Prognostic role of data transmitted by implanted cardiac electric devices in patients with advanced heart failure referred for heart transplantation

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Background: Patients (pts) with advanced heart failure (HF) are poorly tolerant to GDMT, frequently hospitalized and are often carriers of implantable cardioverter-defibrillators (ICD) or of cardiac resynchronization therapy (CRT-D). These devices allow HF centers to remotely monitor the occurrence of arrhythmic events and of ICD interventions, such as anti-tachycardia pacing (ATP) bursts or DC-shocks. While HF hospitalizations are an established prognostic marker, the role of remote monitoring in a context of pts referred for heart transplantation (HT) is poorly explored.

Purpose: In this retrospective monocentric study we aim to evaluate the prognostic value of remotely-transmitted information from ICD/CRT in pts with advanced HF followed in a tertiary Center dedicated to HF and HT.

Methods: We included all adult pts with a remotely transmitting device followed by both Electrophysiology and Heart Failure Teams in our Center between September 2016 and January 2023. We collected data about heart disease, medical therapy, echocardiography, device-delivered therapies, and hospital admissions for any cause. The outcome was the combined incidence of death from any cause or urgent heart transplantation.

Results: 123 pts were enrolled (57±10 yrs, 75% males, LVEF 34%-±10%). 68 had an ICD, 55 CRT-D. 50 pts (41%) received at least one device-delivered therapy (34 pts had at least one ATP; 29 pts had at least one DC-shock, of whom 26 were appropriate). During a mean follow-up of 29 months, we recorded 121 hospitalizations (53% for arrhythmias, 47% for acute HF) in 44 pts. The endpoint occurred in 14 pts: 12 (9.8%) died, 2 (1.6%) underwent to urgent HT; overall, 12 pts (9.8%) were transplanted. Pts with arrhythmic events had more frequently a spontaneous QRS >120ms (60% vs. 40%, p=0.04) and a trend towards more hospitalizations for heart failure (64% vs. 35%, p=0.059). The predictor of the combined endpoint of death or urgent transplant was hospitalization for HF (RR: 4.2, p<0.01); ATP and/or DC-shocks (RR 7.3) and intolerance to vasodilators (ACE-I, ARB, ARNI), (RR (1.5) showed a borderline statistical significance (p=0.06 for both). However, in the subgroup of patients without any HF hospitalization, device-delivered therapies from ICDs and CRT-D carried an higher risk of death and urgent HT (p=0.03), see Figure.

Conclusion: In a population of patients with advanced HF, while confirming the known prognostic role of HF hospitalization, we found that remote monitoring of ICD shocks/ATP in patients not hospitalized for HF identifies a subgroup of patients at high risk of death or urgent HT. These results underscore the importance of considering these patients for advanced HF therapies and of an integrated approach between electrophysiologists and HF specialists.