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ORAL PRESENTATION

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# Insulin resistance, subclinical left ventricular remodeling, and the obesity paradox: the multi-ethnic study of atherosclerosis

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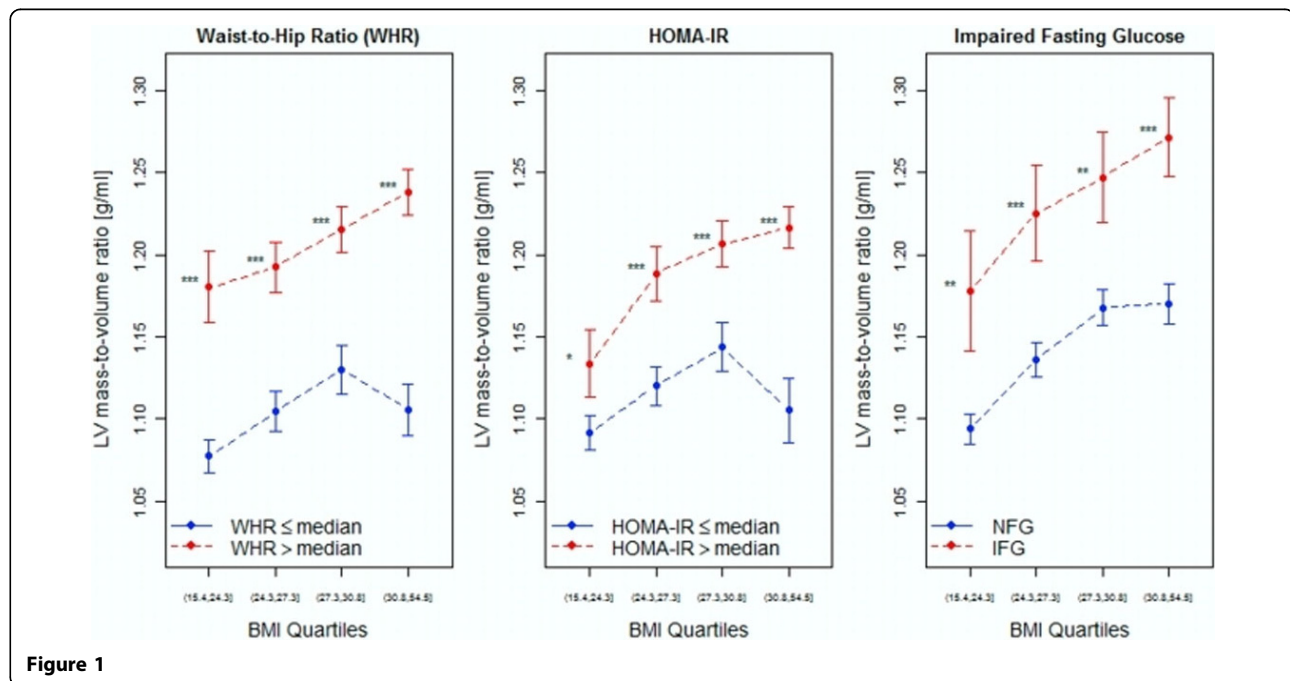
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## Background

Recent studies suggest that central obesity and insulin resistance may be primary mediators of obesity-related cardiac remodeling independent of body mass index (BMI). We assessed in the Multi-Ethnic Study of Atherosclerosis (MESA) whether insulin resistance and waist-to-hip ratio had effects on cardiac remodeling, independent of obesity.

## Methods

We investigated 4,364 individuals without diabetes in MESA. Insulin resistance (by impaired fasting glucose, IFG: 100-125 mg/dl or homeostatic model assessment of insulin resistance, HOMA-IR) and waist-to-hip ratio (WHR) were used for cardiometabolic phenotyping. Multivariate linear regression analysis was used to determine



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the effects of the cardiometabolic markers on LV remodeling, assessed primarily through the LV mass-to-volume ratio obtained by cine cardiac magnetic resonance imaging.

## Results

Individuals with IFG were more likely to be older, hypertensive, with increased prevalence of cardiometabolic risk factors regardless of BMI. In each quartile of BMI, individuals with above-median HOMA-IR, above-median WHR, or IFG had a higher LV mass-to-volume ratio ( $p < 0.05$  for all). HOMA-IR ( $p < 0.0001$ ), WHR ( $p < 0.0001$ ), and the presence of IFG ( $p = 0.04$ ), but not BMI ( $p = 0.24$ ), were independently associated with LV mass-to-volume ratio after adjustment for age, gender, hypertension, race, and dyslipidemia.

## Conclusions

Insulin resistance and waist-to-hip ratio are associated with concentric LV remodeling independent of BMI. These results support the emerging hypothesis that the cardiometabolic phenotype, defined by insulin resistance and central obesity, may play a critical role in LV remodeling independently of BMI.

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