

our participants to a healthier lifestyle, they could maintain lower blood pressure without requiring medication.

19144

Effect of Mesalamine on Metabolic Syndrome risk factors in Ulcerative Colitis Patients: A Retrospective study

Eliseo Castillo, Graziella Rangel Paniz, Fray Arroyo-Mercado, Christina L. Ling, Harry Snow and Eunice Choi
University of New Mexico Health Sciences

ABSTRACT IMPACT: Currently, there are no medications to treat metabolic syndrome and our research sheds light on a potential therapeutic that could prove beneficial for this disease that affects one-third of the US population. **OBJECTIVES/GOALS:** Our goal was to determine the role of the GI tract in MetS, specifically how approved GI-directed medications affect metabolic parameters. Thus, we assessed the effects of mesalamine, a common therapeutic utilized to treat mild to moderate UC, on metabolic parameters in comorbid UC and MetS patients. **METHODS/STUDY POPULATION:** This was a retrospective study with data extracted from Cerner's HealthFacts database across the United States (US). Inclusion criteria included adult patients (≥ 18 years old) with a diagnosis of UC and at least 3 of the 5 metabolic risk factors which included i) dyslipidemia, ii) low HDL, iii) hyperglycemia, iv) hypertension, and v) increased abdominal obesity as determined by elevated BMI. A total of 6197 patients across the US between the years of 2007 and 2017 were included. We pulled patients who had a mesalamine prescription within ± 7 days of an encounter in which they were diagnosed with UC (index date) and the closest values to 3 and 12 months after the index date. Mean age for patients was 53.8 ± 19.9 , with predominance of female sex (52.9%) and white race (78.0%). **RESULTS/ANTICIPATED RESULTS:** There was an observed reduction in BMI, fasting glucose, and increase in HDL levels post start of mesalamine treatment along with a decrease in inflammatory markers (ESR and CRP) ($p < 0.001$). **DISCUSSION/SIGNIFICANCE OF FINDINGS:** The GI tract contributes to numerous disorders associated with metabolic dysfunction. Our retrospective analysis revealed mesalamine treatment in comorbid UC and MetS patients improved metabolic parameters, providing evidence that targeting the GI tract in these individuals potentially improves dysregulated metabolic processes.

29120

Classification of Individuals Across the Spectrum of Problematic Opioid Use: Clinical Correlates and Longitudinal Associations with Mortality

Victoria Powell¹, Colin MacLeod², Lewei A. Lin³, Amy S.B. Bohnert⁴ and Pooja Lagisetty²

¹University of Michigan Division Geriatric and Palliative Medicine and VA Ann Arbor Healthcare System Geriatric Research, Education and Clinical Center; ²University of Michigan Department of Internal Medicine and Center for Clinical Management and Research, Ann Arbor VA Hospital; ³University of Michigan Department of Psychiatry and Center for Clinical Management and Research, Ann Arbor VA Hospital; ⁴University of Michigan Department of Psychiatry and Department of Anesthesiology, Center for Clinical Management and Research, Ann Arbor VA Hospital

ABSTRACT IMPACT: A better understanding of the spectrum of problematic opioid use will lead to more targeted treatments. **OBJECTIVES/GOALS:** It is unclear how to approach treatment of individuals with problematic opioid use who do not clearly meet

criteria for opioid use disorder (OUD). We aim to characterize clinical, demographic, and medication use at time of identification of problematic opioid use across the spectrum as well as identify predictors of poor outcomes. **METHODS/STUDY POPULATION:** A national sample of Veterans coded as having opioid abuse or dependence were previously categorized as (1) high likelihood of OUD, (2) limited aberrant opioid use, and (3) prescribed opioid use with no evidence of aberrant use based on chart review. We will describe how individuals in these three categories differ demographically and clinically. We will then use a trained binary logistic regression model to predict whether individuals with limited aberrant opioid use more closely resemble category (1) or (3). Cox proportional hazards models will be used to predict all-cause mortality, suicide-related mortality, opioid-overdose related mortality, and hospitalization over a three-year period using the three categories as predictors and adjusting for relevant covariates. **RESULTS/ANTICIPATED RESULTS:** We anticipate that Veterans with a high likelihood of OUD will be more likely to experience homelessness and have more psychiatric comorbidities (especially PTSD). We hypothesize that Veterans with prescribed opioid use and no evidence of misuse will be significantly older, more likely to have disability, medical comorbidities (ie., chronic pain, cancer), more prescriptions for non-opioid analgesics, and be prescribed higher doses of opioids. Using a trained binary logistic regression model, we predict that Veterans with limited aberrant opioid use will more closely resemble Veterans with a high likelihood of OUD. We expect that all categories of problematic opioid use will have a high risk of mortality, with a high likelihood of OUD associated with the greatest risk of premature death. **DISCUSSION/SIGNIFICANCE OF FINDINGS:** Identifying and better characterizing individuals with limited aberrant opioid use may be an important opportunity to intervene prior to development of severe OUD. Future research will focus on targeting interventions to this population, which may have specific needs that are separate from classic OUD or simple pain-related opioid dependence.

35336

Effect of Nuclear Soluble Adenylyl Cyclase (sAC) on Melanoma Treatment Response

Jakyung Bang¹, Marek M. Drozd¹, Lauren Dong², Taha Merghoub² and Jonathan H. Zippin¹

¹Joan and Sanford I. Weill Medical College of Cornell University; ²Memorial Sloan Kettering Cancer Center

ABSTRACT IMPACT: Our data identify a novel candidate for combination strategy in melanoma treatment, and can inform clinicians in their decision-making process regarding therapeutic intervention for melanoma patients. **OBJECTIVES/GOALS:** Soluble adenylyl cyclase (sAC) is a novel source of cyclic AMP (cAMP). In melanoma, nuclear sAC localization has an established diagnostic utility and we newly found that nuclear sAC functions as a tumor suppressor by inhibiting Hippo pathway, which affects treatment response. Here, we examine the effect of nuclear sAC on melanoma treatment response. **METHODS/STUDY POPULATION:** We developed a doxycycline inducible system for increasing sAC activity only in the nucleus. We assessed whether nuclear sAC activity affects treatment response, using BRAFV600 human melanoma cell lines. Using a clonogenic assay, we examined how nuclear sAC activity affects growth inhibition in the presence of a BRAF inhibitor, vemurafenib. Our findings will be confirmed in vivo using tumor xenografts. After tumor formation in NSG mice, mice will be randomized to be fed

normal or doxycycline chow for nuclear sAC induction, then subdivided to receive vehicle or vemurafenib to examine the effect of nuclear sAC activity on treatment response in vivo. We will also compare melanoma biopsies collected before and after treatment with BRAF inhibitors to assess how nuclear sAC staining affects tumor morphology in vivo. RESULTS/ANTICIPATED RESULTS: So far, nuclear sAC activity has rendered SkMel178 and M263 cell lines more susceptible to vemurafenib. Cell viability was inversely correlated both with vemurafenib and with doxycycline concentration. Cell viability after vemurafenib treatment was dramatically reduced when nuclear sAC was activated. It appears that nuclear sAC enhances the sensitivity of BRAF mutant melanomas to vemurafenib in vitro. We anticipate that xenografts of these cells in mice will be more susceptible to vemurafenib when nuclear sAC is activated. We also anticipate that positive nuclear sAC staining will correlate with a favorable response to therapy. DISCUSSION/SIGNIFICANCE OF FINDINGS: Targeted therapy with BRAF inhibitors is used in late-stage melanomas, but its use is limited as patients invariably acquire resistance. Here, we identified nuclear sAC activation as a novel candidate for combination strategy. Our data will also inform clinicians how best to integrate this biomarker into their decision-making regarding therapy.

47629

Contribution of Auditory Function to Falls Risk in Adults with Vestibulopathy

Ryan J. Huang¹, Carl F. Pieper², Heather E. Whitson³, Douglas B. Garrison⁴ and Kristal M. Riska⁴

¹Duke University School of Medicine; ²Duke University School of Medicine, Division of Biostatistics and Bioinformatics; ³Duke Center for the Study of Aging and Human Development; ⁴Duke University School of Medicine, Department of Head and Neck Surgery & Communication Sciences

ABSTRACT IMPACT: Findings from this study will better characterize the role of hearing loss in falls risk among patients with vestibulopathy and identify groups that are most at risk for falls. OBJECTIVES/GOALS: Vestibular dysfunction and hearing loss are independent risk factors for experiencing falls. The purpose of this study is to determine the extent, if any, to which hearing loss contributes to falls in patients with concomitant vestibular dysfunction presenting to a specialty vestibular clinic. METHODS/STUDY POPULATION: A retrospective chart review of patients ≥ 18 years who underwent vestibular evaluation at our institution from June 1, 2015 to October 7, 2020 will be conducted. Patients who underwent vestibular evaluation also received audiologic evaluation and degree of hearing loss will be characterized by the 4-frequency pure-tone average (0.5, 1, 2, and 4 kHz) of the better hearing ear. Falls status will be determined by the response to the following question administered at clinic-check in, 'Have you fallen in the last 90 days?' Demographics, comorbidities, and falls-associated medications will also be collected. RESULTS/ANTICIPATED RESULTS: A total of 3,265 unique patients who underwent vestibular evaluation in the study time period were identified. Patients will be categorized into discrete groups (benign paroxysmal positional vertigo, unilateral hypofunction, bilateral hypofunction, central dysfunction, and normal) based on laboratory results. Regression models will be developed to evaluate the potential association between degree of hearing loss and falls in patients with different types of vestibular dysfunction, while adjusting for demographics, comorbidities, and falls-associated medications. DISCUSSION/SIGNIFICANCE OF

FINDINGS: Findings from this study will better characterize the role of hearing loss in falls risk among patients with vestibulopathy and identify groups that are most at risk for falls. This study may potentially indicate the importance of hearing evaluation in the work-up of patients with vestibulopathy.

53746

Body Composition and Metabolic Profiles in Infants of Diabetic Mothers (IDM) as Predictors of Hunger Signaling Gene Expression

Dara Azuma MD¹ and Jill Maron MD MPH²

¹Tufts Medical Center; ²Mother Infant Research Institute

ABSTRACT IMPACT: This study aims to advance the understanding of the biological mechanisms associated with feeding disturbances in infants born to diabetic mothers through non-invasive salivary gene expression analyses and body composition measurements at birth. OBJECTIVES/GOALS: To determine if non-invasive salivary gene expression analyses and body composition measurements at birth could elucidate biological mechanisms associated with aberrant feeding behaviors and disrupted metabolic profiles commonly seen in infants born to diabetic mothers. METHODS/STUDY POPULATION: This prospective cohort study enrolls subjects born at ≥ 35 weeks' gestation without a history of intrauterine growth restriction or major congenital anomalies. The diabetic cohort is defined as infants born to mothers with gestational diabetes or type 2 diabetes. The primary outcome is salivary expression of the hunger signaling genes, AMPK and NPY2R. Secondary outcomes include infant body composition measurements, obtained by skin-fold measurement and/or air displacement plethysmography, and salivary expression of the adipokines, leptin, ghrelin, and adiponectin. Multiple logistic regression will be used to determine which factors are associated with AMPK and NPY2R expression. RESULTS/ANTICIPATED RESULTS: We propose that poor oral intake seen in infants of diabetic mothers may be due to alterations in the expression of hunger signaling genes (decreased expression of AMPK; increased expression of NPY2R) resulting in a diminished feeding drive in these large for gestational age infants. In addition, infant adiposity and the expression of genes involved in the adipoinular axis will be inversely proportional to feeding volume intake. Namely, increased neonatal fat mass will be associated with increased expression of leptin and decreased expression of ghrelin and adiponectin. DISCUSSION/SIGNIFICANCE OF FINDINGS: Infants of diabetic mothers are at higher risk of poor oral feeding in the newborn period. This study aims to elucidate the link between neonatal body composition, adipoinular axis, and hunger signaling to explain this unique feeding phenotype.

60558

Non-Suicidal Self Injury in Military Veterans with PTSD: An Ecological Momentary Assessment Study

Dr. Lorig Kachadourian¹, Dr. Tami Sullivan² and Dr. Robert Pietrzak¹

¹VA Connecticut Healthcare System and Yale University; ²Yale University

ABSTRACT IMPACT: This study will help determine whether ecological momentary assessment is feasible in assessing changes in negative affect and the occurrence of non-suicidal self-injury (NSSI) in military Veterans with post-traumatic stress disorder; if so it will allow for further examination of correlates of NSSI which will inform