Association of left ventricular hypertrophy with incident hypertension: the multi-ethnic study of atherosclerosis.

Increased left ventricular (LV) mass and changes in LV geometry may precede hypertension onset. The authors examined the associations of LV mass and geometry, assessed by cardiac magnetic resonance imaging, with hypertension incidence in 2,567 normotensive participants enrolled in 2000-2002 in the Multi-Ethnic Study of Atherosclerosis, an ethnically diverse, population-based, US study. Over a median follow-up of 4.8 years, 745 (29%) participants developed hypertension. In a fully adjusted model including baseline blood pressure, the relative risks of incident hypertension from the lowest to highest LV mass quartile were 1.00 (referent), 1.13 (95% confidence interval (CI): 0.89, 1.43), 1.28 (95% CI: 1.00, 1.63), and 1.78 (95% CI: 1.38, 2.30) (P < 0.001 for linear trend). Higher levels of LV concentric geometry, defined by higher LV mass to end-diastolic volume quartiles, were associated with higher risk of incident hypertension in a fully adjusted model (P = 0.044 for linear trend). In a final model containing both quartiles of LV mass and LV mass/volume along with all covariates including baseline blood pressure, higher LV mass quartiles were associated with incident hypertension (P < 0.001 for linear trend), whereas higher LV mass/volume quartiles were not (P = 0.643 for linear trend). In this multiethnic cohort, alterations in LV mass preceded hypertension onset among normotensive individuals.