

Left ventricular hypertrophy reclassification and death: application of the Recommendation of the American Society of Echocardiography/European Association of Echocardiography.

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Source

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Abstract

AIMS:

Despite the American Society of Echocardiography (ASE)/European Association of Echocardiography (EAE) recommended the use of left ventricular (LV) mass to diagnose left ventricular hypertrophy (LVH), several laboratories continue to use only the septal thickness by M-mode because it appears easier to measure. Aim of the study was to investigate the discrepancy between the categorization of LVH severity based on measurement of septal thickness and indexed LV mass and the relative prognostic utility of these two methods.

METHODS AND RESULTS:

Observational cohort study. Unselected adults (>18 years) referred to the echocardiography laboratory for any indication had septal thickness and LV mass measured by the ASE/EAE formula using LV linear dimensions indexed to body surface area. LVH was categorized as absent, mild, moderate, and severe according to the ASE/EAE guideline sex-specific categorization cut-offs for septal thickness and LV mass. Follow-up for death was obtained from the national death index. A total of 2545 subjects (mean age 61.9 ± 15.8 , 53% women, mean diastolic septal thickness 10.3 ± 2.2 mm, and mean indexed LV mass 107.5 ± 37.3 g/m²) were enrolled. Agreement between the two methods in classifying LVH degree across the four categories was 52.6% (Kappa = 0.29, 95% confidence interval (CI): 0.26-0.32, $P < 0.001$). Of the 2513 subjects without severely thickened septum, 472 (18.9%) had severely abnormal indexed LV mass. Vice versa, of the 2045 individuals without severely abnormal indexed LV mass, only 4 (0.1%) were classified as severe LVH by septal thickness. After a mean follow-up of 2.5 ± 1.2 years 121 (4.7%) deaths occurred. Using indexed LV mass partition values there was a graded association between LVH degree and survival. Compared with patients with normal indexed LV mass, the adjusted hazard ratio (HR) for death from all causes was 2.17 for mild (95% CI: 1.23-3.81, $P = 0.007$), 3.04 for moderate (95% CI: 1.76-5.24, $P < 0.001$), and 3.81 for severe (95% CI: 2.43-5.97, $P < 0.001$) LVH by indexed LV mass. The area under the receiver-operator characteristic (ROC) curve for the four degrees of LVH by indexed LV mass was superior [area under the curve (AUC) = 0.66] to that of the septal thickness partition values (AUC = 0.58, $P = 0.0004$).

CONCLUSION:

In a large cohort study of unselected adult outpatients referred to the echocardiography laboratory, the measurements of indexed LV mass applying the ASE/EAE recommended cut-offs yielded remarkable discrepancy in the diagnosis of LVH severity and offered prognostic information beyond that provided by septal thickness only criteria.