J Am Coll Cardiol. 2008 Sep 9;52(11):932-8.

Cardiac markers of pre-clinical disease in adolescents with the metabolic syndrome: the strong heart study.

Chinali M, de Simone G, Roman MJ, Best LG, Lee ET, Russell M, Howard BV, Devereux RB.

Department of Clinical and Experimental Medicine, Federico II University Hospital School of Medicine, Naples, Italy. mchinali@unina.it

Comment in:

- J Am Coll Cardiol. 2008 Sep 9;52(11):939-40.

Abstract

OBJECTIVES: Our aim was to evaluate the impact of metabolic syndrome (MetS) on cardiac phenotype in adolescents.

BACKGROUND: A high prevalence of MetS has been reported in adolescents.

METHODS: Four hundred forty-six nondiabetic American Indian adolescents (age 14 to 20 years, 238 girls) underwent clinical evaluation, laboratory testing, and Doppler echocardiography. Age- and gender-specific partition values were used to define obesity and hypertension. Metabolic syndrome was defined according to Adult Treatment Panel III criteria, modified for adolescents. Left ventricular (LV) hypertrophy and left atrial (LA) dilation were identified using age- and gender-specific partition values.

RESULTS: One hundred eleven participants met criteria for MetS. They had a similar age and gender distribution as non-MetS participants. Analysis of covariance, controlling for relevant confounders, demonstrated that participants with MetS had higher LV, LA, and aortic root diameters, higher LV relative wall thickness, and greater LV mass index. Accordingly, MetS participants showed higher prevalences of LV hypertrophy (43.2% vs. 11.7%) and LA dilation (63.1% vs. 21.9%, both $p < 0.001$) compared with non-MetS participants. In addition, MetS was associated with a reduction in midwall shortening, lower transmitral mitral early to atrial peak velocity ratio, and mildly prolonged mitral early deceleration time (all $p < 0.05$). In multiple regression analysis, independently of demographics, obesity, blood pressure, and single metabolic components of MetS, clustered MetS was associated with a 2.6-fold higher likelihood of LV hypertrophy and a 2.3-fold higher likelihood of LA dilation (both $p <$ or $= 0.02$).

CONCLUSIONS: In a population sample of adolescents, MetS is associated with higher prevalences of LV hypertrophy and LA dilation and with reduced LV systolic and diastolic function, independently of individual MetS components.

PMID: 18772065 [PubMed - indexed for MEDLINE]PMCID: PMC2703730**Free PMC Article**