Electrocardiographic and echocardiographic detection of myocardial infarction in patients with left-ventricular hypertrophy. The LIFE Study.

Cicala S, Devereux RB, de Simone G, Wachtell K, Gerdts E, Boman K, Nieminen MS, Papademetriou V, Dahlöf B, Okin PM.

Division of Cardiology, Weill Medical College of Cornell University, New York, NewYork 10021, USA.

Abstract

BACKGROUND: Left-ventricular hypertrophy (LVH) is a recognized risk factor for myocardial infarction (MI). However, detection of MI by standard electrocardiographic (ECG) criteria may be hampered in patients with LVH. In this setting of hypertensive LVH, the accuracy of two-dimensional (2D) echocardiography in detecting incident MI is unknown. Thus, we compared the accuracy of 2D echocardiography with Minnesota-code ECG criteria in detecting incident MI, adjudicated during serial evaluation in patients with hypertension and LVH.

METHODS: In the ECG substudy of the Losartan Intervention for Endpoint Reduction in Hypertension (LIFE) Study, complete baseline wall-motion (WM) evaluation was obtained in 904 hypertensive patients with ECG LVH who did not have a left-bundle branch block. Electrocardiography and echocardiograms obtained at annual follow-up visits were evaluated for ECG Q-waves by Minnesota codes and WM abnormalities, respectively (mean follow-up, 4.8+/-0.9 SD years). Occurrence of incident clinical MI during follow-up was adjudicated by an expert end-point committee.

RESULTS: In two logistic models adjusting for confounders, incident MI was independently associated with either incident Q-waves by the Minnesota code (odds ratio [OR], 6.1; 95% confidence interval [CI], 2.4-15.3) or incident and worsened WM abnormalities (OR, 11.9; 95% CI, 4.5-32.0), and the association was stronger for WM abnormalities than for Q-waves (P < .0001). Detection of incident MI by ECG or 2D echocardiography was obtained with sensitivities of 29% and 68% and specificities of 95% and 84%, respectively.

CONCLUSIONS: Wall-motion abnormalities on serial 2D ECGs recognize incident MI better than do Minnesota-code ECG criteria during follow-up of patients with hypertension and LVH.