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Prognostic implications of the difference between left ventricular ejection fractions after stress and at rest in addition to the quantification of myocardial perfusion abnormalities obtained with gated SPECT.

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Abstract

BACKGROUND: The prognostic significance of the difference between poststress and at rest left ventricular ejection fraction (Δ LVEF) in patients sent for diagnostic myocardial perfusion study (MPS) is not well characterized. The purpose of this study was to prospectively evaluate the ability of Δ LVEF in further risk stratifying these patients in addition to the severity/extent of myocardial perfusion abnormalities expressed as the total perfusion deficit at stress (sTPD), according to the type of stress used.

METHODS AND RESULTS: Two-day ^{99m}Tc-MIBI MPS after stress and rest were obtained for 507 patients subdivided according to the type of stress used, sTPD values, and Δ LVEF. Subsequent cardiac events were determined through a standardized questionnaire applied 1, 2, and 6 years after MPS. Independent of the type of stress used, the 6-year event rate with progressive perfusion and functional abnormalities combined was significant for total events, all-cause death, cardiac death, and revascularization but not for myocardial infarct. When Δ LVEF decreased by more than -10%, only those individuals with sTPD of 5% or less had increased 6-year total event rates [5.9% vs 15% for those submitted to treadmill test ($P < 0.001$) and 8.3% vs 19% when submitted to pharmacological stress ($P = 0.001$)]. An sTPD greater than 5% was the only variable predictive of total events when multivariate analysis was applied ($P < 0.001$ for treadmill exercise and $P = 0.033$ for dipyridamole).

CONCLUSIONS: Estimation of Δ LVEF in addition to sTPD seems to improve risk stratification for future events when Δ LVEF decreases by more than -10% for those individuals with normal or near-normal myocardial perfusion (sTPD \leq 5%). An sTPD greater than 5% was a better prognostic indicator of future events when compared with Δ LVEF for individuals with greater perfusion abnormality at stress.

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