MULTIMODAL PRE-IMPLANT STRATEGY TO PREDICT RESPONSE TO CARDIAC RESYNCHRONIZATION THERAPY

ACC Moderated Poster Contributions
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Background: Cardiac resynchronization therapy (CRT) is associated with improved outcomes in patients (pts) with systolic heart failure (HF), but up to 35% of pts fail to respond. No prior study has investigated a multimodal pre-implant strategy as a predictor of favorable outcomes.

Methods: We studied 72 pts with baseline and follow-up data on clinical parameters and outcomes, ECG, echocardiography, and myocardial viability. We hypothesized that the combination of 5 parameters (ECG with LBBB or RBBB+LADB morphology; QRS > 150 ms; left ventricular end-diastolic volume < 300 mL; presence of more than moderate mitral regurgitation; and absence of lateral wall scar) at pre-implant will lead to improved outcomes within a year of implant. Outcomes included number of HF hospitalizations, changes in ventricular volumes and ejection fraction, and medication titration to target doses. We used multivariable linear regression to test our hypotheses.

Results: Fourteen percent of pts had all 5 parameters present at baseline (group 1), while 86% did not (group 2). Pts in group 1 were more likely to be treated by a HF specialist (80% vs. 50%), had more prolonged QRS (176 ms vs. 161 ms), lower blood pressure (108 mmHg vs. 116 mmHg), were more symptomatic (average NYHA class 3.1 vs. 2.5), used more diuretics and were on lower target doses of neurohormonal antagonists than those in group 2. The ventricular volumes and ejection fraction were similar, but the degree of mitral regurgitation (2.7 vs. 1.3), tricuspid regurgitation (2.1 vs. 1.2), and estimated pulmonary artery systolic pressures (48 mmHg vs. 38 mmHg) were worse in group 1. In multivariable linear regression, the presence of all favorable parameters at pre-implant was associated with a 31% reduction in the number of HF hospitalizations during the first year post implant (p=0.048). Although changes in ventricular volumes were greater in pts in group 1, they did not reach statistical significance (p=0.25). In both groups of pts, medication titration to target doses occurred, with no difference between groups.

Conclusions: The presence of favorable pre-implant parameters is associated with a 31% decrease in HF hospitalizations within the first year post CRT implant.