PACING AT ACCELERATED RESTING HEART RATE IMPROVES THE YIELD FOR AV-OPTIMIZATION IN PATIENTS WITH CARDIAC RESYNCHRONIZATION THERAPY

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Saturday, March 24, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Imaging: Echo Dyssynchrony
Abstract Category: 22. Imaging: Echo
Presentation Number: 1093-100

Authors: Amala P. Chirumamilla, Daniel Spevack, Montefiore Medical Center, Bronx, NY, USA

Background: A recently published randomized study of echocardiography guided atrio-ventricular optimization (AV-opt) in patients with cardiac resynchronization therapy (CRT) failed to show a clinical benefit. However, this study did not specify the HR at which AV-opt should be performed. Performing AV-opt at accelerated resting heart rate (HR) may improve identification of patients at risk for E- and A-wave fusion during daily activities. Since the protocol for AV-opt at our two hospital campuses were identical except for the HR used during optimization, we tested the influence of HR on AV-opt utility.

Methods: At campus 1 (C1), 41 consecutive patients underwent AV-opt at resting HR. At campus 2 (C2) 33 consecutive patients underwent AV-opt at paced HR of 80 bpm. In both protocols, the AV delay was changed from 80 to 200 ms in 20 ms increments. Left ventricular (LV) filling was considered optimal if E- and A-waves were distinct and the A-wave was not truncated on spectral Doppler of the mitral inflow.

Results: Subjects from both sites were similar with respect to age, sex, ejection fraction, left ventricular volume and Doppler parameters of diastolic heart function. The odds of having E- and A-wave fusion during AV-opt was increased in subjects from C2 (odds ratio (OR) 5.3 [95% confidence interval (CI): 1.3, 24.8], p = 0.006). There was no difference in the prevalence of A-wave truncation between the two groups. Subjects with grade 1 diastolic dysfunction (DD) had increased odds of E- and A-wave fusion (OR 4.5 [95% CI: 1.2, 8.7], p = 0.009), whereas subjects with grade 2 DD had increased odds of A-wave truncation (OR 4.8 [95% CI: 1.1, 28.9], p = 0.02).

Conclusions: Performance of AV-opt using a resting HR of 80 bpm increases the odds of identifying subjects at risk for fusion of the E- and A-waves. Since optimization at rest is performed to predict the optimal delay during daily activities, specification of an accelerated HR may improve the clinical utility of AV-opt.