

Prognostic Value of Left Ventricular Dyssynchrony by Phase Analysis of Gated SPECT in Patients Undergoing Myocardial Perfusion Imaging

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Background:

Left ventricular dyssynchrony assessed by phase analysis from gated SPECT myocardial perfusion imaging (MPI) has been studied in patients with left ventricular dysfunction with various clinical settings. The aim of this study was to investigate the utility of using phase analysis combined with gated SPECT MPI in a routine setting and its prognostic value.

Methods:

Patients who were referred for MPI with TC-99m sestamibi underwent a comprehensive gated SPECT and Left ventricular dyssynchrony by phase analysis. The patients were followed up for cardiac events which were defined as: cardiac death, hospitalization for new onset of heart failure, or deterioration of heart failure and life threatening arrhythmia (VT/VF). Univariate and Cox proportional hazard regression were used to identify independent predictor of cardiac events.

Results:

Of 787 patients, 742 were followed up for mean 572 ± 171 days. There were 45 cardiac events, of them 26 cardiac deaths, 16 hospitalizations of new onset of heart failure or deterioration of heart failure and 3 VT/VF. Of all clinical, perfusion, function and phase analysis parameters, the independent predictors for cardiac events were: abnormal EF (<0.0001) and LV dyssynchrony by phase standard deviation (SD) (0.052). However, the independent predictor for cardiac death, was SD only ($p=0.022$). The Kaplan Meir survival curves revealed a significant rate of cardiac events or cardiac death only, in patients with LV dyssynchrony by SD than those without. (Log Rank = 0.0001).

Conclusion:

A comprehensive MPI study by Gated SPECT with phase analysis for assessment of Left ventricular dyssynchrony provides a successful tool to predict cardiac death, heart failure deterioration and life threatening arrhythmias.