A3.3: Physiological and Cognitive Stressors Associated with Glucose Regulation in Menopause

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Presentation Preference: Session Presentation

Abstract Categories:
Research Interest Groups (RIGs): Biobehavioral

Abstract:
Introduction: The purpose of this paper is to examine glucose metabolism changes associated with acute and chronic stress during menopause.

Method(s): A time series design was used to examine the relationship between menopausal hot flashes and blood glucose. A sample of healthy, symptomatic postmenopausal women ages 45-60 was recruited for this experimental study. The sample was balanced by ethnicity and BMI. Screening procedures for all participants included biomarkers for abnormal glucose metabolism including fasting blood glucose, two-hour glucose tolerance testing, and HgbA1c. Analysis of the chronic stress indicators was provided by a secondary analysis of the screening data. In addition, the effect of an acute cognitive stressor on hot flash frequency was examined in a pilot test of a study subsample (n = 6).

Results: All 61 volunteers who completed laboratory screening were included in this analysis. Biomarkers of abnormal glucose metabolism in women reporting surgical menopause included higher BMI, HgbA1c and two-hour glucose tolerance test results. While all volunteers reported themselves as “healthy” during initial screening, significant differences for African American women had the highest average BMI, lowest FSH (F=3.38, p<.04), highest FBS (F=3.1, p < .050) and HgbA1c (F=7.728, p < .001). Surgically menopausal women demonstrated higher 2-hour glucose tolerance (F=5.9, p < .020) and HgbA1c (F=11.24, p < .002). In addition, African American women specifically were more likely to report surgical menopause than Caucasian women (Chisq = 12.46, p < .005). Exposure to acute stress (Stroop Color Word Test) precipitated hot flashes within 3 minutes in symptomatic women.
Discussion & Conclusions: Preliminary evidence indicates that chronic activation of the sympathetic nervous system and the HPA axis for women with surgical menopause and minority status significantly affects peripheral glucose metabolism. Evidence for a menopausal model of diminished capacity to up-regulate glucose transporters during exposure to acute stress is provided. Further study of the pathways of stress and glucose requirements in the CNS is needed. Support: R15NR009023-01A2

Abstract History:
This abstract has not been presented or accepted for presentation in whole or in part at the SNRS or other scientific meeting.

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