
Epidemiology

2.18 Interaction of Metabolic Syndrome and Left Ventricular Hypertrophy in the Prediction of Cardiovascular Risk: the Strong Heart Study

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Introduction: Metabolic syndrome (MetS) is associated with increased prevalence of echocardiographic LV hypertrophy (LVH), a potent predictor of cardiovascular outcome. It is unclear whether LVH predicts cardiovascular (CV) risk both in the presence and absence of MetS. Whether MetS predicts CV risk independently of presence of LVH has also never been investigated.

Methods: 2,758 participants to the 2nd examination of the Strong Heart Study (SHS) were selected (1,746 women), without prevalent coronary heart disease, congestive heart failure and renal insufficiency (plasma creatinine >2.5 mg/dL). MetS was defined according to the WHO criteria, based on previous longitudinal analyses in the SHS cohort. Echocardiographic LV hypertrophy was defined as LV mass index >47 g/m^{2.7}, a population specific partition value, previously reported.

Results: Diabetes was present in 46% of population sample (n=1,272), obesity in 51% (n=1,521) and hypertension in 43% (n=1,272). After adjusting for age, sex, LDL-cholesterol, smoking habit, serum creatinine, and diabetes, prevalence of LVH was 2-fold higher in the presence (n=1,648) than in the absence of MetS (p<0.002). LVH independently predicted composite fatal and non fatal CV events either in the presence (HR=1.6) or absence (HR=2) of MetS (both P<0,05).

Conclusions: LVH is a strong predictor of CV outcome either in the presence or the absence of MetS. MetS by WHO definition is associated with increased CV risk also independent of confounders, also including LVH, but this effect is due to coexisting diabetes. LVH appears to be an important mediator of MetS-associated CV risk, especially in non-diabetic subjects.