Left Ventricular Endocardial Pacing Improves CRT Outcomes in Heart Failure Patients with Intermediate QRS Duration: A propensity Score Matched Analysis

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Introduction: Cardiac resynchronization therapy (CRT) has been shown to improve symptoms, reduce mortality and heart failure (HF) hospitalization in patients with wide QRS widths. However, its benefit in patients with intermediate QRS duration (120-150 ms) is less predictable. With direct access to the rapidly conducting His-Purkinje system, left ventricular (LV) endocardial CRT pacing may improve outcomes by providing a more physiologic means of stimulating the heart.

Methods: A patient-level meta-analysis was done to compare data from the alternate site CRT (ALSYNC) study with LV endocardial pacing (n=118) with data from two conventional CRT studies (PROSPECT (n=426) and REVERSE (n=419)) with respect to LV End Systolic Volume Index (LVESVi) reduction at 6 months post implant. Multiple imputation and propensity score weighting were used to account for missing data and differences in baseline characteristics. Analysis used a linear model for the logarithm of LVESVi at 6 months with the baseline value as a covariate. ALSYNC patients with prior CRT were excluded (n=28).

Result: The LVESVi reduction in both the ALSYNC and conventional CRT cohorts were better than the applicable target of 15% for patients with QRS duration ≥ 150 ms (p=0.05), but much greater in ALSYNC patients when QRS duration was between 120 and 150 ms (p=0.038).

Conclusion: This propensity score matched analysis showed that CRT with LV endocardial pacing resulted in improved LV reverse remodelling in intermediate QRS patients compared to conventional CRT.