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The Effects of Trunk Fat on Endothelial Function in African American Women

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Abstract

African Americans (AA), both adults and adolescents, have increased mortality from most of the diseases associated with metabolic syndrome and Endothelial Dysfunction including: myocardial infraction, stroke, and hypertension. Recent research has shown that there is a close link between endothelial function and insulin sensitivity in both normotensive and hypertensive subjects. This is important because African Americans are more frequently insulin resistant and display less mediated brachial artery vasodilation compared to Caucasians.

The study took healthy, AA women ages 18-45 and grouped them into two main categories based on their Body Mass Index (BMI): lean/ insulin dependent (BMI<25) and obese/insulin resistant (BMI>30). There were two main phases of the study, requiring four sets of measurements from each patient. Phase I was a cross-sectional comparison of endothelial function, adipokines, insulin resistance, inflammatory state, oxidative stress, and circulating endothelial progenitor cells in the two groups of AA women. Phase II was an 8-week randomized controlled trial of the effects of the DASH-type diet on endothelial function, oxidative stress, and endothelial progenitor cells. Measurements of trunk fat were done using the Hologic Discovery QDR densitometer. Coefficient of variation for repeat measurement is 1.0% and correlation of percent body fat between fan beams and hydro densitometry is 0.91. High-frequency ultrasound was used to obtain B-mode images of the left brachial artery in the longitudinal section 2cm above the antecubital crease to measure endothelial function.

Higher trunk fat percentages create greater amounts of oxidative stress and inflammation on the cells, causing a decrease in endothelial function and repair.

KEYWORDS: Endothelial Function; insulin dependent/lean vs. insulin resistant/obese; trunk fat percentage

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