



IMAGING AND DIAGNOSTIC TESTING

RELATION OF LEFT VENTRICULAR DYSSYNCHRONY BY PHASE ANALYSIS OF GATED SPECT IMAGES AND CARDIOVASCULAR EVENTS IN PATIENTS WITH IMPLANTABLE CARDIAC DEFIBRILLATORS.

ACC Poster Contributions

Georgia World Congress Center, Hall B5

Monday, March 15, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Assessing Dyssynchrony With Nuclear Techniques

Abstract Category: Nuclear Cardiology/PET

Presentation Number: 1204-235

Authors: *Wael AlJaroudi, Fadi Hage, Daniel Hermann, Harrish Doppalapudi, Jaekyeong Heo, Ami E. Iskandrian, University of Alabama at Birmingham, Birmingham, AL, Birmingham Veteran's Administration Medical Center, Birmingham, AL*

Background: Left ventricular (LV) dyssynchrony could be measured by gated SPECT myocardial perfusion imaging (MPI). This study examined the relation between the degree of dyssynchrony and outcome in patients with implantable cardiac defibrillators (ICD).

Methods: We studied 70 patients with ICD and LV ejection fraction (EF) <0.40, by gated MPI (performed within 6 weeks of the device implantation). The images were re-processed using phase analysis to derive phase standard deviation (SD) and histogram bandwidth. All-cause mortality and appropriate ICD shocks were identified as the primary endpoint.

Results: There were 87% men aged 62 ± 11 years. The LV ejection fraction was 26 ± 8 %. The mean phase SD was $51 \pm 20^\circ$ (range $12-99^\circ$) and the histogram bandwidth $157 \pm 72^\circ$ (range $21-327^\circ$). These values are significantly greater than those in patients with normal EF ($15.8 \pm 11.8^\circ$ and $42.0 \pm 28.4^\circ$, respectively, $P < 0.0001$, each). At 1 year, 8 patients (11%) died ($n=3$) or had shocks ($n=5$). These patients had a higher phase SD than those without events ($60 \pm 5^\circ$ vs. $50 \pm 21^\circ$, $p=0.002$). The histogram bandwidth was also higher in those with events (185 ± 37 vs. 154 ± 75 , $P = 0.07$). All patients who had an event had a phase SD $\geq 50^\circ$, while none of the patients with a phase SD $< 50^\circ$ ($N = 26$) had an event ($P = 0.02$). The perfusion data, EF, and QRS duration were not statistically different between those with and without events.

Conclusions: The severity of LV dyssynchrony by phase analysis in patients with LV dysfunction and ICD is associated with increased risk of death and appropriate ICD shock; a phase SD $< 50^\circ$ was associated with no events at 1 year.