Clinical outcomes of discordant exercise electrocardiographic and echocardiographic findings in patients with chest pain and no history of coronary artery disease

Authors:
E-S Im¹, I-S Sohn², ¹Dongsuwon General Hospital, Department of Cardiology - Suwon - Korea (Republic of), ²Kyung Hee University Hospital at Gangdong - Seoul - Korea (Republic of),

Topic(s):
Exercise Testing

Citation:

Purposes The aim of this study was to evaluate comparative clinical outcomes of discordant electrocardiographic (ECG) and echocardiographic (Echo) findings compared to concordant findings during treadmill exercise echocardiography in patients with chest pain and no history of coronary artery disease (CAD).

Methods A total of 1725 consecutive patients who underwent treadmill echocardiography with chest pain and no history of CAD were screened. The patients were classified into four groups: ECG-/Echo- (negative ECG and Echo), ECG+/Echo- (positive ECG and negative Echo), ECG-/Echo+, and ECG+/Echo+. Concomitant CAD was determined using coronary angiography or coronary computed tomography. Major adverse cardiac events (MACEs) were defined as a composite of coronary revascularization, acute myocardial infarction, and death.

Results MACEs were similar between ECG-/Echo- and ECG+/Echo- groups. Compared to ECG+/Echo-group, ECG-/Echo+ group had more MACEs [adjusted hazard ratio (HR) adjusted by clinical risk factors (95% confidence interval), 3.57 (1.75-7.29), p<0.001]. Compared with ECG+/Echo+ group, ECG-/Echo+ group had lower prevalence of concomitant CAD and fewer MACEs [HR, 0.49 (0.29-0.81), p=0.006].

Conclusions Positive exercise Echo alone during treadmill exercise echocardiography had worse clinical outcomes than positive ECG alone, and the latter had similar outcomes to both negative ECG and Echo. Positive exercise Echo alone also had better clinical outcomes than both positive ECG and Echo. Therefore, exercise Echo findings might be superior for predicting clinical outcomes compared to exercise ECG findings. Additional consideration of ECG findings on positive exercise Echo will also facilitate better prediction of clinical outcomes.