Body Mass Index is Associated with Progression of Carotid Intima-Media Thickness in Black, but not in White Young Adults: The Bogalusa Heart Study.

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Introduction: Increased Carotid intima-media thickness (CIMT) has been shown to be predictive of future cardiovascular events in middle-age and older adults, with this outcome being detrimentally enhanced by increased body adiposity -as measured by Body Mass Index (BMI).

Hypothesis: We assessed the hypothesis that the association between BMI and CIMT varies among race (black/white) and gender groups.

Methods: B-mode ultrasound images of the far walls for both carotid arteries were obtained from 676 community-based subjects, aged 24 to 43 years, enrolled in the Bogalusa Heart Study (70% white and 43% male). CIMT, BMI and traditional cardio metabolic (CM) risk factors were measured at baseline, and a second set of CIMT imaging was performed at follow-up after an average of 6.9 years. Composite CIMT was considered for the analyses. Progression of IMT was defined as an increase of IMT between examinations, that was greater than the upper endpoint of the 95% confidence interval of the mean difference between the baseline samples and their blind duplicates.

Results: BMI was the only significant predictor of progression of CIMT within the general population (Odds Ratio [OR]= 1.062 p=0.0031), after controlling for age, race, sex and traditional CM risk factors. In race-specific analyses, BMI significantly influenced the odds of CIMT progression only in the black subpopulation (OR= 1.092 p<0.0001). Gender-specific analyses showed independent association of these parameters in females only (OR= 1.063 p=0.0179).

Conclusions: In conclusion, these findings help support the proposed hypothesis of racial and gender divergences in the association between BMI and progression of CIMT, which suggest that race (black-white) and gender-specific mechanistic differences exist in the impact of increased body adiposity on carotid artery disease. Further, these observations may help strengthen individualized race and gender approaches to cardio-metabolic risk prevention in the community.

C. Fernández Alonso: None. R. Barshop: None. P. Galazka: None. S. Li: None. W. Chen: None. G.S. Berenson: None.