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Imaging

LEFT VENTRICULAR DYSSYNCHRONY ASSESSED BY PHASE ANALYSIS OF GATED SPECT MYOCARDIAL PERFUSION IMAGING: A COMPARISON WITH SPECKLE TRACKING ECHOCARDIOGRAPHY

ACC Moderated Poster Contributions

McCormick Place South, Hall A

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Session Title: Evaluation of Left Ventricular Dyssynchrony by Myocardial Perfusion Imaging

Abstract Category: 23. Imaging: Nuclear

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Background: The aim of this study was to compare left ventricular (LV) dyssynchrony parameters measured by phase analysis on gated SPECT myocardial perfusion imaging (MPI) with those measured by speckle tracking echocardiography (STE) in patients with LV dysfunction.

Methods: The population consisted of patients from the Chang Bing Show Chwan Memorial Hospital with reduced LV ejection fraction (LVEF) of $\leq 50\%$ as assessed by a routine two-dimensional echocardiography. LV dyssynchrony parameters were calculated using STE as the maximal time delay (MTD) to peak systolic radial strains between two opposing LV walls and as the standard deviation of the time to peak systolic radial strains (SD-TPS) in 6 basal segments. Significant LV dyssynchrony was defined as a MTD of >130 ms on STE. All of the patients had gated SPECT MPI within 6 ± 11 days post echocardiography. Phase analysis was performed on the gated SPECT MPI images to calculate phase standard deviation (PSD) and histogram bandwidth (HBW) as markers of LV dyssynchrony.

Results: A total of 31 consecutive patients (24 men, mean age 64 ± 11 years, LVEF $35.3\pm 10.0\%$) were enrolled. LV dyssynchrony parameters measured by phase analysis and STE were correlated well (PSD vs. MTD: $r=0.78$; HBW vs. MTD: $r=0.76$; PSD vs. SD-TPS: $r=0.77$; HBW vs. SD-TPS: $r=0.79$; all $p<0.0001$). Additionally, patients with significant LV dyssynchrony on STE (MTD >130 ms) (N=20) showed significantly larger PSD ($48.9\pm 17.1^\circ$ vs. $25.2\pm 7.4^\circ$, $p<0.0001$) and HBW ($163.8\pm 72.2^\circ$ vs. $77.6\pm 21.8^\circ$, $p<0.0001$) as compared to patients without significant LV dyssynchrony on STE (MTD ≤ 130 ms) (N=11).

Conclusion: Phase analysis on gated SPECT MPI showed good correlations with STE for the assessment of LV dyssynchrony.