### SUN-LB131

**Association of Receptor for Advanced Glycation End Product (RAGE) Gene Polymorphisms and Serum Levels of Soluble RAGE (sRAGE) with Metabolic Syndrome (MS) in Mexican Population**

**Background.** RAGE, a multi-ligand type 1 transmembrane glycoprotein belonging to the immunoglobulin superfamily, transduces biological signals associated with chronic cellular stress related with inflammatory responses, tissue damage, chronic and degenerative diseases (1). sRAGE is a variant of RAGE derived from cell surface cleavage mechanisms that could potentially act as endogenous inhibitors of RAGE activity (2). **RAGE** gene is highly polymorphic, with polymorphisms that could be responsible for disease development, like -374T/A (rs1800624) and -429T/C (rs1800625) polymorphisms. These are located in the promoter region and have marked effect on transcriptional activity. However, there have been conflicting findings between the potential association of **RAGE** polymorphisms and the development of diseases. In this work, we evaluated -374T/A (rs1800624) and -429T/C (rs1800625) polymorphisms and measured serum sRAGE levels in Mexican population with MS.

**Methods.** A group of healthy men without any component of the MS (n=80), and a group of men with the MS (n=80) according to the harmonized criteria for the MS were included in this study. Blood genomic DNA was isolated and genotyped by RT-PCR for the -374T/A and -429T/C polymorphisms of **RAGE** gene. sRAGE in serum was measured with an ELISA kit. **Results.** The studied population complied with the Hardy-Weinberg equilibrium (p=0.58 for -374T/A, and p=0.79 for -429T/C). Differences were observed in all the components of the MS between the two groups (MS vs. healthy subjects, p<0.000). However, there were no differences in the population according to their genotype for the -374T/A (p=0.57) and -429T/C (p=0.59) polymorphisms. There was no difference in glucose (p=0.22), triglycerides (p=0.99), and cHDL (p=0.88) levels, or waist circumference (p=0.84) according to the genotype for the -374T/A polymorphism. The same was observed for the -429T/C polymorphism (glucose p=0.57, triglycerides p=0.69, cHDL p=0.77, waist circumference p=0.99). No association of MS with the -374T/A nor -429T/C polymorphism was found. There were no differences between groups in circulating sRAGE levels (p=0.132). **Conclusion.** According to our results, the -374T/A and -429T/C polymorphisms of **RAGE** gene are not associated with the MS in Mexican population, and have no influence on serum sRAGE levels. Some other factors could be playing a role for the high prevalence of the MS, such as eating habits. Gender should be taken into consideration, for our study was performed in men exclusively. **References.** (1) Serveaux-Dancer M et al., Dis Markers. 2019 Feb 4;2019:2067353. (2) Schmidt AM. Vascul Pharmacol. 2015 Sep;72:1-8.

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### SUN-LB42

**The Sexually Dimorphic Response of the Mouse Adrenal Inner Cortex to Thyroid Hormone Treatment**

**Huifei Sophia Zheng, MD, Qiongxia Lyu, PhD, Chen-Che Jeff Huang, DVM, PhD**

1^1^ AUBURN UNIVERSITY, Auburn University, AL, USA, 2^2^ Auburn University, Auburn University, AL, USA.

**Methods.** A group of healthy men without any component of the MS (n=80), and a group of men with the MS (n=80) according to the harmonized criteria for the MS were included in this study. Blood genomic DNA was isolated and genotyped by RT-PCR for the -374T/A and -429T/C polymorphisms of **RAGE** gene. sRAGE in serum was measured with an ELISA kit. **Results.** The studied population complied with the Hardy-Weinberg equilibrium (p=0.58 for -374T/A, and p=0.79 for -429T/C). Differences were observed in all the components of the MS between the two groups (MS vs. healthy subjects, p<0.000). However, there were no differences in the population according to their genotype for the -374T/A (p=0.57) and -429T/C (p=0.59) polymorphisms. There was no difference in glucose (p=0.22), triglycerides (p=0.99), and cHDL (p=0.88) levels, or waist circumference (p=0.84) according to the genotype for the -374T/A polymorphism. The same was observed for the -429T/C polymorphism (glucose p=0.57, triglycerides p=0.69, cHDL p=0.77, waist circumference p=0.99). No association of MS with the -374T/A nor -429T/C polymorphism was found. There were no differences between groups in circulating sRAGE levels (p=0.132). **Conclusion.** According to our results, the -374T/A and -429T/C polymorphisms of **RAGE** gene are not associated with the MS in Mexican population, and have no influence on serum sRAGE levels. Some other factors could be playing a role for the high prevalence of the MS, such as eating habits. Gender should be taken into consideration, for our study was performed in men exclusively. **References.** (1) Serveaux-Dancer M et al., Dis Markers. 2019 Feb 4;2019:2067353. (2) Schmidt AM. Vascul Pharmacol. 2015 Sep;72:1-8.
Background: Among growth hormone (GH) isoforms, the 22kDa (22kD) is the most abundant (~90%), followed by 20 kDa GH (20kD) ~10%. 22kD has known diabetogenic potential by increasing insulin resistance. Although of equal somatotropic activity, 20kD has been suggested to be less diabetogenic. Under physiological conditions, both isoforms are largely secreted in parallel, but data on regulation of both isoforms in the context of glucose load and utilization are scarce.

Methods: We measured 20- and 22kD GH in fasted healthy adult females during two scenarios: (A) Premenopausal females (n = 25; age (mean (range)) 27.8 (22-52), body mass index (BMI) (kg/m²) 21.8 (18.2-27.3), insulin sensitivity index (ISI) 7.9 (3.2-19.7) underwent oral glucose tolerance test (OGTT, 75g, sampling at baseline, 30, 60, 90, 120 and 180 minutes (min)); (B) Premenopausal females within 1 year postpartum (n=28, age 36 (29-44), BMI 23.7 (19.4-41.3), ISI (7.2- (2.4-13.2)) performed moderate intensity exercise (fixed workload 60% VO2max, sampling at -15, -10, -5, 0, 3, 6, 10, 15, 20, 30 and 45 min and after 5, 10 and 15 min of resting). 20- and 22kD were measured by specific immunoassays (22kD: IDS-iSYS GH CLIA, limit of quantification (LoQ) 0.05 ng/mL; 20kD: in-house immunofluorometric assay (IFMA), LoQ 0.025 ng/mL), and the 20/22kD ratio was calculated.

Results: As expected, both, 22kD and 20kD concentrations decreased after glucose load. However, the 20/22kD ratio increased significantly (Friedman test, P = 0.04, Kendall’s W 0.69, Conover’s post test: 0 vs. 60, 90 and 120 min; P = 0.018, 0.032 and 0.018, respectively). After 120 min, 20/22kD returned to baseline. With exercise, both, 20- and 22kD increased. In contrast to glucose load, the 20/22kD ratio significantly decreased (Friedman test, P = 0.025, Kendall’s W 0.59, Conover’s post test: 10 vs. 10 and 20 min; P = 0.015 and 0.022, respectively), reaching a nadir at 10 min and returning to the baseline after cessation of exercise (20 vs. 50, 55 and 60 min; P = 0.02, 0.005 and 0.016, respectively.

Conclusion: Glucose load and exercise lead to opposite changes in the 20/22kD ratio, suggesting a tight regulation by glucose demands. We speculate that the putative less diabetogenic isofrom (20kD) is preferentially secreted during situations of glucose excess, while the opposite happens during exercise, when increased energy demands are associated with predominant upregulation of the more diabetogenic 22kD GH.

Bone and Mineral Metabolism
BONE DISEASE FROM BENCH TO BEDSIDE
Revisit Serum Calcium Correction
Yulong Li, MD MS1, JunJia Zhu, PhD1, Jenny Blau, MD2, William F. Simonds, MD3.
1Penn State University College of Medicine, Hershey, PA, USA, 2National Institute of Health, Bethesda, MD, USA, 3NIH - NIDDK, Bethesda, MD, USA.

SUN-LB67
Context: The serum calcium level is one of most routinely ordered tests in clinical practice. Many factors can affect calcium level and its interpretation. There are challenges and barriers in applying calcium correction formulas to every-day practice. Objective: Revisit correlation between total and ionized calcium levels, and dependence of serum calcium on albumin, pH and creatinine levels. Methods: This study included 1537 subjects enrolled in a parathyroid disease clinical protocol. We examined calcium and relevant biochemistry tests collected simultaneously and repetitively over consecutive years. Histograms, repeated measures correlation, correlation plots, and liner regression plots were used to analyze and visualize the data. Results: We found that: 1) directly measured total serum calcium and ionized calcium had excellent correlation and dependence with p-value=2.2e-16, repeated measures correlation coefficient (rmcorr)=0.919, and 95% interval (CI) = 0.916 to 0.922; 2) there was a low dependence between total serum calcium and albumin levels (rmcorr=0.454, 95% CI = 0.433 to 0.474), a low dependence between ionized calcium and pH levels (rmcorr=0.309, 95% CI= -0.326 to -0.292), and no dependence between total calcium and creatinine levels (rmcorr=0.026 95% CI=0.012 to 0.040); 3) using the commonly applied correction formulas, to either adjust total calcium based on albumin levels or else adjust ionized calcium based on pH levels, did not improve dependence among them. Conclusions: We therefore suggest using directly measured total serum calcium and/or ionized calcium level to assess clinical calcium status in general patients tested for parathyroid related disorders.

Neuroendocrinology and Pituitary
CASE REPORTS IN SECRETORY PITUITARY PATHOLOGIES, THEIR TREATMENTS AND OUTCOMES

Novel Genetic Variant of Carney Complex With Acromegaly
Elizabeth Cristiano, MD, John M. Miles, MD, Rajib Bhattacharya, MD.
University of Kansas School of Medicine, Kansas City, KS, USA.

SAT-LB48
Objective: To describe an uncommon case of Carney complex with acromegaly secondary to pituitary microadenoma with a novel genetic variant. Background: Carney complex (CNC) is a rare autosomal dominant syndrome characterized by myxomas, pigmented skin and mucosal lesions, as well as multiple endocrine tumors. The etiology is an inactivating mutation of the regulatory subunit type 1A of the cAMP-dependent protein kinase (PRKAR1A). Recently, additional CNC pathologic variants in PRKACA and PRKACB have been identified.[1] Elevated growth hormone (GH) and IGF-1 levels are sometimes seen in patients with CNC, thought to be secondary to somatotroph hyperplasia. However, less than one fifth of patients with CNC have clinical acromegaly. [2] Case: Here we describe a 35-year-old female diagnosed with atrial myxoma after presenting with fatigue in her 20s. After her fatigue failed to resolve following surgical excision, further investigation revealed an ovarian tumor. The patient sought care in Mexico where she underwent radiation for presumed ovarian malignancy. Review of the ovarian lesion biopsy at a university hospital later revealed benign melanocyte proliferation. She subsequently developed amenorrhea and hirsutism which prompted referral to endocrinology.