motivation and consistent exercise are warranted. Purpose: This study assessed differences in psychological and behavioral outcomes in young Black women in a culturally-tailored and theory-based resistance exercise (RE) study. METHODS/STUDY POPULATION: Women (M= 22.7 ± 3.6y) were randomized to the standard exercise group (SEG; n= 6) or motivational exercise group (MEG; n= 8), and completed 10 weeks of RE with a Black woman trainer and 11 weeks of unsupervised RE. The MEG discussed and received text messages about exercise education, self-regulation, autonomy, and competence. Motivation was measured by the Behavioral Regulation in Exercise Questionnaire-3, the Physical Activity Self-Regulation Scale-12 measured self-regulation, and the Basic Psychological Needs in Exercise Scale measured competence, autonomy, and relatedness. Adherence was calculated as # of completed/total sessions, and retention was the percent of women who completed ≥2 days/week of unsupervised RE. An ANOVA and Bonferroni post hoc analyses were used to determine significant findings. RESULTS/ANTICIPATED RESULTS: Significant time effects were found for intrinsic motivation (Λ = .691, F [11, 2]= 17.494, p< .001), basic psychological needs (Λ = .951, F [11, 2]= 22.691, p< .001), and self-regulation (Λ = .881, F [10, 2]= 40.942, p< .001), but no main interactions. Significant increases occurred from pre-testing to 3-mo follow-up for intrinsic motivation (pre: 1.80 ± .90 vs 3mo: 2.71 ± .63, p= .002), competence (pre: 1.98 ± .93 vs 3mo: 3.55±.81, p< .001), autonomy (pre: 2.14 ± .75 vs 3mo: 3.81 ± .74, p< .001) relatedness (pre: 2.78±1.60 vs 3mo: 4.32 ± .58, p< .001), and self-regulation (pre: 18.4 ± 2.88 vs 3mo: 33.79 ± 3.11, p< .001). Adherence rates for both groups were 93%. Retention rates were 33% for SEG and 25% for MEG. MEG had 38% complete RE 1 day/week opposed to none in SEG. DISCUSSION/SIGNIFICANCE: Ten weeks of culturally-tailored, supervised RE showed efficacy in significantly increasing motivation and behavioral practices to help sustain exercise. Future research should further explore strategies to use during unsupervised training to help increase exercise adherence in young Black women.

369

Investigating the impact of bariatric surgery on metabolic mechanisms that promote obesity-associated inflammation in subjects with and without Type 2 Diabetes

Samantha Hart, Dr. Joshua Steiner, Lance Johnson and Barbara Nikolajczyk
University of Kentucky

OBJECTIVES/GOALS: This project will provide novel insights into mechanism(s) by which differences in inflammation develop & resolve, or fail to resolve, in metabolically different groups of bariatric surgery patients determined by Type 2 Diabetes status. My work may uncover unique differences between cohorts, encouraging development of personalized medicine. METHODS/STUDY POPULATION: I analyzed human blood samples collected before and 3, 6, & 12 months after bariatric surgery at the University of Kentucky through an established tissue bank. Subjects hadnormal glucose tolerance, pre-diabetes, or Type 2 Diabetes, based on HbA1c%. Iisolated peripheral blood mono nuclear cells & will comparecytokine profiles among cohorts across all time points. I will define & perturbmetabolic differencesin immune cells among cohorts & across time via isotope tracing, fuel source limitation, and metabolite inhibition. This will determine causal relationships between cytokine profiles & immune cell metabolism. RESULTS/ANTICIPATED RESULTS: I anticipatecytokine profiles, a functional output of immune cells, will differ among cohorts pre-surgery, and that this difference will diminish post-surgery. Differencesmay be insignificant by the 12 month time point. I also anticipate differences in fuel usage and metabolite productionin immune cells among cohorts pre-surgery, and that these differences only partially resolve post-surgery to poise immune cells for continued chronic inflammatory action. I hypothesize that T2D status has a lasting impact on immune cell function and fuel usage patterns, and will continue to supportchronic inflammation following short term T2D remission and longer-term weight loss. DISCUSSION/SIGNIFICANCE: There has been an alarming increase in obesity and its comorbidities over recent decades, and inflammation is a known supporter of T2D. The anticipated rewiring of immune cell metabolism post-surgery, if incomplete, may poise subjects forweight regain and T2D recurrence.

370

Point-of-Service Salivary Microbiome Analysis in the Prevention and Detection of Oral Premalignant Lesions

Dana R. Weikel, Ahmed S. Sultan, John Basile, Tao Ma and Timothy F. Meiller
University of Maryland Baltimore

OBJECTIVES/GOALS: Our aim is to establish soluble salivary biomarkers indicative of increased risk of oral premalignancy to be used in a point-of-service technology. Our goal is to non-invasively assess risk level for premalignancy by characterizing a molecular signature pattern that can be applied to such a diagnostic tool at routine dental or medical visits. METHODS/STUDY POPULATION: Adult patients 18 years of age and older who are non-smokers and patients of the University of Maryland School of Dentistry Oral Medicine Clinic and have been diagnosed with oral premalignancy (proliferative verrucous leukoplakia) are eligible. Exclusion criteria include history of immunosuppression or immune compromise; use of antifungal, antibiotic, and/or antiviral medications within the past three months; and gross dental disease. Serial unstimulated saliva samples will be collected at baseline or diagnosis of oral premalignancy, 6 months and 12 months. Solubility testing will be completed to determine whether malignant markers such as EGFR/mTOR/PI3K/p53 are soluble in saliva, and patient samples will be analyzed by ELISA and compared to appropriate controls. RESULTS/ANTICIPATED RESULTS: We anticipate demonstrating increased activity of molecular pathways known to be involved in malignant transformation, such as EGFR/mTOR/PI3K/p53, or increased burden of select microbial pathogens to be associated with increased risk of oral premalignancy in the form of proliferative verrucous leukoplakia. Preliminary sensitivity and specificity testing of the identified markers will provide additional insight to the utility of a diagnostic tool with salivary specimen. Therefore, the microbiome and/or molecular profile proposed from these results will serve as a translational application to development of future point-of-service test devices to be used in the prevention and detection of oral premalignant lesions. DISCUSSION/SIGNIFICANCE: Oral cancer is the sixth most common cancer worldwide, and presents challenges in its diagnosis and clinical management. Later diagnosis is associated with poorer patient outcomes—therefore, a molecular and microbiome profile that may be used in a noninvasive diagnostic test technology would prove beneficial to providers and patients.

https://doi.org/10.1017/cts.2024.326