

## **Yield of Left Ventricular Dyssynchrony as Assessed with Phase Analysis by Gated Myocardial Perfusion SPECT in Patients with ICD or CRTD: Prediction of Cardiac Outcome**

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### **Background:**

Patients with heart failure and LVEF  $\leq 35\%$  receive ICD as primary prevention although it is not activated in the majority of them. Pts with marked LV dyssynchrony might have more life threatening arrhythmias worsening of heart failure cardiac mortality. The aim of this study was to investigate whether LV dyssynchrony by phase analysis from gated SPECT myocardial perfusion imaging (MPI), can also be used to identify who might benefit from receiving ICD or CRTD therapy.

### **Methods:**

In a prospective study, patients post MI with LVEF  $\leq 35\%$  who were scheduled for ICD or CRTD underwent MPI study prior procedure. The patients underwent gated SPECT MPI with technetium 99m sestamibi (rest or rest/stress) Data for analysis included; demographic and clinical characteristics, NYHA class. ECG criteria : Q waves, BBB, QRS width, MPI data: MI size, ischemia size, LVEF, EDV, ESV and phase analysis measures including ; phase standard deviation (SD), histogram bandwidth, skewness and histogram kurtosis.

### **Results:**

The study cohort consisted of 108 pts, 58 with ICD and 50 pts with CRTD. Mean age was  $68.7 \pm 10$  and  $69.0 \pm 12$ , LVEF was  $25.7 \pm 6$  and  $23.7 \pm 7$ , phase analysis (SD) were similar. The patients were followed up for mean of 439 days (median 470 days), for cardiac death, CHF deterioration, VT/VF shock. There were 26 (24%) cardiac events. From them 14(13%) deaths; 12 deaths in CRTD patients compared to 2 deaths in ICD ( $p > 0.02$ ). By Cox proportional hazard regression, NYHA class was the only predictor for cardiac death ( $p < 0.003$ ).

### **Conclusions:**

LVEF, infarct size, LV dyssynchrony were similar in ICD post MI and CRTD patients. NYHA class was the only predictor for cardiac death in patients with ICD or CRTD.