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

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**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 $\geq$ 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 $\geq$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 $\geq$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 $\geq$ 5.5 hours in any day (hazard ratio 0.66, p<0.001).

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