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Comparison of peak and postexercise imaging during treadmill exercise echocardiography with the use of continuous harmonic imaging acquisition.
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Previous reports have demonstrated the superiority of peak (Pk) exercise echocardiography (EE) either with treadmill or bicycle in comparison with post-EE for the diagnosis of coronary artery disease (CAD). However most of these studies used fundamental imaging and view by view imaging acquisition. Technical advantages in stress echocardiography include harmonic imaging and continuous imaging capture.

Methods: To compare the feasibility and accuracy of peak- and post-EE using continuous harmonic imaging acquisition, we studied 240 consecutive patients (pts) referred for EE (age 60±13 years; 149 males). The only exclusion criteria was inability for exercise.

Results: Postexercise images were acquired within 60 seconds after exercise (30±9). Mean heart rate (bpm) was 141±22 at Pk vs. 128±33 at post-exercise imaging (p<0.0001). The number of clearly visualized segments by view was similar at Pk- and post-EE except for the short-axis view (4-Ch apical: 5.9±0.4 vs. 5.9±0.3, p=NS; 2-ch apical: 5.9±0.4 vs. 5.9±0.3, p=NS; parasternal long-axis: 4.2±0.8 vs. 4.2±0.7, p=NS; parasternal short-axis: 4.9±1.6 vs. 5.1±1.4, p=0.01). Interpretable Pk and postexercise images (at least 2 views with ≥4 clearly visualized segments by view) were obtained for all the patients. LV wall motion score index and LV EF were worse at Pk than at post-exercise in patients with positive EE (1.5±0.3 vs. 1.4±0.3, and 50±13 vs. 54±15, respectively, both p<0.001). For analysis of diagnostic capability we included 93 patients: 58 were included on the basis of having had an EE and a coronary angiography (CA) within 4 months of the EE. To avoid bias to CA a subgroup of 35 consecutive non-diabetic patients with pretest probability of CAD of 10% that had atypical chest pain or were asymptomatic were also included and considered as having no CAD. CAD (>49% diameter stenosis in at least 1 vessel) was confirmed in 46 patients, whereas 47 patients were considered to have no CAD.

Positive EE was defined as ischemia or necrosis in at least 1 coronary artery territory. Sensitivity, specificity and accuracy for CAD were 91%, 81% and 86% with Pk-EE and 75%, 85% and 82% with post-EE, respectively (p=0.08 for sensitivity). Sensitivity for the prediction of multivessel CAD was 74% with Pk-EE and 63% with post-EE (p=NS).

Conclusion: Peak treadmill EE is as feasible as post-EE. Ischemia is more easily detected at peak than at postexercise. Therefore, in the clinical setting peak-EE should be performed for diagnostic purposes.

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Prognostic value of noninvasive permanent pacemaker stress echocardiography.
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Background: Noninvasive stress echocardiography (PASE) is simple and efficient option for noninvasive diagnosis of coronary artery disease in the expanding population of patients with permanent pacemaker.

Aim: We investigated the prognostic value of PASE in patients with known or suspected coronary artery disease.

Methods: Thirty-six patients (men, age 67±11 years) with permanent pacemakers underwent PASE by external programming (10 bpm increment up to elevation of ischemia or target heart rate). All patients were prospectively evaluated during mean follow-up of 17±8 months.

Results: A positive result of stress echocardiography was detected in 30 (39%) patients. During follow-up, there were 3 cardiac deaths, 2 myocardial infarctions, 10 clinically-driven coronary revascularizations and 8 unstable anginas. The overall event-free survival was lower in patients with positive PASE (p<0.001). In a multivariate analysis positive result of stress echocardiography was independently associated with increased risk (hazard ratio = 6.8; 95% confidence interval: 2.1 to 13.0; p<0.001).

Conclusions: Positive noninvasive PASE is a strong prognostic factor in patients with suspected or known coronary artery disease.