Increased Effective Pacing Is Associated with Improved Survival in Cardiac Resynchronization Therapy Patients

April Bond
Mark Silver
Edward Schloss
Jagmeet Singh
Brett Atwater
Yong-Mei Cha
Eugene Chung
David O’Donnell
Maurizio Lunati
Shufeng Liu
Thomas Xie

Introduction: Higher percentages of ventricular pacing are known to enhance the clinical benefit of cardiac resynchronization therapy (CRT). Conventional device-reported ventricular pacing reports on pulse delivered rather than actual ventricular capture. A novel CRT diagnostic, EffectivCRT, assesses left ventricular capture after each pace to accurately quantify the percentage of effective ventricular pacing (%eCRT). The objective is to evaluate the association between %eCRT and clinical outcomes in a real-world Heart Failure (HF) patient population.

Methods: The Personalized CRT Study is a multi-center, single arm prospective observational study of real-world HF patients with CRT devices. Enrolled patients with the EffectivCRT diagnostic were included in this analysis, and their lifetime averages of %eCRT were obtained from device data. The clinical outcomes of the patients with %eCRT ≥ 95 were compared to the patients with %eCRT < 95.

Result: A total of 1207 patients (71% male, average age 70.1 ± 10.7 years) were included in this analysis, with an average follow-up duration of 8.7 ± 6.6 months. The group of patients with ≥95 %eCRT (n=822) had a 54% relative reduction in mortality over the group with <95 %eCRT (n=385) (hazard ratio 0.46, p=0.004, Figure 1). The patient group with ≥95 %eCRT also had significantly decreased risk of HF related hospitalizations (hazard ratio 0.47, p=0.014) and lower probability of having atrial fibrillation (AF) burden ≥ 5.5 hours in any day (hazard ratio 0.66, p<0.001).

Conclusion: In a real-world cohort of HF patients, ≥95 %eCRT was associated with reduced mortality, less HF hospitalizations, and lower probability of having AF burden ≥ 5.5 hours in any day.