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Keywords

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O R I G I N A L C O M M U N I C A T I O N

Characterization of Metabolically Unhealthy Overweight/Obese African American Women: Significance of Insulin-Sensitive and Insulin-Resistant Phenotypes

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Background: Obesity is often associated with high cardiovascular disease risk factors. Obesity is common in African

Conclusion: We concluded that: (1) despite obesity, metabolically healthy African American women appear to be less prone to type 2 diabetes and cardiovascular disease and (2) in view of the higher prevalence of metabolic syndrome, metabolically unhealthy African American women should be targeted for primary prevention of type 2 diabetes and cardiovascular disease.

American women. We investigated the characteristics of metabolically healthy and metabolically unhealthy overweight/obese African American women based on the presence of insulin resistance.

Materials/Methods: We studied 196 apparently healthy overweight/obese African American women with family history of type 2 diabetes. Waist circumference, fasting glucose, insulin, c-peptide, lipids and lipoproteins, and systolic and diastolic blood pressure were obtained in each subject. In addition, insulin sensitivity was calculated using Bergman's Minimal Model Method. We defined insulin-sensitive metabolically healthy African American women as individuals with insulin sensitivity greater than $2.7 \times 10^{-4} \times \text{min}^{-1} (\mu\text{U}/\text{mL})^{-1}$ and insulin resistant, metabolically unhealthy as insulin sensitivity less than $2.7 \times 10^{-4} \times \text{min}^{-1} (\mu\text{U}/\text{mL})^{-1}$.

Results: Thirty-three percent of our subjects were metabolically healthy African American women, while 67% were metabolically unhealthy African American women. The metabolically healthy subjects were significantly younger and less obese than the metabolically unhealthy subgroup. Mean fasting serum glucose, insulin, and c-peptide were significantly lower ($P = .001$) in the metabolically healthy than in metabolically unhealthy subjects. However, the mean blood pressures were within normal in both subgroups. Mean serum cholesterol ($p < .05$) and triglyceride ($p < .001$) levels were significantly lower, whereas high-density lipoprotein cholesterol ($p < .03$) was significantly higher in the metabolically healthy than in the metabolically unhealthy subjects. We found 25.5% of our subjects had metabolic syndrome (30.3% metabolically unhealthy and 15.6% metabolically healthy).

Keywords: body weight ■ obesity ■ diabetes mellitus ■ cholesterol

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INTRODUCTION

African Americans have increased cardiovascular morbidity and mortality compared to white Americans.¹⁻⁴ The health outcome disparities in African Americans and whites have been attributed to several factors, including genetic, metabolic, and socioeconomic differences. A major comorbid condition in African Americans is obesity. Recent studies have shown that 50% to 60% of African American women are overweight or obese.⁵⁻⁷ The metabolic consequences of obesity on total health of African American women remain debatable. However, it is well known that obese African American women have higher prevalence of hypertension, type 2 diabetes, stroke, and congestive heart failure than their white counterparts. Other racial/ethnic differences have also been demonstrated in recent metabolic studies in blacks and whites. For example, we⁸⁻¹¹ and others¹²⁻¹⁵ have shown that African American women are more insulin-resistant than white women. However, not all obese African Americans are insulin-resistant. Banerji et al found insulin-resistant

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