SMA Annual Scientific Assembly
Abstract Presentations
Wednesday, October 31, 2018
12:30-2:32 pm

Self report of pain vs discomfort in Emergency Department patients. Is there a difference? | 12:32-12:42 pm

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Disclosures	No relevant financial relationships to declare
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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Self report of pain vs discomfort in Emergency Department patients. Is there a difference?**
Abstract	Background: Previous studies have reported that patients will deny being in pain but report feeling uncomfortable, for instance women with cardiac ischemia. We believed that Emergency Physicians (EPs) would find it useful to know if there was a significant difference in how their patients reported pain vs. discomfort. Methods: This was a prospective cohort study conducted at an urban, academic ED. Adult patients (>=18yrs old) with a chief complaint that included pain of any sort who were willing and able to participate without duress were eligible. Surveys were administered by student teams asking patients to rate their pain and discomfort from 1-10 on visual analog scales. Patient characteristics including demographics, types of pain, duration of pain, location of pain, quality of pain or discomfort, and pain-modifying conditions were recorded on tablet computers. Data was entered into REDCap ©, Vanderbilt University and uploaded into SAS, Cary, NC for analysis. Results: There were 289 patients enrolled in the study. Overall, 58% reported no difference between their discomfort and pain. 21% reported their discomfort to be greater than their pain and 21% reported their discomfort to be less than their pain. Fifty-two (18%) of patients reported chest pain. Of these, 52% saw no difference between pain and discomfort, 25% reported discomfort to be greater than pain and 23% reported discomfort to be less than pain. Seventy-three (25%) of patients reported abdominal pain. Of these, 58% reported no difference between pain and discomfort, 26% reported discomfort to be greater than pain and 15% reported discomfort to be less than pain. Conclusions: Amongst ED patients who present with painful conditions, a clinically important number of patients reported discomfort to be greater than pain. Emergency Physicians (EPs) should be cognizant of this and include questions about discomfort in their clinical assessments.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Compare and contrast different ways in which patients report noxious symptoms associated with disease. • Describe the importance of asking patients about discomfort as well as pain. • Realize that clinical importance does not necessarily require statistical significance.

References and Resources	1. Bugiardini, R., Merz, C.N.B. Angina with "normal" coronary arteries: A changing philosophy (2005) Journal of the American Medical Association, 293 (4), pp. 477-484 (2005). 2. Milner, K.A., Funk, M., Arnold, A., Vaccarino, V. Typical symptoms are predictive of acute coronary syndromes in women, American heart journal, 143 (2), pp. 283-288 (2002). 3. American Heart Association: Heart Attack Symptoms in Women. http://www.heart.org/HEARTORG/Conditions/HeartAttack/WarningSignsofaHeartAttack/Heart-Attack-Symptoms-in-Women_UCM_436448_Article.jsp#.W06Fty3My_s (consulted 7/17/18) 4. Sach, J, et al. Is there a difference between abdominal pain and discomfort in moderate to severe IBS patients? American Journal of Gastroenterology volume 97, pages 3131–3138 (2002)

Stroke Lesions and Behavioral Patterns Correlate with Severity of Post-Stroke Limb Spasticity

12:42-12:52 pm

Presenting Author	Colin Michael Smith, BS, Medical Student- Second Year, Department of Neurology, Medical University of South Carolina, Charleston, South Carolina
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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Stroke Lesions and Behavioral Patterns Correlate with Severity of Post-Stroke Limb Spasticity**
Abstract	Background: We aim to assess the association between corticospinal tract (CST) lesion characteristics in the acute phase and the severity of post-stroke limb spasticity (PSLS) at 3 months in a cohort of ischemic stroke patients. The secondary aim is to investigate the correlation of spasticity, motor deficits, quality of life and depression. Early intervention is known to improve outcome. Methods: This is a prospective study enrolling first-ever ischemic stroke patients with motor deficits and following them for 3 months to assess motor recovery and spasticity development. At the baseline, demographics, brain MRI and National Institute of Health Stroke Scale (NIHSS) scores were recorded. At 3-month visit, modified Ashworth Spasticity Scale (MASS) was used to assess PSLS in biceps, wrist-flexors, finger-flexors and pronator. Modified Rankin Scale (mRS), NIHSS, the Stroke Impact Scale-16 (SIS-16) and the Patient Health-related Questionnaire-9 were recorded. MRIs were reviewed to identify the affected segments along the CST: the primary motor cortex, premotor cortex, primary sensory cortex, centrum semiovale, corona radiata, posterior limb of internal capsule and cerebral peduncle. Results: 70 patients were included. The maximum MASS score is 5 with a mean score of 1.9. There was a significant correlation (Spearman's correlation coefficient =.49, $p < .001$) between the number of lesions along CST and maximum MASS scores. There was a significant correlation (Spearman's correlation coefficient=.71, $p < .001$) between baseline NIHSS arm scores and maximum MASS score. Patients with > 1 lesion had a significantly greater degree of spasticity ($p < .01$). Additionally, patients with more severe spasticity had higher mRS and NIHSS scores and lower SIS-16 scores ($P < .01$).

	Conclusion: Our results suggest a strong association between the number of lesions injured along the CST and the severity of PSLS. Understanding who is at risk for developing severe PSLS is critical for appropriate care.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Identify lesion and behavioral characteristics of ischemic stroke patients that are associated with spasticity severity 3 months post-stroke. • Explain the importance of identifying patients at greater risk for developing severe post-stroke limb spastic
References and Resources	1. Li, S., & Francisco, G. E. (2015). New insights into the pathophysiology of post-stroke spasticity. Front Hum Neurosci, 9, 192. doi:10.3389/fnhum.2015.00192 2. Lance, J. W. (1981). Disordered muscle tone and movement. Clin Exp Neurol, 18, 27-35. 3. Kheder, A., & Nair, K. P. (2012). Spasticity: pathophysiology, evaluation and management. Pract Neurol, 12(5), 289-298. doi:10.1136/practneurol-2011-000155 4. Wissel, J., Verrier, M., Simpson, D. M., Charles, D., Guinto, P., Papapetropoulos, S., & Sunnerhagen, K. S. (2015). Post-stroke spasticity: predictors of early development and considerations for therapeutic intervention. PM R, 7(1), 60-67. doi:10.1016/j.pmrj.2014.08.946 5. Gillard, P. J., Sucharew, H., Kleindorfer, D., Belagaje, S., Varon, S., Alwell, K., . . . Kissela, B. (2015). The negative impact of spasticity on the health-related quality of life of stroke survivors: a longitudinal cohort study. Health Qual Life Outcomes, 13, 159. doi:10.1186/s12955-015-0340-3 6. Brainin, M., Norrving, B., Sunnerhagen, K. S., Goldstein, L. B., Cramer, S. C., Donnan, G. A., . . . Group, I. P. D. S. (2011). Post-stroke chronic disease management: towards improved identification and interventions for post-stroke spasticity-related complications. Int J Stroke, 6(1), 42-46. doi:10.1111/j.1747-4949.2010.00539.x 7. Yelnik, A. P., Simon, O., Parratte, B., & Gracies, J. M. (2010). How to clinically assess and treat muscle overactivity in spastic paresis. J Rehabil Med, 42(9), 801-807. doi:10.2340/16501977-0613 8. Leathley, M. J., Gregson, J. M., Moore, A. P., Smith, T. L., Sharma, A. K., & Watkins, C. L. (2004). Predicting spasticity after stroke in those surviving to 12 months. Clin Rehabil, 18(4), 438-443. doi:10.1191/0269215504cr727oa 9. Ozcakir, S., & Sivrioglu, K. (2007). Botulinum toxin in post-stroke spasticity. Clin Med Res, 5(2), 132-138. doi:10.3121/cmr.2007.716 10. Lim, Y. H., Choi, E. H., & Lim, J. Y. (2016). Comparison of Effects of Botulinum Toxin Injection Between Subacute and Chronic Stroke Patients: A Pilot Study. Medicine (Baltimore), 95(7), e2851. doi:10.1097/MD.0000000000002851 11. Ada, L., O'Dwyer, N., & O'Neill, E. (2006). Relation between spasticity, weakness and contracture of the elbow flexors and upper limb activity after stroke: an observational study. Disabil Rehabil, 28(13-14), 891-897. doi:10.1080/09638280500535165 12. Chen, S. (2012). Clinical uses of botulinum neurotoxins: current indications, limitations and future developments. Toxins (Basel), 4(10), 913-939. doi:10.3390/toxins4100913 13. Wissel, J., Olver, J., & Sunnerhagen, K. S. (2013). Navigating the post-stroke continuum of care. J Stroke Cerebrovasc Dis, 22(1), 1-8. doi:10.1016/j.jstrokecerebrovasdis.2011.05.021 14. Miniño, A. M., Xu, J., & Kochanek, K. D. (2010). Deaths: preliminary data for 2008. Natl Vital Stat Rep, 59(2), 1-52. 15. Rigby, H., Gubitz, G., & Phillips, S. (2009). A systematic review of caregiver burden following stroke. Int J Stroke, 4(4), 285-292. doi:10.1111/j.1747-4949.2009.00289.x 16. Ganapathy, V., Graham, G. D., DiBonaventura, M. D., Gillard, P. J., Goren, A., & Zorowitz, R. D. (2015). Caregiver burden, productivity loss, and indirect costs associated with caring for patients with post-stroke spasticity. Clin Interv Aging, 10, 1793-1802. doi:10.2147/CIA.S91123

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"Where There's Fire, There's Smoke": A Case of Unexplained Moyamoya

12:52-1:02 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**"Where There's Fire, There's Smoke": A Case of Unexplained Moyamoya**
Abstract	Introduction: Moyamoya disease is a rare progressive cerebrovascular disorder seen commonly in Japanese patients or those with autoimmune disease. Meaning “puff of smoke” due to its appearance on imaging, affected patients have bilateral stenosis of cerebral arteries leading to extensive collateral formation. Patients with moyamoya are at increased risk of ischemic or hemorrhagic strokes. Outside of the Asian population, it can be seen in concomitant autoimmune disorders. We present a case of idiopathic Moyamoya disease in an African-American female with no other identifiable risk factors. Case Presentation: A 44-year-old African-American female with a past medical history of hypertension presented with acute onset left upper extremity weakness. Three weeks prior, she experienced acute weakness in her left lower extremity. Computed tomography of head showed watershed distribution infarct of undetermined etiology. Magnetic resonance imaging of the brain showed multifocal acute-to-subacute infarcts involving the right cerebral hemisphere. Nuclear scan with flow showed appropriate distribution of radiotracer activity throughout the cerebral and cerebellar hemispheres, with patchy radiotracer uptake and findings suggestive of differential perfusion throughout the cerebral hemispheres, maybe secondary to vasospasm versus emboli. Cerebral angiography showed moderate right carotid artery stenosis with evidence of collateral blood supply via the posterior cerebral artery.

	Final Diagnosis/Workup: This case report describes an incident of moyamoya disease in a young African American female with no identifiable associated cause. The patient experienced acute onset unilateral lower extremity weakness followed by unilateral upper extremity weakness. Subsequent imaging studies revealed findings consistent with moyamoya disease. Further work up did not reveal any associated or inciting diseases including autoimmune conditions. Outcome: With adequate blood pressure control, initiation of antiplatelet and statin therapy as well as physical therapy, the patient showed significant improvement with resolution of left upper extremity weakness and residual mild lower extremity weakness.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Define moyamoya disease and its typical presentation, pathophysiology, and diagnosis. • Recognize the difference between moyamoya disease and moyamoya syndrome. • Describe the implications of moyamoya disease on increased stroke risk. • Discuss management of moyamoya disease and its prognosis.
References and Resources	1. Scott, R. & Smith, E (2009). "Moyamoya Disease and Moyamoya Syndrome". New England Journal of Medicine, 360:1226-1237. 2. Fujimura M, Sonobe S, Nishijima Y, Niizuma K, Sakata H, Kure S, Tominaga T. "Genetics and Biomarkers of Moyamoya Disease: Significance of RNF213 as a Susceptibility Gene". Journal of Stroke, 16 (2): 65-72. 3. Kronenburg A, Braun K, van der Zwan A, Klijin, C. "Recent advances in moyamoya disease: pathophysiology and treatment". Current Neurology and Neuroscience Reports, 14 (1): 423.

The Great Masquerader: Kikuchi-Fujimoto Disease Presenting as Fever of Unknown Origin

1:02-1:12 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**The Great Masquerader: Kikuchi-Fujimoto Disease Presenting as Fever of Unknown Origin**
Abstract	Introduction: Kikuchi-Fujimoto (KF) disease, also known as Necrotizing Histiocytic Lymphadenitis, is a rare cause of fever of unknown origin. Most commonly seen in Japanese populations, it presents with fever and diffuse lymphadenopathy. KF can present a diagnostic challenge as its

	presentation can mimic sepsis, autoimmune disease, and/or malignancy. We present a case of KF disease presenting with innumerable pulmonary nodules and suspected sepsis. Case Report: A 24-year old African-American male inmate with no past medical history presented to the Emergency Department with two witnessed generalized tonic-clonic seizures. Initial vitals were notable for fever to 101.5, tachycardia, and tachypnea. He was lethargic with a diffuse, erythematous, scaly, necrotic rash. Additionally, cervical, axillary and inguinal mobile, non-tender lymph nodes were noted. Laboratory studies revealed white blood cells 1.9x10^3 cells/µL with 25% bands, hemoglobin 9.4 G/dL, and platelet count of 110x10^3 cells/µL. He was subsequently admitted for sepsis due to presumed meningitis and started on broad-spectrum antibiotics. Lumbar puncture revealed no pleocytosis. Peripheral blood smear showed bandemia with Pelger Huet cells. Computed Tomography of chest, abdomen and pelvis with contrast revealed diffuse pulmonary nodules involving all lobes of the lungs in addition to bulky hilar and retroperitoneal lymphadenopathy. Interventional Radiology performed a retroperitoneal lymph nodes biopsy that revealed lymphoplasmacytic cell infiltrate with extensive necrosis. Otolaryngology performed excisional biopsy of a lymph node, which showed histiocytic necrotizing lymphadenitis. Final Diagnosis: Kikuchi-Fujimoto disease, also known as histiocytic necrotizing lymphadenitis. Outcome: The patient completed a 7-day course of empiric antibiotics. Workup for infectious etiologies was negative. Patient had repeat CT of the chest with interval resolution of his pulmonary nodules on outpatient follow-up.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Describe pathophysiology, diagnosis, and treatment of Kikuchi-Fujimoto Disease. • Discuss the implications of early diagnosis of Kikuchi-Fujimoto on hospital length of stay and cost. • Describe the work up of patients with Kikuchi-Fujimoto disease.
References and Resources	1. Association Kikuchi disease with Hashimoto thyroiditis: a case report and literature review 2. Ann Pediatr Endocrinol Metab. 2018;23(2):99-102. Published online June 20, 2018 3. DOI: https://doi.org/10.6065/apem.2018.23.2.99 4. A. D'Introno, A. Perrone, A. Schilardi, A. Gentile, C. Sabbà, and N. Napoli, "Kikuchi–Fujimoto Disease in an Old Italian Woman: Case Report and Review of the Literature," Case Reports in Medicine, vol. 2017, Article ID 7257902, 4 pages, 2017. https://doi-org.ezproxy.uthsc.edu/10.1155/2017/7257902.

Long Term Efficacy and Safety of Baricitinib in the treatment of Rheumatoid Arthritis: A Systematic Review and Meta-Analysis

1:12-1:22 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Long Term Efficacy and Safety of Baricitinib in the treatment of Rheumatoid Arthritis: A Systematic Review and Meta-Analysis**
Abstract	Background: Rheumatoid arthritis (RA) is a chronic systemic autoimmune disorder characterized by bony erosion and joint destruction mediated by intracellular janus kinases. Baricitinib is an oral agent that preferentially inhibits JAK1 and JAK2 resulting in immune modulation. Previous meta-anlayses indicate efficacy of baricitinib at 12 weeks for treatment of RA. We wanted to evaluate the long-term efficacy and safety of baricitinib 4 mg at 24 weeks for treatment of moderate to severe RA. Methods: We searched multiple databases from inception to 10 June 2018 for randomized controlled trials (RCTs) comparing baricitinib to placebo for treatment of moderate to severe rheumatoid arthritis. Outcomes of interest were American College of Rheumatology (ACR) 20, ACR50, and ACR70 responses. Adjusted odds ratios (ORs) were pooled and analyzed using a random effects model. The Cochrane tool was used to assess risk of bias. Results: We included three RCTs with 1392 patients. For ACR20, pooled OR (95% confidence interval) was 2.33 (1.85-2.92), For ACR50, pooled OR (95% confidence interval) was 2.46 (1.94-3.12). For ACR70, pooled OR (95% confidence interval) was 3.33 (2.16-5.12). ACR responses were both statistically and clinically significant. The number of participants who withdrew from the study because of AEs did not differ between the baricitinib 4 mg and placebo groups. However, the number of serious adverse events observed was higher and statistically significant in the baricitinib group compared to placebo. Conclusions: Baricitinib 4 mg demonstrated long term efficacy at 24 weeks for treatment of moderate to severe RA across a range of ACR responses. Patients on higher doses of baricitinib did have an increased risk of adverse events; yet, the absolute number of adverse events was low. Further studies can help elucidate the optimal risk benefit ratio for using baricitinib in the treatment of moderate to severe RA.

Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Evaluate the role of baricitinib in the treatment of moderate to severe rheumatoid arthritis. • Examine the efficacy and safety of baricitinib 4 mg at 24 weeks. • Determine the adverse effects and their potential implications on the use of JAK Inhibitors.

Assessing the demand for dance medicine in South Carolina with a review of common dance-related injuries — 1:22-1:32 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Assessing the demand for dance medicine in South Carolina with a review of common dance-related injuries**
Abstract	Background/ Knowledge Gap Dance medicine is a rare subset of sports medicine. Injured dancers in South Carolina can often be found seeking care at clinics in other states that have specific protocols for treating dancers. Dancers suffer a wide range of injuries especially once they dance roughly 30-40 hours a week. Systematic reviews are based on data up to October 2016 and have not had studies using multivariate analysis to assess risks for injury.7-9 We hypothesized that there will be a growing dance community and dance injuries in the nation and South Carolina and fewer sports medicine physicians in comparison, especially dance medicine specialists. Methods/Design A systematic review was conducted using the search "((orthopedic OR orthopaedic) AND (dance OR ballet) AND (injury OR injuries))". Inclusion criteria included discussing an orthopaedic injury, English, published within 30 years, and sample size of at least 10 ballet dancers. Exclusion criteria included studies discussing other forms of dance, discussing surgical techniques, and case studies. The National Inpatient Sample (NIS) Database was searched for all emergency department visits coded by ICD-9 codes E005.0 and E005.9; the codes for external cause of injury for dance. This data was gathered nationally and for South Carolina for all available years (2010-2014) and was compared with data from the National bureau of Labor and Statistics regarding employment of dancers. Results/Findings The search resulted 217 articles from pubmed, Cinah, Scopus, respectively. 61 met inclusion criteria. Many of these studies were not conducted in America and included a paucity of scientific rigor including small sample sizes, and poor study design. Dancers sustained foot and ankle injuries leading to a total of 255 missed days of work in one Norwegian ballet company.2 In a Brazilian study of 110 dancers there were 50 ankle injuries sustained.3 Small

	scale studies done focusing on six-week dance intensives and injury occurrence have been done in the USA, but these described the need for further follow-up and injury pattern tracking.5 Additionally, small studies have been done at single dance centers or companies, but have not focused on injury tracking nor have there been large scale studies across multiple centers. Currently there are 110,272 dancers employed nationally. However, database analysis is limited due to the injury needing to be coded with the proper ICD-9 codes. Conclusions/Implications The medical community needs to be aware of the risks and injuries in dancers. This study demonstrates the most common types of lower extremity injuries in dancers. Additionally, we saw that there is a paucity of good evidence in the current literature with need for more rigorous studies to be performed. If we gather data to help find risk factors for injury then we would be able to prevent injury and save careers for future dancers.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Describe the most prevalent foot and ankle injuries in ballet dancers
References and Resources	1. Allen N. Ballet injuries: Injury incidence and severity over 1 year. J Orthop Sports Phys Ther. 2012;42(9):781-790. 2. Byhring S. Musculoskeletal injuries in the norwegian national ballet: A prospective cohort study. Scandinavian Journal of Medicine and Science in Sports. 2002;12(6):365-370. 3. Costa MSS. Characteristics and prevalence of musculoskeletal injury in professional and non-professional ballet dancers. Brazilian Journal of Physical Therapy. 2016;20(2):166-175. 4. Abdolkhani Robab R. Designing an electronic personal health record for professional iranian athletes. Asian Journal of Sports Medicine. 2014;5(4). 5. Fulton J. Injuries presenting to a walk-in clinic at a summer dance intensive program: A three-year retrospective data analysis. Journal of Dance Medicine and Science. 2014;18(3):131-135. 6. Gamboa JM. Injury patterns in elite preprofessional ballet dancers and the utility of screening programs to identify risk characteristics. J Orthop Sports Phys Ther. 2008;38(3):126-136. 7. Anand Prakash Akilesh A. Medical attention seeking dance injuries: Systematic review of case reports. Physician and Sportsmedicine, The. 2017;45(1):64-74. 8. Kenny SJ. Risk factors for musculoskeletal injury in preprofessional dancers: A systematic review. Br J Sports Med. 2016;50(16):997-1003. 9. Hincapié CA. Musculoskeletal injuries and pain in dancers: A systematic review. Arch Phys Med Rehabil. 2008;89(9):1819-1829.

Relation between Childhood Weight Status and Hearing Loss: A Large Sample Cross-Sectional Study

1:32-1:42 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Relation between Childhood Weight Status and Hearing Loss: A Large Sample Cross-Sectional Study**
Abstract	Background/Knowledge Gap: Childhood obesity is a growing epidemic associated with numerous comorbidities. A seldom-examined issue is the risk of hearing loss, with existing analyses demonstrating increased rates of hearing loss in adolescents who are obese. The focus of this study was to evaluate hearing loss patterns among children younger than twelve in different weight groups in a large cross-sectional data set. Methods/Design: This is a cross-sectional database study with selected follow-up information. Data extracted from the AudGen database yielded 4799 children who were obese, 4013 overweight, and 8144 of normal weight. First available audiograms were analyzed for type and severity of hearing loss. For patients with more than one audiogram, the most recent audiogram was used to evaluate for change in hearing. In addition, common medical diagnoses were evaluated in association with hearing loss. Results/Findings: Overall rates of hearing loss among children who were overweight and obese were significantly higher than those in children with normal weight with adjusted odds ratios, respectively, of 1.13 ($p=0.004$) and 1.30 ($p<0.001$). Children with obesity were more likely to have sensorineural hearing loss (SNHL) with an adjusted ORs 1.48 ($p<0.001$) and mixed hearing loss with an adjusted OR of 1.54 ($p<0.001$). Lack of improvement over time correlated significantly with presence of obesity ($p<0.001$) and SNHL ($p<0.001$). Additionally, hypertension was associated with higher rates of hearing loss with an adjusted odds ratio of 1.52 ($p=0.005$). Conclusion/Implications: Children who are overweight and obese have an increased risk of hearing loss, particularly SNHL. Furthermore, hearing loss in the setting of obesity shows significantly less improvement over time. Our study shows that childhood obesity should be considered a risk factor for hearing loss, and hearing loss may deserve consideration as a component of metabolic syndrome in children.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Discuss the correlation between childhood weight status and risk of overall hearing loss, risk of sensorineural hearing loss, and progression of hearing loss.
References and Resources	1. Lalwani, AK, et al. (2013). "Obesity is associated with sensorineural hearing loss in adolescents." Laryngoscope 123(12):3178-84.

2. Ucler, R., et al. (2016). "The association of obesity with hearing thresholds in women aged 18-40 years." Endocrine 52(1):46-53 - https://www.ncbi.nlm.nih.gov/pubmed/26429780

Cerebrovascular outcomes in patients with infective endocarditis receiving anticoagulation therapy

1:42-1:52 pm

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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Cerebrovascular outcomes in patients with infective endocarditis receiving anticoagulation therapy**
Abstract	BACKGROUND: One of the most devastating complications of left sided infective endocarditis (IE) is stroke, occurring in ~10-35% of patients. There are a paucity of data evaluating the use of anticoagulation (AC) and current American Heart Association guidelines provide minimal guidance. In this study, our goals were to describe the outcomes and complications of AC in patients with a concomitant diagnosis of left sided IE. METHODS: All patients admitted to Wake Forest Baptist Medical Center with a diagnosis left sided IE between December 2011 and April 2018 were identified. The primary outcome measure was 10-week stroke occurrence. All strokes were radiographically confirmed. Relevant data were analyzed with univariate and multivariate analysis. RESULTS: Fifty patients were identified who received AC during treatment for IE. Of these, 17 (34%) experienced a stroke, 26.3% of which were hemorrhagic. Mitral valve involvement (68.4% vs 22.6%, $p < 0.01$), Staphylococcus aureus infection (57.9% vs 12.9%, $p < 0.01$), and intravenous drug use (36.8% vs 12.9%, $p = 0.04$) were significantly more common in patients with stroke. Stroke rates did not differ between patients receiving warfarin (63.1% vs 48.3%, $p = 0.31$), direct-acting oral anticoagulants (0% vs 16.7%, $p = 0.14$) or parenteral AC (41.1% vs 43.3%, $p = 0.65$) at time of admission. On multivariate analysis, S. aureus infection (OR = 6.5, 95CI 1.5-28.8) and mitral valve involvement (OR = 5.2, 95CI 1.3-20.9) were independently associated with stroke.

	CONCLUSIONS: Stroke rates were high in our patients with IE who received AC, but were comparable to rates of 10-35% previously cited in the literature. Risk of stroke was highest with S aureus infection, mitral valve involvement, and intravenous drug use. The type of AC did not differ between the stroke and non-stroke groups.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Discuss anticoagulation use in patients with left sided infective endocarditis. • Identify clinical variables associated with increased risk of stroke with left sided infective endocarditis.
References and Resources	1. Baddour LM, Wilson WR, Bayer AS, et al. Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications. A Scientific Statement for Healthcare Professionals From the American Heart Association. 2015. 2. Habib G, Lancellotti P, Antunes MJ, et al. 2015 ESC Guidelines for the management of infective endocarditisThe Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC)Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM). European Heart Journal. 2015;36(44):3075-3128. 3. Lee S-J, Oh S-S, Lim D-S, Hong S-K, Choi R-K, Park J-S. Usefulness of Anticoagulant Therapy in the Prevention of Embolic Complications in Patients with Acute Infective Endocarditis. BioMed Research International. 2014;2014:7. 4. Preston AH, Williams S, Archer J. A review of the role of anticoagulation for patients with infective endocarditis and embolic stroke. Clinical Case Reports. 2016;4(5):513-516. 5. Rasmussen RV, Snygg-Martin U, Olaison L, et al. Major cerebral events in Staphylococcus aureus infective endocarditis: is anticoagulant therapy safe? Cardiology. 2009;114(4):284-291. 6. Snygg-Martin U, Rasmussen RV, Hassager C, Bruun NE, Andersson R, Olaison L. Warfarin therapy and incidence of cerebrovascular complications in left-sided native valve endocarditis. European journal of clinical microbiology & infectious diseases : official publication of the European Society of Clinical Microbiology. 2011;30(2):151-157. 7. Tornos P, Almirante B, Mirabet S, Permanyer G, Pahissa A, Soler-Soler J. Infective endocarditis due to Staphylococcus aureus: deleterious effect of anticoagulant therapy. Archives of internal medicine. 1999;159(5):473-475.

What Can Interventional Radiology Do for Me? Clinical Interventional Radiology and the New Integrated Residency Model

1:52-2:02 pm

Presenting Author	Charles Hyman, MD, Department of Radiology, UT Health San Antonio, San Antonio, Texas
Disclosure	No relevant financial relationships to declare
Unlabeled Use?	No
Title	**What Can Interventional Radiology Do for Me? Clinical Interventional Radiology and the New Integrated Residency Model**
Abstract	Background: Interventional radiology (IR) is the first new medical specialty to be approved by the American Board of Medical Specialties since Emergency Medicine in 1991. This new

	board certification was the culmination of a decade of changes that have revolutionized the field. From the new clinical model of IR to the new integrated IR residency, the landscape of IR is entirely different in scope and practice. Design: This oral presentation will consist of the recent history and changes in practice of IR. It will highlight the new paradigm in a way that is practical and applicable to nearly all other specialties. Findings: We will cover the new clinical IR model which includes admitting privileges, outpatient clinics, and whole disease management, and highlight how the new integrated residency is teaching these principles. We will also cover the new procedures and common, underappreciated procedures that are in the IR armamentarium. Conclusions: Attendees will leave with a greater understanding of how the new model of IR can enhance patient care.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • gain confidence in integrating IR into patient care. • identify conditions that IR can contribute to care. • describe to patients the level of care IR can provide.

Association of Physical Activity and HbA1c in Light Vs Moderate Users

2:02-2:12 pm

Presenting Author	Satish Tadepalli, MD, MPH, Research Assistant, Department of Internal Medicine, Hackensack Meridian Health, Ocean Medical Center, Brick, NJ
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Co-authors Disclosure	No relevant financial relationships to declare
Title	**Association of Physical Activity and HbA1c in Light Vs Moderate Users**
Abstract	Introduction: Past studies have reported a decrease in HbA1c with an increase in physical activity. The aim of this investigation was to study the association of physical activity and glycosylated hemoglobin (HbA1c) in light and moderate drinkers using the data from National Health and Nutrition Examination Survey (NHANES). Methods: A secondary analysis of NHANES data collected between 1999-2006 was conducted. The data regarding HbA1c (LBXGH, %) was extracted from NHANES. Study participants were divided into two groups light drinkers (<3 drinks/week) and moderate drinkers (≥3- <14 drinks/week). Physical activity for all the participants was calculated based on the Metabolic Equivalent Unit (m-score). R (version 3.5) was used for statistical analysis of the data. Results: A total of 41,474 participants with a mean age of 31.64 ± 20.38 completed the survey Our sample consisted of 7610 light drinkers and 2254 moderate drinkers. Amongst the

	light drinkers, HbA1C and m-score (ANOVA, p-value <0.001) were inversely correlated (r -0.05, p-value <0.001) Similarly, in moderate drinkers HbA1C and m-score (ANOVA, p-value = 0.05) showed an inverse relation (r -0.04, p-value = 0.026). Discussion: Our study demonstrated an inverse relationship between physical activity and HbA1c being limited to light alcohol use. The protective effect of physical activity was lost in the group with moderate alcohol use. Thus, implying that moderate alcohol consumption may not be as beneficial and a need to ascertain the recommended safe amounts of alcohol use. One should not ignore the dose-dependent risk of alcohol consumption. Ultimately, randomized trials of all such lifestyle factors will be needed to answer these questions definitively.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Even minimal amounts of alcohol have an influence on the myriad of variables leading to cardiovascular disease and diabetes. • The protective effect of physical activity on systolic blood pressure diminishes with increasing amount of alcohol use.

Emergency Department Buprenorphine Program Reduces Repeat Emergency Department Visits and Inpatient Admissions

2:12-2:22 pm

Presenting Author	Lindsey K Jennings, MD, MPH, Assistant Professor, Department of Emergency Medicine, Medical University of South Carolina, Charleston, SC
Disclosure	No relevant financial relationships to declare
Co-authors	Carolyn Bogdon, MSN, FNP-BC, Director, Emergency Department Medication Assisted Treatment Program, Department of Psychiatry & Behavioral Sciences, MUSC, Charleston, SC, Ralph Ward, PhD, Assistant Professor, Public Health Sciences, MUSC, Charleston, SC, Steven Saef, MD, MS, Associate Professor, Emergency Medicine, MUSC, Charleston, SC
Co-authors Disclosure	No relevant financial relationships to declare
Title	**Emergency Department Buprenorphine Program Reduces Repeat Emergency Department Visits and Inpatient Admissions**
Abstract	Background: As more patients continue to struggle with opioid addiction and as death rates from overdose continue to rise, the medical community is working to connect patients to treatment for opioid use disorder (OUD). Emergency Departments (ED) across the country are starting up ED-based buprenorphine induction programs for patients with OUD following the landmark study by D'Onofrio et al. showing favorable outcomes for patients inducted on buprenorphine in the ED. However, many of these programs require additional ED staff to run smoothly, which requires funding. Potentially showing reduced ED visits and admissions for patients started on buprenorphine could be translated to healthcare cost savings and a favorable return on investment. Methods: We enrolled patients meeting eligibility criteria for OUD who presented to our urban, academic ED during the time period from December 11th, 2017-April 30th, 2018. Eligible patients were offered the opportunity to receive buprenorphine through an ED-based buprenorphine treatment program. Consenting patients were induced on buprenorphine

	and followed prospectively. The electronic medical records (EMR) of all subjects were queried for the number of ED visits and hospital admissions pre- and post- induction on buprenorphine from 30 days prior to their ED buprenorphine induction date until 30 days post buprenorphine induction. We compared the number of ED visits and inpatient admissions in the pre- and post- induction groups using McNemar's exact test for nominal data. The ED visit during which the buprenorphine induction occurred was excluded from both measures. Results: Twenty-four patients were inducted on buprenorphine during the study period. Patient ages ranged from 19 to 66 years (mean 33.6 years). Fifty-four percent of patients were female. Forty-two percent of patients were uninsured, 42% percent had private insurance, and 16% had Medicare or Medicaid. In our sample there were 8 ED visits during the 30 days prior to buprenorphine induction and 1 ED visit during the 30 days post buprenorphine induction indicating a strong trend toward a reduced frequency of ED visits in the post-buprenorphine induction group (p=0.07). There were 2 admissions in the pre-induction period and 0 admissions in the post-induction period; however, because of the limited number of admissions in the pre and post groups, testing for statistical significance was not possible. Of note, 6 of the 8 ED visits prior to buprenorphine induction and both inpatient admissions were for uninsured patients. Conclusions: We identified a strong trend towards decreased ED use by patients started on treatment with buprenorphine through an ED-based treatment program for OUD. Our sample size was too small to compare pre and post hospitalization rates. Though our findings did not reach statistical significance, we feel they are clinically significant and justify further investigation with a larger sample and over longer time periods. In this exploratory study, an ED-based medication-assisted treatment program using buprenorphine showed great promise for reducing the healthcare needs of patients with Opioid Use Disorder.
Learning Objectives	Upon completion of this lecture, learners should be better prepared to: • Discuss potential interventions and treatment for Opioid Use Disorder (OUD) in the Emergency Department (ED) setting • Describe the process of ED-based buprenorphine induction
References and Resources	1. D'Onofrio G, O'Connor PG, Pantalon MV, et al. Emergency Department–Initiated Buprenorphine/Naloxone Treatment for Opioid DependenceA Randomized Clinical Trial. JAMA. 2015;313(16):1636–1644. doi:10.1001/jama.2015.3474

Impact of Inpatient Anticholinergic Load on Subsequent Patient Disposition

2:22-2:32 pm

Presenting Author	Luis F. Zegada, MD, Geriatric hospitalist, Department of Medicine, Hendrick Medical Center, Abilene, TX
Disclosure	No relevant financial relationships to declare
Title	**Impact of Inpatient Anticholinergic Load on Subsequent Patient Disposition**

Abstract

Background.
Multitudinous studies have demonstrated associations between the anticholinergic burden and deleterious cognitive and functional outcomes, and possibly mortality. Medications with anticholinergic capacity are prescribed to elderly patients routinely for different therapeutic purposes, even in controlled settings such as the hospital. The aging process involves progressive homeostenosis, including brain structural changes, producing nerve cell loss, accumulation of lipofuscin, satellitosis, and an altered blood-brain barrier function. Collectively, these changes predispose the aging organism to medication side effects, with anticholinergics being one of the most offending drugs.

Methods and Design.
This is a single center, observational retrospective chart review study, which included patients 70 years and older, admitted to the acute inpatient medical setting of a community hospital. Principal investigator and collaborator reviewed 803 electronic medical records starting in 2013 up to 2015. IRB approval was granted on November of 2016 for study number 1170131. The main aim of the study was to evaluate the effects of anticholinergic medications in acutely hospitalized patients, on their subsequent disposition. Secondary outcomes were length of stay (LOS) and mortality. Patients were excluded from the study if they lived in residential care or other inpatient facilities. Patients placed on observation and outpatient status, were also excluded. Information collected from patients meeting inclusion criteria included: age, sex, major medical problems, inpatient medication regimen, circumstance of hospitalization, and LOS. The Charlson Comorbidity Index (CCI) was calculated. The Anticholinergic Cognitive Burden (ACB) was employed, as previous studies demonstrated its close association with adverse outcomes, specifically functional and cognitive dysfunction. The ACB was also the scale that best encompassed our site anticholinergic medications. Medications were ranked in those with low anticholinergic properties (score of 1), medium (score of 2), and high anticholinergic activity (score 3). A mean was calculated.

Characteristics	**Total Sample n=803**
Male, n (%)	293 (36.48)
Female, n (%)	510 (63.51)
Age, mean (SD)	80 (6.20)
CCI, mean (SD)	7.50 (4.18)
ACB, mean (SD)	1.62 (0.61)
LOS, mean (SD)	6.31 (1.40)
In-patient mortality, n (SD)	14 (0.67)

Statistical analysis was performed using SPSS Version 25. Data were checked for normality using the Shapiro-Wilk test. Correlation between variables was determined by calculating Spearman's correlation coefficients. A level of significance was set to 0.05 for all P values. Multiple linear regression analyses were conducted to determine predictors associated with post-acute discharge/disposition, LOS, and mortality.

Results

The study included 803 community dwelling patients, with an overall female predominance (63%), and a mean age of 80 +/- 6 years, and a CCI mean of 7.50. We found that exposure to drugs with anticholinergic burden had no effect on discharging patient to sub-acute units, such as inpatient rehabilitation (p .117; OR 5.5; CI -3.4-14.49), SNF (p.248; OR 21; CI -3.6-46.69), nursing home (p.193: OR 1.16; CI -0.49-2.82), or hospice (p.282; OR 4.42; CI -0.63-9.48). No association was found between these drugs and LOS (p.098; OR 7.54; CI 4.85-10.23), or in-patient mortality (p.219; OR 1.94; CI -.96-4.84) either.

Conclusions

Various studies have encountered different associations between anticholinergic drugs and the outcomes of interest. Our study shows in a consistent manner no statistically significant relationship. Some caveats apply, the main one being the relatively low anticholinergic load, which reflects the geriatric style of practice of the facility. Another important consideration is the pharmacokinetics and pharmacodynamics at play. A simpler solution would entail obtaining blood samples to measure anticholinergic levels in serum; however, this almost always measures the peripheral and not the central anticholinergic properties of these drugs. Also, the single center design limits its generalization. Other important aspects to consider are the patient's baseline functional and cognitive capabilities, and their social capital. Lastly, even though our best effort was given trying to capture most of the offending drugs with the ACB, a new and unifying scale should be designed considering new medications with anticholinergics properties.

Acknowledgment

The author thanks Greg Perry, Pharmacy Clinical Manager at Hendrick Medical Center.

Learning Objectives

Upon completion of this lecture, learners should be better prepared to:

- Identity the major determinants of inpatient disposition and inpatient mortality
- Describe medications potentially inappropriate for geriatric patients
- Measure medications anticholinergic load

References and Resources

1. Anticholinergic burden quantified by anticholinergic risk scales and adverse outcomes in older people: a systematic review. Salahudeen et al. BMC Geriatrics (2015) 15:31