bicuspid pulmonary valve is rare and most often diagnosed at surgery or post-mortem (Table 1). Here, we report an extremely rare case of PAA associated with an isolated true bicuspid pulmonary valve.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Anthony Hospital

Incidence of above knee amputations due to total knee arthroplasty complications: A comprehensive analysis from a Midwest metropolitan hospital system.

Presenting author: Robert Garner, DO

Affiliation: Kansas City University/HCA-KC Research Orthopedic Surgery Resident

Co-Authors and affiliations: Collin Erickson, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, Evan Johnson, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, Brandalynn Holland, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, Jacob Frisbie, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, David Dye, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, Tillman Landers, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident, Jason Webb, BA, Robert Paul, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Residency Faculty, David Dugan, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Residency Faculty, Charles Orth, DO FAOAO, Kansas City University/HCA-KC Research Orthopedic Surgery Residency Program Director

Abstract:

Introduction: Rates of total knee arthroplasty (TKA) have increased over the past several years to greater than 800,000 ¹ and are projected to continue to increase to over 1.2 million by 2040 ². TKA is infected at 0.92% in 2008 ³. Above-knee Amputation (AKA) is indicated for failed TKA refractory to other treatments⁴. The rate of AKA for failed TKA 1970-2000 was 0.36%⁵. This study aims to evaluate if there is an increased rate of AKA per primary TKA. **Methods:** Retrospective study using the HCA Database to identify patients treated at HCA-Midwest hospitals 2016-2022 who underwent an AKA, CPT code 27590. ICD-10 codes used to evaluate comorbidities, BMI, demographic information, and microbiology were all obtained and utilized CPT code 27447 to identify primary TKA and operative reports to determine the indication for AKA. T-test and chi-square were used for comorbidities. **Results:** 360 cases were identified, and 256 were included in the study after exclusion criteria. 35 AKA were due to failed TKA, including prosthetic joint infection and arthrofibrosis. There were 9900 primary TKA performed. The rate of AKA due to failed TKA is 0.35% (33/9900). No comorbidities were statistically significant in association with AKA for failed TKA. **Conclusion:** The rate of AKA per primary TKA has remained the same today as in the past. An AKA is the terminal treatment option for failed TKA. Recommend continuing to review this statistic and other complications of TKA in the future due to evolving technology, technique, and increase in TKA performed.

Category: Medical Education

Presentation mode: Live Virtual Presentation (GME)

GME program Location: HCA KC-Research Medical Center

How can you mend a broken heart: a case report on takotsubo cardiomyopathy

Presenting author: Megan Hammersla, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Objective: Cardiomyopathy typically has an obvious presentation but can have multiple etiologies. Some are rare and can lead those to think, “I have never heard of that,” triggering considerable personal and family anxiety. Such is the case with the condition we now call Takotsubo cardiomyopathy. **Case Presentation:** A 79-year-old single Caucasian female with essential hypertension, hyperlipidemia, GERD, and diastolic heart failure presented to the emergency room after a mechanical fall at home. She was status post right mastectomy two weeks earlier, with increasing erythema and pain at site x 2 days. She met sepsis criteria. Initial troponin was negative. BNP was 219. CT angiogram showed moderate bilateral pleural effusions, moderate bibasilar atelectasis or infiltrate, no PE. Echocardiogram showed ejection fraction 50-55%. EKG showed normal sinus rhythm. On day 4 of admission, she experienced sudden dyspnea and chest pressure. ABG showed severe respiratory acidosis and significant hypercapnia. Her mental status quickly deteriorated. BNP trended up to 840 and echocardiogram showed EF 20-30% with severely reduced systolic LV function, mildly dilated left atrium, and severe diffuse hypokinesis with basilar hypokinesis, suggesting Takotsubo cardiomyopathy. **Discussion:** Takotsubo is uncommon but characterized by reversible left ventricular akinesis without significant coronary artery obstruction. Treatment is primarily focused on monitoring and supportive care. This patient was admitted for sepsis, but during her stay, developed stress cardiomyopathy. With proper management she returned to baseline functioning. Her echocardiogram the following day showed EF 40-45%. A left heart catheterization done a few days later showed mild but nonobstructive CAD, reaffirming stress induced cardiomyopathy. Further research will hopefully continue to illustrate the prevalence of Takotsubo, as this diagnosis of cardiomyopathy is often missed or delayed. Keeping the rare pathologies on the horizon, such as this one, can lead to timely intervention and disease management.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

A breath-taking circumstance: a case report on LAM

Presenting author: Jeffrey Lee, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Introduction: Lymphangioleiomyomatosis is a rare multisystem disorder that is a low grade neoplasm which causes proliferation of atypical smooth muscle cells manifesting as progressive diffuse cystic lung disease with clinical symptoms of dyspnea, chylous effusions and renal angiomyolipomas. It mostly afflicts women. Since the 2000s, studies exploring the pathogenesis of LAM have produced ground-breaking insights that have led to the development of an effective treatment. Case: A 47-year-old female presents to the ED for a first-time episode of hemoptysis. Patient had a one year history of exertional dyspnea and two month history of cough. She is a lifetime non-smoker and has no significant past medical history. CT chest showed moderate cystic emphysematous changes throughout the lungs and bilateral pleural effusions. CT abdomen showed multiple angiomyolipomas present in the kidneys. Thoracentesis of left lung returned cloudy chylous fluid. Pulmonology was consulted and diagnosed LAM based on classic clinical presentation and radiographic findings. Immunohistochemistry of the pleural fluid was consistent with LAM. Patient was referred to a LAM clinic after discharge. She was eventually started on treatment with sirolimus. Discussion: LAM should be suspected in a young female who presents with a spontaneous pneumothorax, unexplained dyspnea, pleural or peritoneal chylous fluid collections, TSC, or renal angiomyolipomas. Estimates of the prevalence of sporadic LAM range from 1 to 14 per million women in the general population with the highest rates in women with TSC. The pathogenesis involves excessive proliferation of LAM cells due to loss of functioning TSC genes, preventing formation of the hamartin-tuberin complex which regulates mechanistic target of mTOR, a molecule that controls cell growth and cell size. Use of mTOR inhibitors slow progression of respiratory impairment but is not curative. The estimated median transplant-free survival time for pulmonary LAM is 29 years from symptom onset and 23 years from diagnosis.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Clinical Toxicology of Flora Native to Southwest Missouri

Presenting author: Darren Dalbey, DO

Affiliation: Kansas City University/Freeman Emergency Medicine Resident

Co-Authors and affiliations: Matthew Pultz DO, Kansas City University/Freeman Emergency Medicine Resident; Jordyn Watts, DO, Kansas City University/Freeman Emergency Medicine Resident; Robert Steele, DO, Kansas City University/Freeman Emergency Medicine Resident; Shayne McGowan, DO, Kansas City University/Freeman Emergency Medicine Resident

Abstract:

Introduction Physicians in southwest Missouri have to contend with occasional ingestions of the native toxic flora and fungi. Because of the rarity of these ingestions, there is a paucity of systematic reviews of the clinically relevant information regarding these plants. The purpose of this systematic review is to review the clinically relevant Botany, pathology, pharmacology, patient presentation, recommended bloodwork, and ultimate prognosis for the Destroying angel, Fly agaric, Jimsonweed, Poison hemlock, Water hemlock, Pokeweed. Methods Information regarding the botany, pathology, pharmacology, patient presentation, recommended bloodwork, and ultimate prognosis for ingestions of toxic flora were obtained by a pub med search. Of special interest were particular case studies, toxicological/pharmacologic overviews, and descriptions of the pathophysiology of the toxins of interest. Results Discussion of the aforementioned clinically relevant topics were collated with citations into a poster presentation with an end to educate clinicians in a practical and accessible way on a reasonable clinical approach to toxic ingestions with the discussed flora. Discussion The majority of toxic ingestions with the flora native to Southwest Missouri are subclinical. Furthermore, many are of minor clinical significance and require only supportive care. Clinically significant ingestions are rare. In this special case, it can be very easy to practice with a poor understanding of the toxicology of our local toxic flora. This literature review and presentation is intended to improve clinician understanding regarding diagnosis and management. Conclusion While the toxicology of plants native to Southwest Missouri is fairly well described, much more research is necessary into the optimal treatment for clinical ingestions. In many cases, the only described treatment is supportive care, however research is emerging into potential antidotes for some of these toxins. It is our hope that in time, if the conversation regarding these toxic flora can continue, more optimal treatments can be discovered.

Category: Medical Education

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Objective: ACS in low-risk population: Spontaneous Coronary Artery Dissection (SCAD) under-diagnosed or misdiagnosed

Presenting author: Christine Miller, DO

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations:

Abstract:

Objective: ACS in low-risk population: Spontaneous Coronary Artery Dissection (SCAD) under-diagnosed or misdiagnosed Presentation: 37 y.o. female who we were asked to see for chest pain. Patient is a friendly 37-year-old who works at a gas station as a supervisor. She reports that she had about an hour of intense elbow pain, with radiation up into her chest, into chest pain with radiation to her arm, back and neck. She presented to ED and placed on heparin drip and nonsteroidals with resolution of symptoms. Troponins elevated to 4.98. She had no arrhythmias, blood pressure changes or shortness of breath. She denied nausea, vomiting, diarrhea, lightheadedness or syncope. She denies hypertension, smoking or diabetes. She has no children and is not currently pregnant. She has no other previous cardiac history but endorses migraines. Risk factors include strong family history of heart disease and hyperlipidemia. She underwent a PCI which demonstrated a Type 2 SCAD in the midportion of the OM1, other use normal coronary arteries. No atherosclerotic disease noted. Because of the type, TIMI-3 flow, resolution of symptoms, conservative management was recommended. She was discharged on beta-blocker, aspirin, and Plavix therapy 1 month. Discussion: SCAD is defined as a nonatherosclerotic, non-iatrogenic separation of the coronary artery vessel wall, often presenting as ACS. It accounts for a small portion of the myocardial infarctions that present, but should be apart of the differential for patients with no-to-low risk factors. It's important to remember that in patients presenting with ACS syndrome who are 50 years of age or younger, SCAD may nearly account for 25% of the cases. Studies are showing post-menopausal females are at risk, with median age at 51. Risk factors are thought to be hormonal imbalances (peripartum and post-menopausal), fibromuscular dystrophy, migraines.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

I-PROMPT: Improving patient retention with outreach messages via physician telecommunications

Presenting author: Alexander Intriago, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Sarah Shapiro, MS3 Kansas City University College of Osteopathic Medicine; Jeffrey Lee, MD, Kansas City University/Reid Health Family Medicine Resident

Abstract:

Introduction: Family medicine residency clinics traditionally do not penalize patients for no-shows unlike other medical practices. With that said, the patient no-show rates at residency clinics are higher than the no-show rates seen at other outpatient clinics. To reduce the patient no-show rates in this patient population, implementation of other measures to ensure patient attendance must be explored.

Materials and Methods: This is a four-arm study of family medicine residency patients seen between 07/2021-03/2024. The control group consisted of the clinic staff calling patients to remind them of scheduled appointments, the first intervention group consisted of the resident directly calling the patient to remind and confirm the scheduled appointment, the second intervention group consisted of the resident leaving a personalized voicemail to confirm appointments, and the third intervention group consisted of the resident sending a personalized text message reminder. Patient no-show data was gathered over the course of 30 consecutive months between 07/2021-03/2024. The monthly no-show rates were calculated in the three intervention groups and the control group. Additionally, the monthly no-show rates were further stratified to consider for person, month, day, time of day, and appointment type. **Results:** There is a statistically significant decrease in no-show rates in family medicine residency patients who are called directly by the resident in comparison to a voicemail reminder by a resident or a phone call reminder by another clinic staff member. Personalized text messages from a resident are not any more effective than automated texts. **Discussion:** This project successfully demonstrated beyond reasonable doubt that residents personally calling patients to remind and confirm scheduled appointments makes a substantial difference in reducing no-show rates. **Conclusion:** Residents should personally confirm appointments over the phone prior to appointments to minimize frequency of patient no-shows.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Excimer Laser Refractive Surgery, Intraocular Lens Implantation and Refractive Lens Exchange Outcomes for Children with Neurodevelopmental Disorders

Presenting author: Alex Downey, DO

Affiliation: Kansas City University/St. Luke's Des Peres Family Medicine Resident

Co-Authors and affiliations: Nicholas Faron, DO, Kansas City University/St. Luke's Des Peres Family Medicine Faculty; James Hoekel, OD - Washington University in St. Louis Pediatric Optometry Faculty; Margaret Reynolds, MD, Assistant Professor for Ophthalmology and Visual Sciences at Washington University in St. Louis; Lawrence Tychsen, MD, John F. Hardesty, MD, Distinguished Professor of Ophthalmology and Visual Sciences & Professor of Neurobiology, and Ophthalmology in Pediatrics, Dept of Pediatrics at Washington University in St. Louis

Abstract:

Introduction: To report the use of photorefractive keratectomy (PRK), phakic intraocular lens (pIOL) and refractive lens exchange (RLE) to treat refractive errors in children. **Methods:** Clinical data were collated retrospectively in 479 children (n=768 eyes) with a neurodevelopmental disorder (NDD), including ADD/ADHD, Autism, Cerebral Palsy, Developmental Delay, Down Syndrome, Epilepsy and Extreme Prematurity. The mean age at surgery was 12.2 years (range 2-20); mean follow-up was 4.4 years (range 1-20 years). **Results:** Hyperopic PRK SEQRE improved from $+3.0D \pm 0.4$ to $0.52D \pm 0.3$ and myopic SEQRE from $-4.4D \pm 0.76$ to $-0.04D \pm 0.0$. Correction with pIOL implantation was from $-12.3D \pm 2.4$ to $-0.21D \pm 0.47$, and with RLE from $-14.9D \pm 4.6$ to $-0.18D \pm 1.2$. Uncorrected distance visual acuity (UDVA) for the hyperopic children improved from an average 0.61 to 0.26 logMAR and for myopic children, from 0.84 to 0.34 logMAR. After pIOL implantation, UDVA improved from an average of 1.5 to 0.37 logMAR, and with RLE, from an average of 1.49 to 0.56 logMAR. The rate of sight threatening complications was low; for PRK < 1% and for pIOL and RLE < 4%. **Discussion/Conclusion:** PRK, pIOL implantation, and RLE are effective means for improving visual function and quality of life in children who have NDD and difficulties wearing spectacles. Visual acuity and refractive error substantially improved from preoperative measures.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Luke's Des Peres Hospital

Alcohol Use Disorder: Comparative Efficacy and Tolerability of Medications in Youth

Presenting author: Mahnoor Waqar, MBBS

Affiliation: International Medical Graduate from Rawalpindi Medical University, Pakistan

Co-Authors and affiliations: Mahnoor Yousif Shaikh, MBBS, International Medical Graduate from Dow University of Health Sciences, Pakistan; Mohsan Ali, MBBS, International Medical Graduate from King Edward Medical University, Pakistan; Ozge Ceren Amuk Williams, MD, Kansas City University/Ozark Center Psychiatry Resident; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

Abstract: Objectives: Alcohol use disorder (AUD) is on the rise among adolescents leading to adverse consequences for youth's psychological well-being and developmental outcomes. Methods: A thorough search of five electronic databases, including PubMed, Scopus, ISI Web of Science, APA PsycInfo, and clinicaltrials.gov, using relevant search terms was conducted. The reviewers performed the title and abstract screening using predetermined eligibility criteria, followed by the full-text screening of the articles. From the selected articles, the data was extracted and cross-checked for accuracy. Results: The study included three randomized control trials, including 78 participants diagnosed with AUD with participants aged 16-19 years. The participants were followed for three months to assess the pharmacological efficacy of Cyanamide, Acamprosate, and Disulfiram against placebo. Mean cumulative abstinence duration was reported for a total of 77.7, 79.8, and 68.5 days when participants were given 200 mg of cyanamide, 1332 mg of Acamprosate, and 200 mg of Disulfiram, respectively in the intervention group. Relapse was reported to be the most common reason for treatment discontinuation in both groups. No significant difference in the side effects was reported between the intervention and control groups. Conclusion: These results support using Cyanamide, Acamprosate, and Disulfiram for treating AUD in adolescents. However, current evidence is very limited, and future trials are needed to explore the comparative efficacy and safety of these pharmacological treatments of AUD.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Be prepared: A storm of a different kind.

Presenting author: Rajesh Dhakal, MBBS

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Residency Faculty

Abstract:

Introduction: A thyroid storm is a rare, life-threatening emergency condition. In the US, the incidence is 0.57 to 0.76 per 100,000 person-year. It can get easily unnoticed with optimal symptoms like fever and tachycardia only. Case: A 48-year-old female with peripheral vascular disease, coronary artery disease, illicit drug abuse, chronic mesenteric ischemia, recent stent placement for stenosis of celiac artery, and no thyroid-related disorders presented to ER with shortness of breath; she was tachycardic (143 bpm) and hypertensive (150/95 mm of Hg). She had heat intolerance and anxiety. After being admitted for pneumonia with significant tachycardia and unexplained BNP of 1000 pg/mL, her Thyroid Stimulating Hormone was undetectable at 0.01 mIU/L, total T3 elevated at 182 ng/dL, free T4 elevated at 3.3 µg/dL. After symptomatic management of pneumonia, acute exacerbation of COPD, and respiratory failure. Treatment with hydrocortisone IV 100 mg 8 hourly, propylthiouracil 200mg 8 hourly, propranolol 40 mg 8 hourly, and five drops of potassium iodide eight hourly 1 hour after PTU for thyroid storm. Normalization of her TFTs was within two days. Her symptoms started to resolve with first dose. The patient tolerated the treatment with symptomatic improvement and was discharged with methimazole 15 mg and followed up with her primary care physician and endocrinologist. Discussion: Thyroid storms can be caused by untreated hyperthyroidism or acute events like surgery, infections, and trauma. Similar symptoms can mask the diagnosis due to other conditions like pneumonia, COPD exacerbation, and drug withdrawal. Her Burch-Wartofsky Point Scale was 45, highly suggestive of a thyroid storm. Early detection and treatment can prevent the worst outcome. Our patient improved clinically with normalized TFTs and BNP levels. Conclusion: Prioritizing early diagnoses with immediate treatment can save a patient's life. Frequent ED visits with fever and tachycardia signaled an impending episode in this patient.

Category: Medical Education

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

An Uncommon Cause of Anemia, Heyde Syndrome

Presenting author: Rishi Gupta

Affiliation: Kansas City University College of Osteopathic Medicine Student

Co-Authors and affiliations: Steven Scheidt, Kansas City University College of Osteopathic Medicine; Cali Clark, D.O. M.B.A., Kansas City University/Freeman Internal Medicine Resident; Shane Miller, D.O., Kansas City University/Freeman Internal Medicine Resident

Abstract:

The case we present is a 59 year old female that presented to our hospital for worsening dyspnea and was found to be severely anemia with presenting hemoglobin of 3.4. Work-up revealed severe aortic stenosis with a mean gradient of 55 mmHg. The patient underwent endoscopic evaluation with EGD and limited colonoscopy. No lesions were found as a cause of bleeding and the patient was set up to undergo small-bowel follow through. Ultimately, the patient was felt to have severe anemia secondary to Heyde syndrome and underwent transcatheter aortic valve replacement. Heyde syndrome is characterized by severe aortic stenosis, anemia secondary to gastrointestinal bleeding, and an acquired von Willebrand syndrome. The theorized pathophysiology is severe aortic stenosis leads to proteolysis of the von Willebrand factor's high molecular weight multimers and loss of platelet mediated homeostasis leading to an acquired von Willebrand disease.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Impact of Focused Diabetic Education on A1c Levels

Presenting author: Max Hesse, MD

Affiliation: Kansas City University/St. Luke's Des Peres Family Medicine Resident

Co-Authors and affiliations: Jason Woody, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Neil Bobenhouse, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Kayla Beashore, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Charles Shipley, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Allison Politsch, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Grant Paterson, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Efren Shahabeddin, MD, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Kirstie Mabitad, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Kailyn Baalman, MD, Kansas City University/St. Luke's Des Peres Family Medicine Resident; Nick Gutzmer, DO, Kansas City University/St. Luke's Des Peres Family Medicine Resident

Abstract:

Type 2 Diabetes is a common and impactful medical condition in the primary care setting. Our quality improvement project seeks to gauge the efficacy of focused diabetic education with supplemental literature as it relates to the lowering of Hemoglobin A1c in our patient population. Eligible patients have A1c <9, are NOT on insulin, and are not on >2 oral hypoglycemic agents. Additionally, eligible participants must have not received prolonged courses of oral steroids (>2 weeks) in the past 3 months. We will use our Electronic Medical Record and laboratory monitoring features to track A1c values throughout the course of the Quality improvement project. Printed trifolds are available in clinic for distribution to ALL diabetic patients, though only eligible patients will be included in the study. The literature and education will be distributed and orally reviewed with each patient during the final 5 minutes of each encounter. Eligible patients and their corresponding a1c values are logged by residents in the designated binder. At the end of the initial study period (6mo), we ideally will have 3 A1c measurements for each participant. We will then measure the average change +/- in A1c. Initial data is encouraging, with many patients achieving lowered A1cs. Our hypothesis is that increased time spent on diabetic education in our clinic can result in lowering of A1c and therefore, mitigation of comorbidity and risk for secondary outcomes such as MI, Stroke, Nephropathy, Retinopathy, etc. Many patients are unaware of the impact that diabetes has on their overall health and are likewise unaware of the dietary and lifestyle modifications that are essential to maintaining healthy glucose levels. Upon conclusion of the study, the resources used to distribute the education will be retained by the clinic and will continue to serve as a method of quality improvement for our patients.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Luke's Des Peres Hospital

Designing Wellness Initiatives Tailored to Individual Needs in Residency Training: Diversity of Coping Skills in Response to Stress

Presenting author: Ozge Amuk Williams, MD

Affiliation: Kansas City University/Ozark Center Psychiatry Resident

Co-Authors and affiliations: Kailey Kowalski, Kansas City University COM Student; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director; Modaser Shah, MD, Kansas City University/ Ozark Center Psychiatry Residency Faculty

Abstract:

Introduction: Enhancing resident wellness is crucial in developing a caring and resilient physician. Early identification of the factors that affect residents' well-being is essential to create an individualized wellness program. Objective: To identify residents' coping strategies in response to stress and define the expectations of an ideal wellness program. Methods: We invited 58 residents of the GME programs at Ozark Center and Freeman Hospital to the study in November 2022. We performed a qualitative analysis of the respondents' views on the characteristics of an ideal wellness program comprising six themes, including acknowledgment and appreciation, leisure time, mentoring and training activities, resource allocation, social activities, workload, and working environment. We conducted quantitative analysis to assess demographic correlates that might be linked to variations in perspectives to apply nuances in an inclusive wellness program considering the diversity among the trainees. Results: We included 34 residents with a total response rate of 58.6%. Residents highlighted that an ideal wellness program should consider enhancing sleep hygiene, focusing on stress reduction, and providing time for physical exercise. Formal mentoring programs with scheduled check-ins and mentoring activities tailored to individual needs were emphasized. Discussion: Residents suggested monthly discussion sessions for ongoing struggles, and a scheduled free time built into the curriculum to use based on their individual needs. Residents emphasized the importance of team-based social events to cultivate a supportive environment. Conclusion: Our results could guide other residency training programs to launch wellness interventions tailored to individual needs while applying nuances based on the diversity. References: 1. Jennings ML, Slavin SJ. Resident Wellness Matters: Optimizing Resident Education and Wellness Through the Learning Environment. Acad Med. 2015;90(9):1246-50. doi:10.1097/acm.0000000000000842. 2. Natsuhara KH, Borno HT. The Distance Between Us: the COVID-19 Pandemic's Effects on Burnout Among Resident Physicians. Med Sci Educ. 2021;31(6):2065-9. doi:10.1007/s40670-021-01431-7.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Tailoring Parenting Styles and Family-Based Interventions Cross-Culturally as an Effective Prevention Strategy for Youth Substance Use: A Scoping Review

Presenting author: Ozge Amuk Williams, MD

Affiliation: Kansas City University/Ozark Center Psychiatry Resident

Co-Authors and affiliations: Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director; Jeffrey S Bradley, MD, Kansas City University/ Ozark Center Psychiatry Residency Faculty

Abstract:

Introduction: The challenge of substance use among youth continues to be a highly concerning public health issue across the globe. The notion that parenting lifestyles and family-based intervention can help in the prevention of adolescent substance use have received robust attention from policy makers, researchers' clinicians and general public. Objective: To review literature assessed the effects of parenting styles and family-based interventions preventing adolescent substance use. Methods: A scoping review of literature published in English between 2012 and 2022 was conducted searching Scopus, MEDLINE, PsychInfo, and CINAHL databases utilizing keywords of family-based intervention strategies on youth substance use were coded. Results: A total of 47 studies included. Narrative synthesis illustrated that parental involvement, restriction of mature-rated content, parental monitoring, authoritative parenting styles, and parental support can help in the prevention of adolescent substance use. Poor parent-child bonding, permissive parenting, authoritarian parenting styles promoted adolescent substance use disorders. Proximal risk factors like peer influence, previous use of other substances, and risky behaviors had more effect than just parenting styles. Discussion: Intervention strategies of "Preventive Parenting", "Parent Training", and "Parent Involvement", with focus on "Technology Assisted Intervention", are found as effective family-based intervention strategies to mitigate substance use in youth. Conclusion: Culturally tailored family-based behavioral strategies psychosocial intervention strategies can be considered of the most effective strategies to prevent substance use disorders in youth. References 1. Mak, H.W. and Iacovou, M. (2019) 'Dimensions of the Parent-Child Relationship: Effects on Substance Use in Adolescence and Adulthood', *Substance Use & Misuse*, 54(5), pp. 724–736. Available at: <https://doi.org/10.1080/10826084.2018.1536718>. 2. Piehler, T.F. and Winters, K.C. (2017) 'Decision-making style and response to parental involvement in brief interventions for adolescent substance use', *Journal of family psychology: JFP: journal of the Division of Family Psychology of the American Psychological Association (Division 43)*, 31(3), pp. 336–346. Available at: <https://doi.org/10.1037/fam0000266>.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Inpatient Penicillin Delabeling - Pitfalls of QI/Research Overlap

Presenting author: Michael Weaver, DO

Affiliation: Kansas City University/Freeman Internal Medicine Resident

Co-Authors and affiliations: Megan Johnson, DO, Kansas City University/Freeman Internal Medicine Resident;

William Estep, DO, Kansas City University/Freeman Internal Medicine Resident; Sean Hickey, DO, Kansas City University/Freeman Internal Medicine Resident; Kyle Mense, DO, Kansas City University/Freeman Internal Medicine Resident; Nathan Miller, DO, Kansas City University/Freeman Internal Medicine Faculty

Abstract:

Introduction: Up to 25% of patients report penicillin allergy, however only up to 10% are truly allergic when challenged.¹ Allergy documentation is often lacking or incomplete.¹ Risks associated with penicillin allergy include longer hospital length of stay, increased incidence of drug resistant organisms, and higher mortality in the postoperative period.^{1,2} The AAAAI recommends proactive efforts to delabel penicillin allergy.⁴ PEN-FAST is a risk stratification tool for direct oral penicillin challenges.³ with a validation study showing less than 5% of patients experienced a reaction, all of which were mild to moderate with no incidence of serious directions or anaphylaxis.⁷ **Methodology:** Patients with penicillin allergy were selected from academic hospitalist teams to undergo screening and direct oral penicillin challenge if appropriate based on a set of inclusion and exclusion criteria. The challenge involved administration of amoxicillin 250 mg followed 30 minutes later by amoxicillin 500 mg ordered by standardized order set. Vitals were taken between administration and the patient was screened for reactions. At the end of the challenge, patients were determined to be allergic or nonallergic and the electronic health record was updated. **Results:** The penicillin delabeling order set was ordered on 22 patients between 9/1/2023 and 2/19/2024. Of these patients, 8 did not undergo challenges and 1 was ordered by a physician who was not part of the study group. Of the 13 patients who started the direct oral challenge, PEN-FAST score was documented for 8 of the challenged patients, each of which received a score of 0. No adverse reactions were noted and the patients were successfully delabeled. **Conclusion:** Low risk direct oral penicillin challenges are feasible in the inpatient setting, however adequate documentation and nurse education are key to a robust inpatient delabeling program.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Evaluation of Provider Perception to Naloxone Prescribing and Buprenorphine Induction in Patients with Opioid Use Disorder

Presenting author: Haider Saleem, MD

Affiliation: International Medical Graduate from Aga Khan University, Pakistan

Co-Authors and affiliations: Ayzal Noor Tahir, MD - International Medical Graduate from Islamabad Medical and Dental College, Pakistan; Grace Park, Pharm D - Dept of Pharmacy at Cleveland Clinic, Cleveland, OH; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

Background: Opioid overdose deaths have risen at an alarming rate in the past two decades in the USA. Naloxone can reverse the opioid overdose related fatal respiratory depression, thereby reducing overall mortality. Despite established FDA recommendations to prescribe naloxone to at-risk patients, the prescribing rate of naloxone remains low for a variety of reasons including economic barriers and provider knowledge. Similarly, while buprenorphine has an established benefit in helping withdrawal symptoms in OUD, its use remains low. This study aimed to explore the opinions and prescribing patterns of providers at our institution to patients with opioid use disorder (OUD). Methods: A self developed survey was handed out to providers employed at Freeman Health System in Joplin, Missouri. The 24-question long survey collected provider demographics and information of the providers prescribing patterns related to Naloxone and Buprenorphine Results: Two-Third of the physicians (n=32) reported never asking patients with Opioid Use Disorder (OUD) about their access to naloxone. More than half of the physicians felt under confident in their ability to refer their patients with OUD to a substance abuse clinic (n=25) or to administer a narcan kit if needed (n=40). Only 17 percent of the physicians (n=8) felt more than 50 percent confident in their ability to refer OUD patients to substance abuse clinics. Only a few providers (n=11) felt confident more than 50 percent of the time in their knowledge about laws and DEA requirements for prescribing naloxone and about resources available to OUD patients. Conclusion/discussion: In line with previous data, the study established a low rate of understanding and prescription of naloxone and buprenorphine in physicians. An overwhelming number of responders expressed openness to receiving education about these life saving modalities and the laws associated with them.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Carfentanil, A highly potent opioid responding to high doses of naloxone, what can help?

Presenting author: Paul Welder, MD

Affiliation: Kansas City University/Ozark Center Psychiatry Resident

Co-Authors and affiliations: Sahar Ashraf, MD, Texas Tech University Health Science Center; Kaushal Shah, MD, Wake-Forest School of medicine; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

• **Introduction:** • The super potent opioid, Carfentanil, has emerged from within the opioid epidemic as a powerful killer of Americans. Its high affinity for mu receptors makes the drug 10,000 times more potent than morphine and 100 times more potent than Fentanyl. The ubiquitousness of Carfentanil in America's illicit drug supply is causing grave concern amongst America's illicit drug users, lay responders, first responders, front-line healthcare workers and border patrol agents. • **Method:** • A literature search was conducted using relevant MeSH terms in 6 databases which included Psych Info, PubMed, Web of Science, Medline, Biological abstracts and Inspec for relevant articles from inception until January 30th, 2023, and included 7 articles in this review. • **Results:** • The review shows that Carfentanil which has higher potency than other opioid analogs due to its stronger affinity and binding at the mu-opioid receptor can be successfully displaced by IN Naloxone. A marked decline was observed in [11C] Carfentanil binding in the first 60 min after IN naloxone administration, another study shows that Naloxone-induced cortisol predicts mu opioid receptor binding potential in specific brain regions of healthy subjects. • In case of accidental Carfentanil poisoning in an occupational setting, it is reported that parenteral infusion of Naloxone in the field before reaching the hospital has helped the patient recover within 24 hours. These results are very useful in understanding the use of naloxone in case of carfentanil poisoning and allowing its use at higher doses instead of using other invasive procedures like intubation due to the safety profile of naloxone. • **Conclusion:** Carfentanil like most fentanyl has intrinsic efficacy and can produce its response in the presence of few receptors. [7] There should be increased awareness of highly potent opioids and its reversal using higher-than-usual doses of naloxone. This will save lives!

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Not the typical Hydronephrosis:Painless Hydronephrosis and Questionable Retroperitoneal Fibrosis!

Presenting author: Bothaina Afifi, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Objective With a term “Hydronephrosis” which is common condition, pain comes to mind. But there are exceptions. Here we describe similar case. Case report 79-year-old female with PMH of breast cancer in remission, presented with shortness a breath. No abdominal or flank pain, fever, or urinary symptoms. Normal creatinine and EKG. CXR showed bilateral pleural effusion. CT abdomen showed severe right hydronephrosis of uncertain cause. Diagnostic thoracentesis of 700 ml fluid removed, improved symptoms, and showed exudative effusion per Light's criteria. Cytology was suspicious of malignancy. Urology was consulted. Lasix renal scan showed no right renal function, diminished left renal function, and significant left side-obstruction. Cystoscopy with bilateral retrograde pyelogram and ureteral stent done. Unclear reason was suspicion of retroperitoneal fibrosis. Discussion Hydronephrosis is the dilatation of the renal collecting system due to obstruction of urine outflow, typically causing flank pain. However, it can be painless if the obstruction develops slowly. Intrinsic causes include stones and extrinsic causes like compression from retroperitoneal fibrosis. Nephrolithiasis common in young adults, while in the elderly, prostate neoplasms, and retroperitoneal tumors are more prevalent. Diagnosis is mainly with imaging. Treatment varies based on the cause, like stent placement, antibiotics, or surgery. The most common malignancies that metastasize to retroperitoneum include breast, lung, GI, lymphoma. In our patient, reason for admission was SOB with no complaints related to hydronephrosis and documented good renal output and function. Incidental finding of hydronephrosis with timely intervention potentially saving her kidneys. Prolonged obstruction can lead to irreversible kidney damage from tubular atrophy and interstitial fibrosis. The prognosis of renal recovery depends on the duration of severity of obstruction. Conclusion Hydronephrosis can be painless, especially with chronic obstruction. Nephrolithiasis is a common cause of painful hydronephrosis, while retroperitoneal fibrosis can cause painless hydronephrosis, especially with a history of malignancy.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Case Report: Failed retrieval of a retrievable inferior vena cava (IVC) filter

Presenting author: Ben Murrell, DO

Affiliation: Kansas City University/St Mary's General Surgery Resident

Co-Authors and affiliations: Austin Wagner, DO, Kansas City University/St Mary's General Surgery Faculty; Samuel Groot, MD, Vascular Surgery Fellow at Midwest Aortic & Vascular Institute, P.C.

Abstract:

Introduction: IVC filters are commonly indicated as a treatment to prevent pulmonary embolism (PE) in patients who have venous thromboembolism who also have an absolute contraindication to anticoagulation or who have progression of deep vein thrombosis (DVT) despite adequate anticoagulation. Once the risk of a blood clot travelling to the lungs is acceptably low or if the patient can begin anticoagulation medication, retrievable IVC filters can be removed relatively safely. We report a case where a retrievable IVC filter was unable to be removed despite several different techniques being utilized. Case Description: A 75-year-old female presented to our clinic for removal of her IVC filter. The filter was placed 9 months prior after she developed a DVT following an orthopedic procedure. After the IVC filter was placed, she was later started on Xarelto. She was eventually cleared by both cardiology and orthopedics to come off Xarelto, so the decision was made to retrieve the IVC filter. Discussion: The patient underwent an attempt at retrieval of her IVC filter in an outpatient endovascular suite which was unsuccessful, partly due to it being tilted at thirty degrees. A decision was then made to attempt IVC filter retrieval in the hospital's hybrid operating room. Both standard techniques as well as advanced retrieval techniques were utilized. Attempts were unsuccessful and the decision was made to leave the IVC filter in place to avoid potential complications. IVC filter retrieval can become a difficult procedure, especially if the filter has a prolonged dwell time. If the IVC filter is unable to be retrieved, patients can be at increased risk for recurrent DVT and IVC thrombus formation. The development of advanced filter retrieval techniques has helped increase overall success rates.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Mary's Hospital

West Nile Confusion

Presenting author: Nicole Hountz, DO

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations:

Abstract:

Objective: West Nile virus is an RNA virus endemic to North America but largely underreported because most infected are asymptomatic. However, infections cause a wide range of symptoms including rash, fever, meningitis, encephalitis, chorioretinitis, myocarditis, rhabdomyolysis. Case: A 73 year old male with past medical history of CAD, hx alcohol use, non-insulin-dependent diabetes initially presented with confusion. He was found to have acute urinary retention and was admitted for such as well as encephalopathy. Urine culture was positive for Enterococcus faecalis, and he was treated with ampicillin. Confusion continued to wax and wane following appropriate treatment of UTI. Neurology was consulted. MRI showed mild generalized atrophy. CSF studies showed elevated protein, WBCs, and glucose. Further CSF studies were done as send out labs. EEG obtained and showed generalized slowing, no epileptiform activity. Thiamine/folate was started due to history of alcohol use. Carbidopa/levodopa was started due to parkinsonism. He was discharged with further CSF studies pending and neurology follow up. At follow up with neurology 1 month later, patient appeared to have improved with carbidopa/levodopa and neurology diagnosed underlying Parkinson's disease. However, it was also noted on CSF studies patient was positive for West Nile virus which was likely worsening symptoms. Patient has continued to follow with neurology, remained on carbidopa/levodopa, and has continued to improve. Discussion: This case demonstrates the importance of wide differentials in medicine and the importance of continued investigation. West Nile virus was not something initially thought of but when the treatment did not show the improvement expected, a wider differential was needed. Conclusion: We are all familiar with the phrase "when you hear hoofbeats think horses, not zebras." While West Nile is normally thought of as a zebra, it has become more common in the US recently and should remain on our differential.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Phenibut Withdrawals: A Systematic Review of an Online Supplement

Presenting author: Yassar Odhejo, MD

Affiliation: Kansas City University/Ozark Center Addiction Medicine Fellow

Co-Authors and affiliations: Savitha Kumari Satyasi, MD, Kansas City University/Ozark Center Addiction Medicine Fellow; Kaushal Parimi, Student at Washington University in St. Louis; Allison Smith, DO, Kansas City University/Ozark Center Psychiatry Residency Faculty; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director; Suporn Sukpraprut-Braaten, PhD, Adjunct Assistant Professor at Kansas City University

Abstract:

Background: Phenibut is a substance developed in Russia in the 1960s as a treatment for anxiety, depression, PTSD, and insomnia [1]. It is a GABA-mimetic, which stimulates GABA receptors [2]. It is not currently registered in Western countries but is easily accessible online as a supplement [3]. Methods: This is a systematic review study to review case reports published in PubMed between January 2010 and October 2023 and written in English. Descriptive statistics, odds ratio, and chi-square test are used to analyze the results. Results: A total of 269 articles were identified with the keyword “phenibut” in Pubmed. Sixty-five articles are human articles published between January 2010 and September 2023. Twenty-one case report articles were screened. The average age of patients with phenibut addiction reported in these publications is 32 (SD=12) years old, and 15 cases (83%) were males. The average dosage is 12 g/day (SD=8), ranging from 1.5 to 28.5 g/day. presented at an emergency department, and three cases (17%) were presented at a clinic setting facility. The most common history of patients who took phenibut is alcohol or drug abuse (73%). The majority of the cases also had a history of anxiety and depression (60%). Conclusions: The majority of the cases took phenibut to help to stop their alcohol or drug abuse. Educating all physicians about potentially harmful supplements available to patients and their biological mechanisms is essential. This review highlights the importance of collecting a thorough patient history, including supplements, to help prevent phenibut overdose and subsequent withdrawals.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Does Sural Nerve Class influence the positioning in the lateral ankle?

Presenting author: Robert Steele, DO

Affiliation: Kansas City University/Freeman Emergency Medicine Resident

Co-Authors and affiliations: Dominic Maiuro, Kansas City University College of Osteopathic Medicine Student; Cameron Smith, Kansas City University College of Osteopathic Medicine Student; Millie Shah, Kansas City University College of Osteopathic Medicine Student

Abstract:

Introduction: The sural nerve (SN), pertinent in nerve grafts and diagnostics, varies in its formation within the popliteal fossa. Literature identifies eight class formations, the relationship between these classes and the SN's horizontal distance near the lateral malleolus is currently understudied. **Methods:** 119 formalin-preserved and four Theil-embalmed cadavers were dissected, exposing the sural nerve in its superficial fascial plane in the lateral ankle. it was then traced up to the popliteal fossa from the lateral malleolus. Measurements of the nerve's horizontal position were obtained through ImageJ software, with the horizontal distance from the lateral malleolus to the SN averaging 1.72 ± 0.70 cm. Data were validated using a Bland Altman Plot with a standard deviation of 0.111 mm. **Results:** Analysis of 256 limbs, providing $n=485$ measurements, revealed no significant variances in the SN's horizontal positioning across anatomical classes. Mean distance (cm) from lateral ankle is 1.79 with a standard deviation of 0.82, mean distance from calcaneal tendon in the same plane is 2.872 with a standard deviation of 1.15. Morphological assessment indicated the presence of classes with varying x value distributions. Class 2, for instance, exhibited a mean x value of 1.67, while Class 7 displayed a broader range (0.36 to 5.24), suggesting heterogeneity in data points. Transitioning from VAR 3 to VAR 4, certain classes showed increased mean x value, with Class 2's mean rising to 3.15. **Conclusion:** Understanding the characteristics in the SN's horizontal distance from the lateral malleolus across is crucial for surgical navigation and minimizing iatrogenic injury.

Category: Basic Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Calciophylaxis secondary to Warfarin in a patient with aortic and mitral valve replacements

Presenting author: Tess Krage

Affiliation: Kansas City University College of Osteopathic Medicine Student

Co-Authors and affiliations: Fady Botrous, Kansas City University College of Osteopathic Medicine Student; Suji Baskar, DO, Kansas City University/Freeman Internal Medicine Resident, Cali Clark, DO, Kansas City University/Freeman Internal Medicine Resident; Shane Miller, DO, Kansas City University/Freeman Internal Medicine Resident

Abstract:

A 57 year old female with a past medical history of remote rheumatic fever status-post mechanical aortic and mitral valve replacement and chronic systolic congestive heart failure (Ejection Fraction of 15%) status-post implantable cardiac defibrillator (ICD) presented to our facility from her cardiologist's office due to wound dehiscence of her ICD surgical site. Along with the wound dehiscence, she was experiencing right lower abdominal wall swelling and significant tenderness to touch. She underwent wound excision and washout with subsequent wound vacuum placement. Dermatology was consulted due to concern for calciophylaxis secondary to warfarin and agreed based on presentation and pathology that non-uremic calciophylaxis was likely secondary to warfarin. Sodium thiosulfate treatment started. Cardiology was consulted and decided to start low molecular weight heparin in place of warfarin. Warfarin induced calciophylaxis is a form of non-uremic calciophylaxis that presents as painful, violaceous reticular patches that evolve into ulcerations. The pathophysiology is thought to occur secondary to two mechanisms: inhibition of vitamin K dependent matrix G1a protein causing vascular calcification and local inhibition of protein S and C secretion causing thrombosis. This differs from warfarin induced necrosis as calciophylaxis occurs at a mean of 32 months after starting warfarin, and necrosis is within the first one to two weeks. Mortality for warfarin induced calciophylaxis is 17%, whereas mortality for classic calciophylaxis due to renal failure is closer to 50-80%. Treatment involves discontinuation of warfarin and use of sodium thiosulfate; patients may require transition to a direct oral anticoagulant such as apixaban or rivaroxaban or a low molecular weight heparin.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

A Systematic Review of Cardiovascular Presentations Associated with Klippel-Feil Syndrome

Presenting author: Randall Hansen, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Salma Alkhatib, OMS-1 Kansas City University College of Osteopathic Medicine; Abigail Niewchas, OMS-1 Kansas City University College of Osteopathic Medicine; Christopher Stewart, OMS-1 Kansas City University College of Osteopathic Medicine; Alex Otto DO, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident; Mitchell Fisher OMS-1, Kansas City University College of Osteopathic Medicine; Andrew Simonsen, OMS-1 Kansas City University College of Osteopathic Medicine; Suporn Sukpraprut-Braaten, PhD, Adjunct Assistant Professor, Kansas City University

Abstract:

Introduction: Klippel-Feil Syndrome (KFS) is a rare congenital disease characterized by an abnormal fusion of cervical vertebrae. The purpose is to describe the most common cardiovascular abnormalities associated with KFS to establish a baseline knowledge and reference material for clinicians. Methods: This is a systematic review of all case reports in PubMed over the last 10 years identified using the keywords “Klippel-Feil Syndrome”. 157 reports were initially found with these criteria for a total of 177 cases. Of those, 39 articles containing 42 case reports described concurrent cardiovascular abnormalities including septal and valve defects, aortic disease, coronary disease, and vascular abnormalities. The cases were divided by age into 3 groups ranging from in-utero-18 months old, 18 months-18 years old, and 18 years-70 years old, and incidence of the aforementioned cardiovascular defects was further investigated. Results: Of the 42 case reports examined, 9 cases fell in the age range of in utero-18 months, 16 in the 18 month-18 year age range, and 17 in the 18-70 year age range. The most common cardiovascular anomaly across all age groups was septal/valve abnormalities with an incidence of 66.7% and 57.1%, and 43.8% in the youngest, middle, and oldest groups respectively. Vascular abnormalities were present in 44.4%, 42.8%, and 31.3%, aortic disease in 33.3%, 0%, and 31.3%, and finally, coronary disease was present in 11.1%, 0%, and 6.25%. Based on the Samartzia classification of KFS (2006), Type 3 was most common across all ages for septal/valve abnormalities and aortic disease, and Type 1 for vascular abnormalities in the youngest and middle age groups.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Tablet based interactive distraction in pediatric patients undergoing same day procedures with general anesthesia

Presenting author: Randall Hansen, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Chance Aplanalp, OMS-III - Kansas City University College of Osteopathic Medicine; Kent McIntire, DO, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Program Director; Suporn Sukpraput-Braaten, PhD, Adjunct Assistant Professor, Kansas City University

Abstract:

Introduction: Preoperative pediatric anxiety has been linked to adverse outcomes, unsafe inductions, sleep disturbances, and reduced patient satisfaction. Traditionally, preoperative medication(s) such as benzodiazepines, beta-blockers, and opioids have been given to minimize preoperative anxiety. Although these medications may be adequate, several studies suggest that tablet-based interactive distraction (TBID) is equally effective as a preoperative anxiolytic in pediatric patients. TBID involves age-appropriate video games that have been preloaded onto a tablet and subsequently given to a pediatric patient before the administration of anesthesia. This study aims to investigate if parent and staff perceived anxiety is reduced in pediatric patients undergoing same-day procedures. **Methods/Materials:** This is a prospective observational study. Tablets with preloaded age-appropriate video games are distributed to pediatric patients from 2-12 years old undergoing same-day surgical procedures such as tonsillectomy, adenoidectomy, and tympanostomy tubes. A trained preoperative nurse will be given a script to recite as the tablets are distributed, thereby maintaining consistency when presenting the tablets. The patients will be encouraged to interact with video games until anesthesia induction. What are the outcomes used to test the hypothesis? Anxiety will be based on the perception of the parents and the same preoperative nurse who presented each tablet. How to measure the outcomes? Afterward, the parents and the preoperative nurse will be given a survey that uses a Likert numbering scale (1-4) to answer a set of four questions. These questions evaluate the perceived anxiety that the patient experienced. **Results:** The results will be used to determine whether tablet-based interactive distraction decreases preoperative anxiety in pediatric patients undergoing same-day procedures. **Conclusion:** Explain how to use the results from this study to implement on a larger scale in practice. Limitations of the study include small sample size, limited to one practice, anxiety being subjective, etc.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Access Denied: Leriche syndrome in the cardiac catheterization lab

Presenting author: Alyssa Wilhelm

Affiliation: Kansas City University College of Osteopathic Medicine Student

Co-Authors and affiliations: Fady Botrous, Kansas City University College of Osteopathic Medicine Student; Kyle Mense, DO, Kansas City University/Freeman Internal Medicine Resident; Cali Clark, DO, Kansas City University/Freeman Internal Medicine Resident

Abstract:

Introduction: Leriche syndrome is a rare but important disease process that results in chronic occlusion of the abdominal aorta. **Case Report:** A 49-year old male presented with sudden onset chest pain and a new left bundle branch block, and was taken for emergent cardiac catheterization with concern for acute ST elevation myocardial infarction. Initial access attempt via the right common femoral artery failed due to occlusion of the right external iliac artery; the left external iliac artery was also found to be occluded. Access was eventually gained through the right ulnar artery due to occlusion of the right radial artery. Patient was found to have non-obstructive coronary artery disease with an acute decompensation of heart failure and a new decreased ejection fraction of 20%. Further investigation revealed patient had aortoiliac occlusive disease, or Leriche syndrome, diagnosed via a CTA of the abdominal aorta. On physical exam, he did have decreased bilateral femoral pulses, an absent right radial pulse, and a +2 right ulnar pulse. He denied any symptoms of claudication, erectile dysfunction, or gait difficulties. He was admitted to the intensive care unit, treated for acute heart failure, and eventually was discharged in stable condition. **Discussion:** Leriche syndrome, originally described in 1814, is a rare, chronic occlusive disease of the abdominal aorta. Patients are generally asymptomatic or have vague symptoms such as lower extremity claudication or erectile dysfunction. Risk factors to developing Leriche syndrome include hypertension, diabetes, hyperlipidemia, tobacco abuse, and male sex. Diagnosis is made with abdominal CTA or other angiography. The mainstay of treatment is surgical aortobifemoral bypass, although endovascular options are emerging. **Conclusion:** Leriche syndrome can provide a unique challenge in patients with acute myocardial infarction due to lack of classical access points and may require unique arterial access, as in our patient.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Systematic review of tablet based interactive distraction in pediatric patient undergoing same day procedures

Presenting author: Randall Hansen, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Chance Aplanalp, OMS-III - Kansas City University College of Osteopathic Medicine; Kent McIntire, DO, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Program Director; Suporn Sukpraput-Braaten, PhD, Adjunct Assistant Professor, Kansas City University Graduate Medical Education

Abstract:

Introduction: Evidence shows tablet-based interactive distraction (TBID) is effective as a preoperative anxiolytic in pediatric patients. TBID involves age-appropriate video games that have been preloaded onto a tablet and subsequently given to a pediatric patient before the administration of anesthesia. The purpose of this study is to provide a comprehensive analysis of previous studies that have investigated the use of TBID to minimize preoperative anxiety. **Methods:** The literature criteria for this systematic review included randomized control trials and prospective studies that used TBID as a method to reduce preoperative anxiety in pediatric patients ages 1-12. Data extraction concentrated on the patient population to which the tablets were introduced, the method of tablet administration, how anxiety was evaluated, who completed the evaluations, and the results of each publication. This chosen data set is to systematically understand if TBID is effective and to identify the most practical ways to implement TBID. Collected data from the selected publications were entered into a table. **Results:** For this systematic review, 11 publications were screened for eligibility. These studies were selected based on the keywords “tablet-based interactive distraction” in PubMed. This data represented 475 total patients (T) and 249 patients who implemented tablet use (TAB) the other 226 patients were used as various control groups. The outcome of each study is summarized and placed into a table. **Discussion:** This study is expected to provide an overall assessment of the effectiveness of TBID and evidence-based guidelines as clinicians incorporate tablet use into preoperative protocols. Time to give the tablet to the children impacts its efficiency. **Conclusion:** Tablet use demonstrated an effective reduction in perioperative anxiety, emergence of delirium, and time-to-discharge, increasing parental satisfaction compared to midazolam. These results can be achieved when implemented under specific parameters such as tablet introduction timing, game selection based on interest, etc.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Insights of Opioid Use Treatment During Pandemic: A Multicenter Cross Sectional Study

Presenting author: Ozge Amuk Williams MD

Affiliation: Kansas City University/Ozark Center Psychiatry Resident

Co-Authors and affiliations: Ellis Jang, BS, California Northstate University College of Medicine; Thien Nguyen, BS, California Northstate University College of Medicine; Johnson Thai, BS, California Northstate University College of Medicine; Alex Jiang, BA, California Northstate University College of Medicine; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

Introduction: The pandemic has provided valuable insight into adversely affect individuals with OUD. The disproportionate impact on underserved populations has demonstrated the importance of involving patients in advocating for policy changes. **Methods:** Participants were invited to take a survey that measured: demographics, response to telehealth services and potential implications, and access to opioid agonist treatment (OAT). The study sample was drawn from patients from the Comprehensive Opioid Recovery Experience Medical Clinic and Transitions Buprenorphine Clinic of Sacramento in California (134 participants) and Ozark Center in Joplin, Missouri (21 participants). Included participants were 18 years of age or older, reported a history of opioid misuse, and utilized telemedicine visits and/or OAT during the COVID-19 pandemic, from March 11, 2020, to May 11, 2023. Quantitative data analysis reported for categorical variables. The inductive thematic analysis was applied for qualitative data. **Results:** Among total of 134 participants 71.0% had misused opioids for more than 5 years before seeking treatment; 138 engaged in telehealth and 153 utilized OAT during COVID-19. 97.1% reported that telehealth services improved their access to treatment. The top three reasons for satisfaction regarding telemedicine included convenience (94.2%), transportation (73.9%), and flexibility with work schedule (73.2%). 98.6% reported that they would continue to use telehealth services in the future. **Discussion:** Respondents reported barriers to accessing opioid use treatment: transportation; insurance coverage and financial costs; or availability and accessibility of opioid treatment programs. **Conclusion:** Broadening insurance coverage and lowering costs of either telehealth visits and/or OAT as well as increasing take-home doses can enhance access of opioid use treatment in the future. **References (1)** Ghose, R., Mantsch, J. R., & Forati, A. M. (2022, April). Impact of the COVID-19 Pandemic on Opioid Overdose Deaths: A Spatiotemporal Analysis. Journal of Urban Health. <https://pubmed.ncbi.nlm.nih.gov/35181834/>

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Spontaneous pneumothorax from bullae in azygos lobe

Presenting author: Vincent Bustamante, DO

Affiliation: Kansas City University/St. Anthony Hospital Surgery Resident

Co-Authors and affiliations: Dr. Daniel Gross, MD, Kansas City University/St. Anthony Hospital Surgery Resident; Josh Perch, BA- Rocky Vista University, Colorado

Abstract:

An azygos lobe is a rare anatomical variant of the right lung formed embryologically when the posterior cardinal vein, a precursor to the azygos vein, invaginates through the right upper lobe forming a mesentery attachment (meso-azygos) and an extra fissure. While the term lobe is a misnomer, as it does not have a dedicated bronchus, its presence is rare with an estimated prevalence between .4-1%. Even more rare is the occurrence of a bullae formation within an azygos lobe, as it has been previously theorized to have features that protect against bullae formation, with only a handful of cases previously described. We present a tall, thin, daily smoker, eighteen year old male patient with a primary spontaneous pneumothorax that was refractory to multiple attempts at re-expansion with tube thoracostomy at two rural hospitals prior to transfer for definitive care. He was surgically managed by our team with a robot-assisted segmentectomy, azygos vein resection, and pleurectomy resulting in resolution of his symptoms. Whereas other previous authors have converted to open thoracotomy due to adhesions, or left the azygos vein intact, we resected both the meso-azygos and azygos vein, as the ability of intricate dissection achieved with robotic surgery allowed this. This case describes a rare set of circumstances in medicine, review of an anatomical variant, and operative considerations for management in the setting of robotic surgery.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Anthony Hospital

Patient satisfaction of splinting of musculoskeletal injuries

Presenting author: David Dye, DO

Affiliation: Kansas City University/HCA-KC Research Orthopedic Surgery Resident

Co-Authors and affiliations:

Abstract:

Introduction: Splinting in the emergent setting is common for musculoskeletal injuries. Given the acuity, rapid environment, and high stress associated with musculoskeletal injuries, instructions are not always clearly communicated. Splint quality and provider confidence has been shown to correlate with educational sessions². The aim of this study is to evaluate patient perspectives on splint treatment at local institutions and implement a strategy to improve splinting at the facility with the lowest satisfaction scores. Collaboration between training programs and hospitals can create an environment conducive for growth. **Methods:** A 16-question anonymous survey was administered to patients ages 18 and older in a private practice who presented for their first orthopedic visit in a splint, boot, or brace placed by emergency departments or urgent cares. **Results:** Of 103 patients recruited, 30 patients did not complete the survey. Out of the 73 patients who completed the survey, 2 patients were excluded due to not being their first visit and 2 patients were excluded for being under 18 years of age. The majority were older than 65, 27%. 81% of patients were treated in an emergency department. An emergency department staff member placed the splint in 68% of patients, 30% received procedural sedation. 51% of patients were placed into a molded splint, the remainder were placed into brace or boot. 74% of patients felt the splint supported the injury well, 82% stated splint was well padded, and 77% were given instructions on splint care. 86% of patients reported they were satisfied with their splint. **Conclusion:** Most patients are satisfied with their splint and were given instructions on splint care. The patients who were not satisfied felt the splint or stated the splint did not support the injury. Splinting requires special training, comfort, and communication skills. A local emergency department was identified with low satisfaction.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: HCA KC-Research Medical Center

Vaccines and Dermatology 2.0 - The Next Frontier of Public Health

Presenting author: Charles Dunn, MD

Affiliation: Kansas City University/ADCS Orlando Dermatology Resident

Co-Authors and affiliations: Victoria Dukharan, MD, Kansas City University/ADCS Orlando Dermatology Resident

Abstract:

In 2019, the World Health Organization listed "Vaccine-Hesitancy" as a Top-10 Threat to Global-Health. Root-cause-analysis by UNICEF identified ACCESS/CONVENIENCE as a key-theme to this issue. Several factors provide dermatology practices a unique opportunity to impact immunization access. Simply based on volume, dermatologists intersect with the community more than most clinicians. At-risk populations for vaccine-preventable-illnesses are also commonplace in dermatology clinics, as is the practice of injectable-therapeutics. In 2021, as proof-of-concept, our residency provided 116 unvaccinated patients (76.3% of those offered) a single or two-dose COVID-19 vaccine as part of their dermatology visit (PMID: 35721300). We demonstrated 97% compliance with second-dose regimens. 91% of patients expressed interest in other vaccines if offered at the dermatology clinic. "Convenience" and "Comfort with the practice" were listed as key considerations underlying patients' decision to receive vaccination at their dermatology clinic. These results were leveraged to expand in-clinic vaccines across 3 pilot-sites to include human papillomavirus (HPV) and varicella zoster virus (VZV) immunizations. Pre-implementation data suggested that only 14% and 52% of eligible patients seen at these clinics between January 1 and December 31, 2021 were vaccinated against HPV and VZV respectively. Following implementation of a comprehensive in-clinic vaccination program that included education and point of care immunizations between January 1 and December 31, 2023 these rates improved to 72% and 76% respectively. These data support that dermatology clinics have the power to positively impact the public-health of the population they serve through select point-of-care vaccine administration targeting conditions salient to dermatology practice and should be further studied.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: ADCS-Orlando

Patient Attitudes Regarding Shingles Vaccination in Dermatology Clinics

Presenting author: Victoria Dukharan, MD

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Co-Authors and affiliations: Chloe Fernandez, DO - Kansas City University/ADCS Orlando Dermatology Resident; Jay Nguyen, DO, Kansas City University/ADCS Orlando Dermatology Resident; Fahad Siddiqui, DO Kansas City University/ADCS Orlando Dermatology Resident; Luke Harpenau, BS - KCU-Kansas City, College of Osteopathic Medicine; Panagiotis Mitropoulos, DO, Kansas City University/ADCS Orlando Dermatology Faculty; Patrick Dominguez, MD - Kansas City University/ADCS Orlando Dermatology Faculty; William Steffes, MD - Kansas City University/ADCS Orlando Dermatology Faculty; Martin Yungmann, DO - Kansas City University/ADCS Orlando Dermatology Resident Faculty; Jere Mammino, DO, Kansas City University/ADCS Orlando Dermatology Program Director

Abstract:

In the wake of COVID-19, a vaccine outreach program was designed in 2021. A component of this study involved assessing patients' attitudes toward receiving additional vaccinations in dermatology offices. The survey data showed high degrees of satisfaction with vaccines administered at the dermatology office, and 90.9% of patients stated they would receive other vaccines at their dermatology clinic if recommended and available. It is important to note that less than half of patients in the cohort who received COVID-19 vaccines (48.2%) had been vaccinated with a shingles (varicella zoster virus) vaccine despite being age-eligible. We seek to expand on this study which was produced in 2022, by collecting data among patients who are 50 years or older and being seen by a resident physician in a multipractice dermatology group. The patients are surveyed before and after education about the Shingles vaccine is provided. We hypothesize that if education is provided in a dermatology clinic regarding the Shingles vaccine (ie: indications, eligibility, dosing schedule, adverse reactions, and cost) to individuals over 50 years old who are previously unvaccinated, then individuals will be more willing to receive the vaccine. Survey data is being recorded anonymously and is thereby IRB exempt. Results are pending. This study is likely limited by patient bias since patients who are willing to be seen by a resident physician may generally have improved medical literacy and view the medical field more positively, therefore they might be more likely to entrust physicians and be receptive to education. We believe these results will nonetheless inform and provide support for the valuable role that dermatology practices can play in improving public health, specifically when it comes to Shingles vaccination rates.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: ADCS-Orlando

Breathless Mystery: Unraveling Renal Cell Carcinoma's Pulmonary Puzzle

Presenting author: Stephanie M. Delgado Colon, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Objective: Renal cell carcinoma (RCC) can present with multiple pulmonary manifestations. These pulmonary features can either be the presenting symptom of the disease or can occur in latter stages of the disease. A high index of suspicion can lead to an early diagnosis of RCC and assist in instituting an early intervention improving overall prognosis. Case Presentation: A 63-year-old male presented to the ED with shortness of breath. Patient referred ongoing shortness of breath since approximately six months prior, which worsened over the past month despite treatment for bronchitis. He was seen by PCP about a month prior to presentation and treated with antibiotics/prednisone. He did not have any significant improvement and was given a second round of antibiotics/prednisone. On presentation to ED patient was placed on 6L of oxygen. CT chest showed bilateral pulmonary infiltrates, right paratracheal mass, and large mass involving right kidney. Patient was transferred to ICU secondary to increasing oxygen requirements and placed on high-flow oxygen. Biopsy of renal mass and supraclavicular lymph node done and confirmed clear cell RCC. Patient eventually discharged on supplemental oxygen and was able to continue follow up with oncology. Discussion: This case underscores the diagnostic challenge posed by atypical presentations of RCC. The traditional clinical triad associated with renal masses includes flank pain, hematuria, and detectable mass. However, this triad is relatively uncommon and may only manifest in advanced stages. Approximately 25% of RCC are metastatic with most being to the lungs (50–60%). The most common presentation is in form of solitary or multiple lung nodules, with other presentations such as pulmonary embolism, tumor emboli, and pleural effusions being less common. Conclusion: The case emphasizes the need for a high index of suspicion for malignancy in patients presenting with unexplained respiratory symptoms, particularly in the context of atypical clinical features.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Snort it Inject or inject it damage is still there: a case report on glomerulonephritis caused by Heroin abuse

Presenting author: Salecah Ullah, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Objective: Heroin (diacetylmorphine, diamorphine) is the most commonly abused drug. Besides infectious concerns, there are hazards associated with direct Heroin use. Here, we discuss such a scenario. Case presentation: A 59-year-old Caucasian homeless male with a past medical history of cirrhosis, hepatitis C, and ongoing IV heroin abuse for the last 15 years arrived in the hospital with a chief complaint of massive testicular swelling and abdominal pain. He was admitted for anasarca and acute kidney injury. Active hepatitis-C infection with a viral load of 1110000/ml of blood was confirmed. His SAAG score of 0.9 indicated non-portal hypertension. He had significantly impaired renal function (Cr 1.6mg/dl and urinary spot protein 882mg/dl/24hrs). Although, there was a strong suspicion of Hep-C induced nephritis, the biopsy was compatible with diffuse endocapillary and mesangial proliferative focal sclerosing glomerulonephritis with C3 dominant deposits and SPEP was unremarkable. He had a high likelihood of heroin-related renal issues. Discussion: Heroin (diacetylmorphine, diamorphine) is the most commonly abused drug that can be sniffed, eaten, smoked, or injected intravenously. There are several renal complications from its abuse. Concurrent renal impairment and active Hep C, like in our patient, can be misleading and direct to Cryoglobulin-related GN but keeping a broader differential can help with definitive management. However, it was a direct effect of heroin as confirmed by renal biopsy supported by suppressed plasma C3 levels but normal C4 levels, translating to different management goals. C3 deposition-related glomerulonephritis is uncommon but is reversible upon cessation of the causative drug which is heroin in this case. The focus would be addressing addiction and hepatitis C treatment alone would not help. Biopsy is the gold standard to diagnose the real cause. Avoiding the IV route and snorting heroin would prevent acquiring Hep C/HIV but heroin itself can cause renal damage.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Otolaryngological Presentations of Klippel-Feil Syndrome in the last 10 years: A Systematic Review

Presenting author: Alex Otto, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Christopher Stewart OMS-1, Kansas City University College of Osteopathic Medicine Randall Hansen DO, MBA, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident; Mitchell Fisher OMS-1, Kansas City University College of Osteopathic Medicine Andrew Simonsen OMS-1 Kansas City University College of Osteopathic Medicine Abigail Niewchas OMS-1 Kansas City University College of Osteopathic Medicine Salma Alkhatib OMS-1 Kansas City University College of Osteopathic Medicine Suporn Sukpraprut-Braaten, PhD, Kansas City University Graduate Medical Education

Abstract:

Introduction: Klippel-Feil Syndrome (KFS) is a rare congenital fusion of the cervical vertebrae that classically presents with a triad of limited cervical range of motion, low posterior hairline, and a short neck. Otolaryngologists physicians to see KFS patients. Additional ENT symptoms are commonly seen including hearing loss, dysphagia, cleft palate, jaw disorders, and ear malformation. These symptoms make education and knowledge of KFS relevant in the field of otolaryngology. Understanding these symptoms leads to a higher quality of patient care with patients presenting with KFS. **Methods:** This systematic review was done using the keyword “Klippel-Feil Syndrome” in the PubMed database for all case reports in the last 10 years. 157 cases were reported. Subsequent filtering was done using the keywords “hearing loss”, “dysphagia”, “retrognathia”, “micrognathia”, “cleft lip”, “cleft palate”, “thyroid”, “ear”, “mallampati”, and “cormack-lehane” resulting in 64 cases. Each of these cases was carefully analyzed. **Results and Conclusion:** Cases were classified using the Samartzis classification which classifies KFS patients as either type 1 (1 fused region in cervical region), type 2 (1 fused region outside of the cervical region), or type 3 (multiple fused segments in the cervical region). Understanding vertebral fusion leads to an increased understanding of symptoms. 7 (33%) hearing loss patients reported as type 1 and 10 (42%) reported type 3. 1 (20%) jaw disorder patient reported type 1 and 3 (60%) reported type 3. 2 (29%) cleft lip/palate reported type 1 and 4 (57%) type 3. 1 (50%) thyroid patient reported type 1. 3 (60%) of dysphagia patients reported type 3. 3 (50%) ear malformation patients reported type 1 and 2 (33%) reported type 3. These findings indicate that type 3 KFS patients are at a higher risk of serious comorbidities and need to receive additional imaging and care.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Hearing Loss in Klippel-Feil Syndrome Patients

Presenting author: Alex Otto, DO

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Abstract:

Introduction Klippel-Feil Syndrome (KFS) is a blanket syndrome with patients presenting with the classic triad of a short neck, low posterior hairline, and limited cervical range of motion along with a fusion of cervical vertebrae. One symptom that is commonly seen in these patients is hearing loss. KFS is often underdiagnosed. It is often not found until much later in life. Otolaryngologists should keep KFS on their list of diagnoses for individuals with hearing loss with the potential to have serious inner and middle ear malformations. **Methods** This systematic review was done using the keyword “Klippel-Feil Syndrome” in the PubMed database for all case reports in the last 10 years. 157 cases were reported. Subsequent filtering was done using the keywords “hearing loss”, “ear” resulting in 21 cases. Each of these cases was carefully analyzed. **Results and Discussion** Cases were classified using the Samartzis classification which classifies KFS patients as either type 1 (1 fused region in cervical region), type 2 (1 fused region outside of the cervical region), or type 3 (multiple fused segments in the cervical region). Understanding vertebral fusion leads to an increased understanding of symptoms. Of the 21 cases that reported hearing loss, 7 (33%) were type 1 and 10 (42%) were type 3. Further, 10 (48%) reported sensorineural hearing loss, 3 (14%) reported conductive hearing loss, and 2 (10%) reported a mixed hearing loss. Of the cases with ear malformations, 3 (50%) reported type 1, and 2 (33%) reported type 3. As far as we are aware, this is the most extensive study into ear malformations and the causes of hearing loss in KFS patients.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Unilateral Choanal Atresia in a Child with Prolonged Nasal Congestion

Presenting author: Randall Hansen, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Lindsay Ussher, Kansas City University OMS-III; Alex Otto, DO, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident; Kent McIntire, DO - Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Program Director; Suporn Sukpraput-Braaten, PhD, Adjunct Assistant Professor, Kansas City University

Abstract:

Choanal atresia obstructs the nasal passage due to abnormal bony or soft tissue growth during fetal development. The clinical manifestations are more pronounced in bilateral cases, often presenting immediately after birth with respiratory distress, as newborns are obligatory nasal breathers. This contrasts unilateral cases, where the condition may present with mild symptoms and be diagnosed later in life. We present a case of a five-year-old male who initially presented with a concern for nasal polyps due to nasal congestion with absent airflow out of the right nostril. Following visual examination of the pharynx and nose, the patient was diagnosed with nasal turbinate hypertrophy, right more than left, and was subsequently scheduled for bilateral inferior turbinate reduction, adenoidectomy, and nasal endoscopy. Intraoperatively, the inability to pass a catheter through the nasopharynx to reach the oropharynx was our indicator of a more severe diagnosis. Here, we report an incidental finding of the right choanal atresia and seek to highlight its importance given this incidental finding.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Comparing Intubation Techniques of Klippel-Feil Syndrome Patients: A Systematic Review

Presenting author: Alex Otto, DO

Affiliation: Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident

Co-Authors and affiliations: Mitchell Fisher, OMS-1, Kansas City University College of Osteopathic Medicine; Andrew Simonsen, OMS-1 Kansas City University College of Osteopathic Medicine; Christopher Stewart OMS-1, Kansas City University College of Osteopathic Medicine; Randall Hansen, DO, Kansas City University/ Freeman Otolaryngology – Head & Neck Surgery Resident; Abigail Niewchas, OMS-1 Kansas City University College of Osteopathic Medicine; Salma Alkhatib, OMS-1 Kansas City University College of Osteopathic Medicine; Suporn Sukpraprut-Braaten, PhD, Adjunct Assistant Professor, Kansas City University

Abstract:

Introduction Klippel Feil Syndrome (KFS) is a rare congenital abnormality characterized by cervical vertebral fusion. Patients typically present with a triad of short neck, low posterior hairline, and limited cervical range of motion. Location and quantity of vertebral fusions in KFS makes airway management challenging. Anesthesiologists select intubation methods based on perceived difficulty, making this paper essential to the field. The purpose of this study is to analyze first-attempt intubation success on KFS patients. **Methods** This is a systematic review of all case reports on PubMed in the last 10 years using keywords “Klippel-Feil Syndrome”, and subsequently screened searching “anesthesia” and “intubation”. Examiners reviewed the remaining 27 articles for fusion abnormalities and intubation techniques used. The articles detail Fiberoptic, Direct, Laryngeal Mask Airway (LMA), and Video-guided intubation techniques, and success rates were analyzed. **Results** Of the 1,234 KFS articles found, 657 were case reports with 157 being in the last 10 years. After review, 27 case reports presenting 30 cases were included. The average age reported was 25.4 ± 21.6 and 73.3% were female. Direct (n=10), Fiberoptic (n=12), Video-guided (n=6), and Laryngeal Mask Airway (n=2) were the chosen first-attempt intubation maneuvers. Fiberoptic and video-guided intubations reported 83% success while Direct and LMA reported 50% success. Higher success rates were found in patients with 2 cervical segment fusions (70%) when compared to 3+ fusions (33%). Inferior vertebral fusions (C5-T1) reported higher success than mid-cervical fusions (C3-C5), with 100 and 33 percent respectively. Mallampati class 4 had the highest success (100%), although further analysis showed fiberoptic intubation was used in each case. **Conclusion** Fiberoptic and video-guided intubation in KFS patients offers the best results. Though there may be confounding variables, fiberoptic should be considered the gold standard when intubating KFS patients.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Uncovering Biases in AI-Generated “Dermatology Resident” Imagery: An Observational Study

Presenting author: Fahad Siddiqui, DO

Affiliation: Kansas City University/ADCS Orlando Dermatology Resident

Co-Authors and affiliations: Danielle Glinka, MS - Alabama College of Osteopathic Medicine; Charles Dunn, MD, Kansas City University/GME ADCS Orlando Dermatology / Resident; Adam Leavitt, MD - Kansas City University/ADCS Orlando Dermatology Faculty; Rajiv Nathoo, MD - Kansas City University/ADCS Orlando Dermatology Faculty; William Steffes, MD - Kansas City University/ADCS Orlando Dermatology Faculty; Suporn Sukpraprut-Braaten, PhD – Adjunct Assistant Professor, Kansas City University

Abstract:

Introduction: Artificial intelligence (AI) image-generating programs have gained traction despite imperfections attributed to their novelty and source material constraints. This observational study examines the demographic distribution within AI-generated images of dermatology residents, discussing implications arising from the findings. **Methods:** Three prominent AI programs, namely DALL·E 2, DreamStudio, and Midjourney, were employed. Utilizing a standardized "Dermatology Resident" prompt, 100 images were generated from each software. Images were categorized by sex and race, following the ACGME demographic standards. Statistical comparisons were made against published ACGME resident data to evaluate accuracy. **Results:** Findings revealed discernible biases across all three AI programs. While ACGME data indicate 62% female and 38% male dermatology residents, Midjourney predominantly generated male images (97%, $p < 0.0001$). DALL·E 2 also skewed male (59%, $p = .0008$), albeit less significantly, whereas DreamStudio exhibited a near-even split (51% female, $p = .0576$). None accurately reflected the female predominance in the field. Moreover, DreamStudio and Midjourney failed to depict Black/African American individuals, contrasting the 5.7% representation in reality. DALL·E 2 exhibited a relatively diverse racial distribution, resembling ACGME data more closely. **Discussion:** The study highlights inherent biases within AI-generated images, potentially perpetuating harmful stereotypes and affecting diagnostic accuracy. Despite AI's growing role in dermatology, its understanding of resident demographics remains underexplored, necessitating scrutiny due to the implications of demographic data in healthcare. **Conclusion:** This research underscores the presence of racial and gender biases within AI-generated images of dermatology residents. With limitations acknowledged, such as the study's focus on only three AI programs and sample size constraints, it advocates for further investigation and improvement of AI technology to accurately represent diverse populations, essential for equitable and effective healthcare delivery.

Category: Medical Education

Presentation mode: Live Virtual Presentation (GME)

GME program Location: ADCS-Orlando

Identifying LGBTQ+ Education Amongst Health Care Professionals: a barrier to treatment

Presenting author: Kaka Murk, MD

Affiliation: Kansas City University/Ozark Center Psychiatry Resident

Co-Authors and affiliations: Sonia Khan, MD - Kansas City University/Ozark Center Psychiatry Resident; Lukas Moore, DO, Kansas City University/Ozark Center Psychiatry Resident; Gloria Robertson, MD, Kansas City University/Ozark Center Psychiatry Resident; Aneel Kumar - Kansas City University/Ozark Center Psychiatry Resident; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

In recent years, significant strides have been made in the recognition and acceptance of LGBTQ+ individuals in society. As patient populations evolve, healthcare professionals must be trained to ensure that the diverse needs are met with sensitivity, understanding, and competence. This imperative stems from the unique challenges and mental health disparities that this population faces (Moagi M. et al., 2021). One vital aspect of this transformation is the training of healthcare workers to enhance their ability to provide effective care for LGBTQ+ patients (Rutherford, 2012). However, multiple studies have cited that healthcare professionals do not receive adequate training. Rutherford et al. reported low practitioner knowledge of LGBTQ+ issues such as having limited understanding or awareness and as a result, are less equipped to provide culturally sensitive and effective care of this patient population (2012). Hirschtritt et al. surveyed 72 program directors of ACGME-accredited psychiatry residency programs and revealed that 55.6% of the programs had less than five hours of LGBTQ+ specific education (2019). An online survey of healthcare workers in long term care reported a willingness to learn with one of the greatest barriers being a lack of training (Smith et al., 2019). Multiple studies have recommended the implementation of training programs for health care professionals, to enhance practitioners' knowledge and cultural competence in working with LGBTQ+ clients, reduce stereotypes and biases, and ensure more effective and empathetic care (McCann et al., 2014). We will conduct a cross-sectional primary survey to pinpoint a significant identified obstacle, lack of education and exposure to LGBTQ+ for healthcare professionals. Our objective is to assess healthcare professionals' training, competence, and overall comfort in providing care for LGBTQ+ populations. Identifying this barrier will pave the way for the development of future protocols aimed at enhancing the education of healthcare professionals in this area.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Assessment of Barriers in the Office-Based Opioid Treatment in Rural United States

Presenting author: Savitha Kumari Satyasi, MD

Affiliation: Kansas City University/ Ozark Center Adiction Medicine Fellow

Co-Authors and affiliations: Savitha Kumari Satyasi, MD, Kansas City University/ Ozark Center Adiction Medicine Fellow; Yassar Odhejo, MD, Kansas City University/ Ozark Center Adiction Medicine Fellow; Suporn Sukpraprut-Braaten, PhD, Kansas City University; Dustin Harrington, BS, Kansas City University/Ozark Center Psychiatry Program Coordinator; Filomena Galdikas, MD, Kansas City University/Ozark Center Psychiatry Resident; Christopher Stewart, OMS1 Kansas City College of Osteopathic Medicine; Allison Smith, DO, Kansas City University/ Ozark Center Adiction Medicine Faculty; Nauman Ashraf, MD, Kansas City University/Ozark Center Psychiatry Residency Program Director

Abstract:

Background: The opioid epidemic has contributed to reducing life expectancy for three consecutive years after 2014 and has had a harmful impact on health in the United States. The most recent national survey of 2020 estimates that at least 2.7 million people in the United States have opioid use disorders. The root causes and barriers to accessing treatment for opioid use disorder in rural areas have not been well understood. **Methods:** A cross-sectional study was conducted. The research participants are patients with opioid use disorder. The inclusion criteria are adults aged between 18 and 65 being treated at the Suboxone outpatient facility. Pregnant women, prisoners, and other vulnerable people were excluded from the study. Descriptive statistics and chi-square tests are used to analyze the data. A survey was conducted to evaluate familiarity with medications to treat opioid addiction, primary barriers to receiving an OUD treatment, difficulties finding a provider to provide the treatment, and support from family and friends to seek and continue the treatment. The survey also measured the ability to access information about OUD and treatment options. **Results:** A total of 73 people participated in the study. The average age is 39 (± 10.2) years old. The main barriers that make it difficult for patients to get the medication needed to treat opioid use disorder are cost-related reasons, including cost and insurance (57%), compared to non-cost-related reasons, including transportation and availability (43%), difference=14%; $p=0.1615$. **Conclusions:** Cost and insurance are the primary reasons that make it difficult for patients to obtain OUD treatment. The primary barriers to OUD treatment in rural areas are the clinic's location, travel, and clinic hours. The limitations of this study are the small sample size and the fact that the results are from a single clinic. However, understanding these barriers helps us to address the issues.

Category: Health Service Psychology

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Ozark Center

Lactobacilli Urinary Tract Infection in Male Patient

Presenting author: Vivien Nsonwu, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Objective: Lactobacilli are Gram-positive rods, part of the normal human flora that are generally considered contaminants on culture. However, there are reported cases of Lactobacilli urinary tract infection (UTI). This report reviews Lactobacillus UTI in a male patient. **Case Presentation:** Patient is a 66-year-old male with PMHx of T2DM and pancreatic insufficiency who presented for acute on chronic diarrhea. Upon arrival, he also complained of dysuria and penile discharge. Bladder scan showed increased post-void residual volume. UA ordered suggested UTI. Patient was started empirically on levofloxacin. When urine culture resulted, it grew >100,000 cfu of Lactobacillus and 30,000 cfu of Candida. Patient was transitioned to amoxicillin for Lactobacilli and fluconazole for Candida. Before discharge, repeat urine culture showed no organisms other than Candida albicans <100,00 cfu.

Discussion: Between 40%-60% of women are likely to get UTIs in their lifetime while only 7-12% of men (circumcised) are expected to experience it. In the rare cases of UTI in men, what factors could contribute? Risk factors include obstruction in the urinary tract (BPH, stones, long-term use of a catheter), lack of circumcision, diabetes, fecal incontinence, and contracting sexually-transmitted infections. However, likelihood of Lactobacilli UTI is very rare. In fact, only two cases of UTI due to Lactobacillus delbrueckii have been reported in male patients as of June 2022. Lactobacillus is more likely to be the causative agent of UTI in symptomatic patients with high colony counts in consecutive urine cultures, without other organisms present. Though our patient's situation did not meet all these conditions, repeat urine culture was negative for Lactobacillus and the patient showed clinical improvement after appropriate antibiotic use. **Conclusion:** The possibility of UTI in male patients with symptomatology and comorbidities should not be overlooked as there are factors that increase this risk. However, diagnosis of Lactobacillus UTI is rare.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Transiliac Shortening Osteotomy to Treat Ischial Pressure Injury due to Fixed Pelvic Obliquity: A Case Report

Presenting author: Brandon Nguyen, DO

Affiliation: Kansas City University/HCA-KC Research Orthopedic Surgery Resident

Co-Authors and affiliations: Richard Schwend, MD- Kansas City University/HCA-KC Research Orthopedic Surgery Faculty; McKenna Noe - Department of Orthopaedic Surgery, Children's Mercy Kansas City; John Anderson, MD, Kansas City University/HCA-KC Research Orthopedic Surgery Faculty; Shao Jiang - Department of Orthopaedic Surgery, Children's Mercy Kansas City

Abstract:

Introduction: Pressure injuries are characterized by localized damage to the skin and underlying tissues subjected to prolonged pressure. These injuries typically occur over bony prominences. Elderly patients and those with spinal cord injury, poor nutrition, and/or incontinence are at the greatest risk. Pelvic obliquity (PO) is common in neuromuscular scoliosis and is typically treated with spinal fusion to the pelvis. However, when the deformity is severe, full correction of the PO may not be achieved causing unequal ischial pressures. We describe a novel case of non-healing ischial pressure injury associated with fixed PO that resolved with an ipsilateral transiliac shortening osteotomy. **Case:** A 17-year-old male with severe cerebral palsy and neuromuscular scoliosis underwent spinal fusion and instrumentation from T3-pelvis. He developed a NPIAP stage 3 right ischial pressure injury a few months post-operatively, which persisted despite non-operative measures. He underwent an ipsilateral transiliac shortening osteotomy 16 months after spinal surgery to treat his residual PO and ischial pressure injury, which healed completely. **Discussion:** Residual PO, impaired mobility, dystonia, and low body weight predisposed the patient to an ischial pressure injury that was refractory to proper positioning, cushions, nutritional support, and hygienic care. Transiliac lengthening has been used to treat PO secondary to short limb with developmental hip dysplasia or mild scoliosis, post-traumatic malunion, and hemisacral agenesis. We are not aware of any reported use of transiliac shortening osteotomy for fixed PO. Our approach directly addresses the pathologic side, promotes primary bone healing, avoids an interposition graft, and decreases strain on neurovascular structures. Because the tissue is relaxed versus stretched, the risks of wound dehiscence and infection may be lower. Ipsilateral transiliac shortening osteotomy is one proposed method of PO correction that can help unload the ischium to allow for healing and improved function.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: HCA KC-Research Medical Center

Use of a Steinmann Pin for Provisional Fixation during Cephalomedullary Nailing of a Basicervical Femoral Neck Fracture: A Case Report

Presenting author: Brandalynn Holland, DO

Affiliation: Kansas City University/HCA-KC Research Orthopedic Surgery Resident

Co-Authors and affiliations: Mark Gendi, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident; Evan Johnson, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident; Tillman Landers, DO, Kansas City University/HCA-KC Research Orthopedic Surgery Resident; Charles Orth, DO, FAOAO, Kansas City University/HCA-KC Research Orthopedic Surgery Program Director

Abstract:

Introduction Basicervical femoral neck fractures make up a small portion of femoral neck fractures, (9). Inherent rotational instability adds complexity to fixation (10). This has led to the use of dynamic hip screws or cephalomedullary nails with potential use of an antirotational screw (2,5,7). Antirotational screws are well documented, but provisional fixation with the use of a Steinmann pin is not. **Case Report** Patient is a 76-year-old female who sustained a ground level fall directly onto her left hip. Radiographs demonstrated a left basicervical femoral neck fracture with minimal comminution of the greater trochanter tip (Figure 1). Intraoperatively, patient was placed onto a Hana table, and repeat radiographs verified the nature of the fracture. Appropriate starting point was obtained, and a smooth pin was advanced 1cm to hold positioning. Next, a Steinmann pin was percutaneously placed through the lateral aspect of the greater trochanter and advanced into the anterior aspect of the femoral neck and head. The smooth pin was further advanced to the level of the lesser trochanter (Figure 2), and opening reamer was utilized. Next, the nail was inserted, and radiographs demonstrated excellent alignment of fracture (Figure 3). During insertion of the leg screw, the Steinmann pin was maintained to avoid malrotation and a set screw was placed. Finally, the Steinmann pin was removed as fracture alignment was stabilized with appropriate rotation (Figure 4). **Discussion** This case report demonstrates that a Steinmann pin located in the anterior aspect of the femoral neck and head provides provisional fixation and avoids varus distraction of a basicervical femoral neck fracture during insertion of a cephalomedullary nail. This demonstrates the importance of having some sort of provisional fixation of the femoral head/neck segment prior to utilizing the opening reamer to ultimately avoid varus collapse of the fracture site (6).

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: HCA KC-Research Medical Center

Nocardiosis Complicated by Hyponatremia Secondary to the Mainstay of Treatment

Presenting author: Jenil Baman

Affiliation: Kansas City University College of Osteopathic Medicine Student

Co-Authors and affiliations: Mark Jarosz, DO, Kansas City University/Freeman Internal Medicine Resident; Shane Miller, DO, Kansas City University/Freeman Internal Medicine Resident

Abstract:

A 59-year-old male with a past medical history of tobacco usage (40+ pack year history) and recent unintentional weight loss presents to the hospital from his pulmonologist clinic due to concern for worsening shortness of breath with known right upper lobe infiltrate. Three months prior a chest x-ray demonstrated a right upper lobe infiltrate with follow-up CT chest scan revealing a necrotizing right upper lobe pneumonia with multiple cavitations, severe bullous emphysema, and a small left basilar infiltrate. A bronchoscopy with bronchoalveolar lavage demonstrated only white cells were present with no organisms or growth identified. Then a PET scan revealed intense FDG uptake in the right supraclavicular node with bulky mediastinal and hilar lymph nodes with intense radiotracer uptake in the right upper lobe. Fungal cultures on admission which grew *Nocardia asiatica*. The patient was started on IV TMP-SMX and meropenem. The patient began to experience worsening hyponatremia that was felt to be secondary to intravenous TMP-SMX by infectious disease and nephrology. The patient was transitioned to meropenem and ampicillin-sulbactam due to the complication from TMP-SMX. *Nocardia* is a soil saprophyte that invades the body through the respiratory tract, skin, or digestive tract which can lead to the life-threatening disease of Nocardiosis. This usually presents in immunocompromised patients with the pulmonary system most likely being affected. From the lungs the infection can disseminate to many organ systems including the brain leading to abscess. Bacteremia from *Nocardia* has a mortality rate estimated at 60% (2). Traditionally, the treatment for nocardiosis is trimethoprim and sulfamethoxazole (TMP-SMX) for at least 6 months of treatment. A known and possibly severe complication of TMP-SMX is significant hyponatremia. The mechanism remains a subject of debate but is thought to be secondary to syndrome of inappropriate antidiuretic hormone.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Teaching medieval methods for reducing dislocations in the 21st century

Presenting author: Jesse Cooper, DO

Affiliation: Kansas City University/Freeman Emergency Medicine Resident

Co-Authors and affiliations: Richard S. Swinney MD, FAAEM, Kansas City University/Freeman Emergency Medicine Faculty; Connor Bridge, DO, Kansas City University/Freeman Emergency Medicine Resident; Steven Donald Roe, BSW, RSAP, CCJP (Independent Scholar)

Abstract:

Introduction: Late medieval medical care was far less ignorant and barbaric than is commonly portrayed. A prime example of this is reduction of dislocations. Pre-modern practitioners were faced with the same anatomical challenges of dislocations, often in patients presenting much later with more intransigent dislocations. They had to accomplish the same goal (reduction) without the benefits of x-rays or rapid onset medications to sedate / relax their patients. By employing 4 basic principles drawn from medieval sources, 21st century emergency medicine residents are learning how to decrease the number of personnel required, decrease the amount of force required, and increase the likelihood of success for the reduction of common dislocations. Case 1: adult female skydiver with isolated left hip dislocation Case 2: adult male with isolated right shoulder dislocation Discussion: Using the stepwise approach of static counter-traction slow, continuous traction (adapted from skin traction windlass) adequate relaxation manipulation drawn from a close reading of medieval medical manuals, multiple ER residents have demonstrated the ability to successfully reduce dislocated shoulders and hips singlehandedly. === As it is a demonstration of clinical techniques, it works best as a physical demonstration. I have also delivered an expanded form of the presentation for Grand Rounds - as well as a hands-on practicum.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Decision rules in diagnosing pulmonary embolism - is missing 3% OK?

Presenting author: Shayne McGowan, DO

Affiliation: Kansas City University/Freeman Emergency Medicine Resident

Co-Authors and affiliations: Richard S. Swinney MD, FAAEM, Kansas City University/Freeman Emergency Medicine Faculty

Abstract:

Introduction The reported incidence of pulmonary emboli in the US is estimated to be ~ 115 per 100,000 - or about 0.1%. Based on autopsy data, however, pulmonary emboli are reported as the second leading cause of sudden unexpected nontraumatic death in outpatients. The decline in autopsies from 19.1% in 1972 to only 7.4% in 2020 argues that medical examiners diagnosing cause of death without performing autopsies are further underestimating the true incidence of pulmonary emboli. Diagnosing pulmonary emboli is challenging. Commonly used screening tools help in the decision making process guiding diagnostic workups, but one such tool, the Modified Wells' criteria with a score of 4 or less (PE unlikely) has been assessed as missing up to 3% of patients with pulmonary emboli. **Case series** - Ten patients who had two or more of the following: normal O2 sats (95%+ on room air) not tachycardic atypical presentation low Modified Wells' criteria score (less than or equal to 4) - "PE unlikely" negative age-adjusted d-dimer on anticoagulant therapy diagnosis missed by one or more previous evaluations / hospitalizations **Conclusions** - Diagnosing pulmonary emboli is challenging, and diagnostic tools like PERC criteria, Wells' criteria and age-adjusted d-dimer should not be regarded as absolutes. As evidenced by this cohort of patients: all from a single facility all diagnosed by a single provider many of whom presented atypically many of whom did not meet established criteria for further workup we physicians are likely grossly underestimating the number of pulmonary emboli patients as well. As such, the most important element of making the diagnosis is entertaining the diagnosis in atypical patients in the first place. === If presented as a poster, the number of cases would probably need to be cut back.

Category: Clinical Science

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Heparin or not? Current recommendations for the treatment of acute embolic stroke of uncertain source (ESUS) treated with Tenecteplase - a case report.

Presenting author: Abdulla Elsayadh, MD

Affiliation: Kansas City University/Freeman Emergency Medicine Resident

Co-Authors and affiliations: Richard S. Swinney MD, Kansas City University/Freeman Emergency Medicine Faculty; Gulshan Uppal MD, Kansas City University/Freeman Emergency Medicine Faculty

Abstract:

Stroke care continues to evolve. The current standard of care in the United States involves rapid identification, screening, transport, and imaging of potential stroke victims. Patients meeting specific criteria may qualify for thrombolytic therapy: The diagnosis is acute ischemic stroke. Treatment can commence within 4.5 hours from the last known normal/baseline, persistent, measurable, disabling neurologic deficit. Noncontrast head CT or brain MRI is without hemorrhage or other contraindications. Thrombolytic therapy (e.g. Alteplase, Tenecteplase) is often administered before the workup is complete — especially if the patient is first evaluated at a hospital that is not a stroke center. **CASE DESCRIPTION** 83-year-old male presented to a non-stroke center hospital for evaluation of new onset of left arm weakness. CT brain without contrast was performed and was negative. CTA head and neck were performed and were negative. Laboratories were otherwise unremarkable. The patient was within 4.5 hours from the onset of his symptoms and had no contraindications to thrombolytics. He was given IV Tenecteplase and transferred to a stroke center for further evaluation and treatment. On arrival at the stroke center, the patient was neurologically intact with complete resolution of the weakness post-TNK therapy. MRI brain without contrast showed multiple foci of restricted diffusion throughout the right cerebral cortex as well as involving bilateral cerebellar hemispheres, findings consistent with acute infarcts. The patient had no known history of atrial fibrillation and was not documented to be in atrial fibrillation at any time. Neurology was consulted for further recommendations. **DISCUSSION** The management of ESUS (embolic strokes of unknown source) differs somewhat from thrombotic strokes and embolic strokes due to atrial fibrillation. Current recommendations for anticoagulation and anti-platelet therapy and timing will be discussed, as well as emerging research on the use of IV heparin in patients after the administration of IV thrombolytics.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Residency Blues- Improving the rate of depression screening in the family medicine residency clinic

Presenting author: Shruti Dave, MD

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Nicholas Hinkle, DO- Kansas City University/Reid Health Family Medicine Resident; Kristopher Brott, DO- Kansas City University/Reid Health Family Medicine Resident; Tanner Everhart, DO- Kansas City University/Reid Health Family Medicine Resident; Sara Khan, MD- Kansas City University/Reid Health Family Medicine Resident; Bothaina Afifi, MD, Kansas City University/Reid Health Family Medicine Resident; Jeffrey Lee, MD- Kansas City University/Reid Health Family Medicine Resident; Nicole Hountz, DO- Kansas City University/Reid Health Family Medicine Resident; Novera Inam, MD, Kansas City University/Reid Health Family Medicine Faculty

Abstract:

Introduction: Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest which can lead to difficulties in all aspects of life, including within the community, at home, work and school. According to the WHO, depression affects approximately 280 million people, 50% more common among women. Suicide is the 4th leading cause of death in 15-29 year olds. In primary care, approx. 10-14% of patients are estimated to have MDD, however, as many as 50% of those go undetected. There are effective treatments for depression which include psychological treatment and medications. Screening using the standard scale such as the PHQ can increase treatment initiation and monitoring symptoms for depression. **Materials and Methods:** Using our EMR, *** patients age 12 and above were analyzed to determine the pre-intervention rate of depression screening at our residency clinic. The interventions implemented include reminders sent to all the residents and staff in our program to increase screening for depression. We also created a flyer which we posted around the clinic and advertisements on television in the waiting area. PHQ-2 and/or PHQ-9 were used to screen for depression in patients 12 and older in our clinic. **Results:** Pending **Discussion:** Limitations to our study included lack of follow through by residents and staff, inability to obtain new patient data in the time period, and visits to the clinic for alternative reasons which may have not offered time to complete/address screening. **Conclusion:** We found our depression screening rate improved/declined by x% during the study period.

Category: Medical Education

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Reid Health

Optimizing a Visiting Rotation in PGY-1 Family Medicine

Presenting author: Robert Morris, DO

Affiliation: Kansas City University/Freeman Family Medicine Resident

Co-Authors and affiliations: Mariam Akhtar, DO, Kansas City University/Freeman Family Medicine Faculty

Abstract:

During PGY-1 (intern year), Family Medicine (FM) residents rotate for 1 month within an Inpatient Pediatric service. The goal of this rotation is to receive critical exposure towards this patient cohort for future clinical practice. FM residents at Freeman Hospital visit Children's Mercy (CMH) in Kansas City, Missouri, to gain this valuable experience in PGY-1. As part of the visiting rotation, residents potentially adapt to some of the following challenges: navigating a new physical hospital, working with a different electronic medical record (EMR), using an unfamiliar pager system, and learning pediatric-focused rounding and hand-off format. The initial goal of this project was to capture the experience of the visiting resident in PGY-1 and identify areas for quality improvement. In order to accomplish this, current FM residents (n=6) were pre-surveyed about their experience at CMH during PGY-1. 50% of residents identified that Inpatient Pediatrics at CMH was the most challenging rotation of intern year. 66% identified "minimal experience" with Inpatient Pediatrics prior to this rotation. Residents were then given a 30-minute presentation about possible ways to improve the visiting rotation, including a CMH App for hospital navigation and a CMH App for acute illness management. 83% (5/6) residents responded that the presented information would be either "very likely" or "likely" to help improve the overall experience of a new visiting FM intern. The survey data suggest several areas for quality improvement for the visiting rotation. The long-term goals of this project include developing a handbook for visiting residents, connecting residents to mentors, overlapping residents (1 day for outgoing and incoming residents), and creating basic wellness goals prior to the visiting rotation.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: Freeman Health System

Postoperative opioid use after unplanned urgent laparoscopic cholecystectomy

Presenting author: Sendy Ha, MD

Affiliation: Kansas City University/St. Anthony Hospital Surgery Resident

Co-Authors and affiliations: Rachel Landin DO, Kansas City University/St Anthony Surgery Resident; Maximilien Bergman DO, Kansas City University/St Anthony Surgery Resident; Mollie Mustoe MD, Kansas City University/St Anthony Surgery Resident; Jennifer Pekarek RN, St. Anthony Hospital; Meghan Holland, St. Anthony Hospital; Kailey Kowalski, Kansas City University College of Osteopathic Medicine; Brian Blackwood MD, Kansas City University/St Anthony Surgery Faculty; David Beck MD, Kansas City University/St Anthony Surgery Faculty.

Abstract:

Introduction: Prescribed opioids have caused over half a million people to succumb to addiction, overdose, and death. Current opioid prescribing guidelines are based on elective surgery data. Unplanned surgeries might produce a different degree of postoperative pain. This pilot study looks at the quantity of opioids patients are using after an unplanned laparoscopic cholecystectomy. **Methods:** Patients were recruited when they presented to the Emergency Department, were diagnosed with gallbladder disease, and were offered laparoscopic cholecystectomy. The electronic medical record was reviewed for pain scores and opioid prescriptions, and after discharge, subjects were contacted with a questionnaire regarding their pain and opioid usage. The primary outcome of unused prescribed opioids was analyzed with a right-tailed t-test. **Results:** Of the 34 subjects recruited, 16 subjects were included in data analysis. They were prescribed an average of 101 MME (morphine milligram equivalents). 62.5% subjects had unused pills on follow up questionnaire. The amount of unused opioids was statistically significant with an average of 42.7 MME ($p=0.000026$ when compared to a null hypothesis of 0 MME). 87.5% subjects were administered opioids within 24 hours prior to discharge. The average pain score on discharge was 3 (on a 0-10 scale), and 68.7% subjects were still experiencing surgery-related pain on follow up questionnaire. **Discussion:** The amount of unused prescribed opioids after unplanned urgent laparoscopic cholecystectomy is correlated with overprescribing. As this was a pilot study, the sample size was small. Subjects were excluded when they were lost to follow up or opted out, discharged without opioid prescriptions, or had a postoperative procedure or complication. **Conclusion:** Healthcare providers might be overprescribing opioids after an urgent laparoscopic cholecystectomy, however more research is needed to determine the ideal amount to prescribe. A comparison between unplanned pain from urgent surgery to that expected from elective surgery could also be explored.

Category: Quality Improvement

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Anthopny Hospital

Gastric Volvulus: A Case Report

Presenting author: Jacob Wiepen, DO

Affiliation: Kansas City University/St Mary's Surgery Resident

Co-Authors and affiliations:

Abstract:

I will be reporting a case about a 51 year old male with gastric volvulus. Patient initially presented with intractable nausea and vomiting. Continued work up revealed a large hiatal hernia involving nearly his entire stomach. Imaging reports also indicated some degree of gastric volvulus present within patient's hernia sac. During our operation, we identified patient's large hiatal hernia and worked to fully reduce patient's stomach into the abdomen. It was also identified that patient likely had mesenterio-axial gastric volvulus. A gastric volvulus will likely result in obstruction. If left untreated, gastric volvulus may lead to acute strangulation. With prompt surgical management, our patient began to recover and was able to be discharged in only a few days following surgery.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Location: St. Mary's Hospital

Peeling Back the Layers: Unveiling Staphylococcal Scalded Skin Syndrome in Pediatric Practice

Presenting Author: Jesse Smallwood, DO

Affiliation: Kansas City University/Reid Health Family Medicine Resident

Co-Authors and affiliations: Novera Inam, MD, Kansas City University/Reid Health Family Medicine Residency Faculty

Abstract:

Objective: Staphylococcal Scalded Skin Syndrome (SSSS) is a rare presentation. Prompt recognition is crucial due to its similarity to other dermatological conditions, which can lead to misdiagnosis and delayed treatment. **Case Presentation:** A 6-month-old patient with no known medical problems presented to ED with irritability and a macular rash, initially managed as allergic dermatitis with symptomatic care steroids and discharged home but later worsened rash with perioral crusting and respiratory distress prompted further visits and admission. Despite unremarkable initial labs, the rash continued to worsen, empiric abx initiated. Cultures revealed Strep Agalactiae and nonspecific Gram-negative Bacilli. He required transfer to a tertiary facility where SSSS was formally diagnosed based on clinical features and supportive positive cultures. Treatment with IV antibiotics led to improvement and was discharged home on oral antibiotics. The erythematous character and distribution of the rash improved rapidly but desquamation continued to resolve for two more weeks. **Discussion:** Staphylococcal Scalded Skin Syndrome is a cutaneous manifestation of the disseminated hematogenous distribution of Staphylococcal Exotoxin A and B causing deep erythema, intense skin pain, and desquamation, primarily in children less than six years of age. The incidence is estimated to be approximately eight per one million children, and the incidence appears to be increasing¹. The diagnosis is clinical but multisite cultures can assist. Clinical presentation typically includes tender, erythematous skin with positive Nikolsky sign, perioral crusting, and irritability. However, distinguishing SSSS from conditions like impetigo or toxic epidermal necrolysis can be difficult, necessitating a high index of suspicion. As in our patient. a six-month-old male infant who presented with a diffuse rash, initially treated as an allergic dermatitis with anaphylaxis, which developed desquamation and prompted antibiotics. Prognosis is excellent for children with prompt and appropriate management

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Locations: Reid Health

Distal Esophageal Leiomyoma in a Young Female Patient

Presenting Author: Mollie Mustoe, MD

Affiliation: Kansas City University/St. Anthony Hospital Surgery Resident

Co-Authors and affiliations: Kelsey White, Student at Rocky Vista University; Ellen Sprouse; Dean Gubler, DO, Faculty at Rocky Vista University; Jeffrey Cross, MD, Kansas City University/St. Anthony Hospital Surgery Faculty

Abstract:

Introduction: Esophageal tumors are predominantly malignant, with benign tumors accounting for 10% of cases, half of which are leiomyomas.¹ Esophageal leiomyomas are benign tumors of smooth muscle, most commonly the inner circular muscle layer in the distal two-thirds of the esophagus.¹⁻³ Esophageal leiomyomas often affect middle-aged males, with an incidence twice that of females. While malignant transformation is unlikely, surgical resection is often required as fine needle aspiration is not sufficient to rule out malignancy.⁴ Resection is typically transthoracic, though endoscopic or laparoscopic approaches may also be used. Pediatric cases are exceedingly rare and in contrast affect females more than males.^{6,7} Historically, most pediatric cases require esophagectomy, though enucleation via open thoracotomy has become common. Case: A 26 year old female patient presented with symptoms of vomiting, coughing, and gastric reflux since 2016. A CT scan in March 2020 demonstrated a paraesophageal hernia (PEH). In July 2020, esophagogastroduodenoscopy revealed an esophageal mass, and fine needle aspiration biopsy was consistent with leiomyoma. In February 2023, an incidental CT scan demonstrated the previously identified esophageal mass to be 6 cm long with associated edema. The patient developed debilitating symptoms of dysphagia (including saliva alone), reflux, constant epigastric pain, bloating, cough, and recurrent fevers. In June 2023, she underwent diagnostic laparoscopy followed by robotic assisted laparoscopic esophageal leiomyoma resection with PEH repair and fundoplication in July 2023. The 7.1 x 4.7 x 4.2 cm mass was resected in its entirety and the remaining esophageal defect was closed in two layers. The PEH defect was closed and reinforced with Phasix mesh. The stomach was then wrapped posteriorly in a 270-degree fundoplication, covering the leiomyoma defect. Final surgical pathology demonstrated a spindle cell neoplasm positive for desmin and negative for CD117, DOG1, and S100, consistent with a benign leiomyoma. Discussion: This case demonstrates a novel robotic-assisted laparoscopic abdominal approach to distal esophageal leiomyoma resection. The approach not only prevented the morbidities associated with open thoracotomy, but also preserved the patient's native tissue to avoid esophagectomy. Distal esophageal leiomyomas may contribute to hiatal dysfunction, such as PEH, therefore an abdominal approach allows for concomitant repair of the hiatal hernia.

Category: Case Reports and Studies

Presentation mode: Live Virtual Presentation (GME)

GME program Locations: St. Anthony Hospital