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WIRELESS LV ENDOCARDIAL STIMULATION FOR CARDIAC RESYNCHRONIZATION: SINGLE CENTER EXPERIENCE IN THE SELECT-LV STUDY

Vivek Y. Reddy, MD, Petr Sedivy, MD, PhD, Tomas Mraz, MD, Lucie Sediva, MD, PhD, Filip Malek, MD, PhD, Jan Petru, MD, Jaroslav Simon, MD, Subbarao Choudry, MD and Petr Neuzil, MD, PhD. Mount Sinai School of Medicine, New York, NY, Na Homolce Hospital, Prague, Czech Republic

Introduction: Patients indicated for CRT may remain untreated due to difficulty with CS access, lead placement/dislodgement, exit block, high pacing threshold, phrenic nerve stimulation, deteriorating HF, or high risk to ICD/pacemaker upgrade. The Wireless Cardiac Stimulation System, WiCS-LV (EBR Systems Inc) is comprised of an implanted battery-powered ultrasonic transmitter, and a leadless pacing electrode affixed directly onto the LV endocardium. The system detects RV pacing pulses from a co-implanted pacemaker/ICD and stimulates the LV synchronously with the RV. This WiCS-LV system is being evaluated in the SELECT-LV study.

Methods: In this study, we implanted 12 pts indicated for CRT but untreated due to difficult CS access/anatomy (n=8), lead dislodgement (n=1), high pacing threshold (n=1) or phrenic nerve stimulation (n=2). Pre-implant TTE screening defined the intercostal space (ICS) location for the transmitter implantation. Electrode implantation at the LV mid-lateral free wall was performed using a steerable sheath via a retrograde aortic approach, guided by fluoroscopy and ICE to assess LV wall thickness at the target location. Primary endpoints were at 1 month and secondary endpoints at 6m.

Results: Baseline characteristics: 11 men; NYHA 2.4±0.7; age 68±7 yrs; intrinsic QRS 176±34 ms includes RV-pace dependent QRS in 2 pts; EF 27.5±6.2%; etiology ICM-7/NICM-3/both-2; AF in 5 pts. CRT was achieved in all pts: BV QRS 133±32 ms at 1m and 139±24 ms at 6m, EF 32.0 ±8.9% at 6m (p=0.05); NYHA 1.6±0.5 at 6m (p=0.01). At 6m, there were no deaths or HF hospitalizations, and clinical composite scores: 11 improved (92%), 1 unchanged (8%), none worsened (0%). There were no instances of LV electrode dislodgement or AEs attributable to device deficiencies by the 6m follow-up.

Conclusions: Wireless endocardial LV pacing provides an alternative approach to CRT. This single center experience over the 6m study period demonstrates the clinical benefit in our pts who were previously left untreated by conventional CRT.

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VENTRICULAR ANTITACHYCARDIA PACING THERAPY IN HEART FAILURE PATIENTS WITH CARDIAC RESYNCHRONIZATION THERAPY DEFIBRILLATOR: EFFICACY, SAFETY AND IMPACT ON HEART FAILURE HOSPITALIZATIONS AND MORTALITY

Maurizio Landolina, MD, Maurizio Lunati, MD, Giuseppe Boriani, MD, PhD, Renato P. Ricci, MD, Alessandro Proclemer, MD, PhD, Elisabetta Daleffe, MD, Roberto Rordorf, MD, Massimiliano Maines, MD, Antonio Rossillo, MD, Giovanni Morani, MD, Giulio Molon, MD and Maurizio Gasparini, MD. Policlinico San Matteo, Pavia, Italy, Niguarda Ca' Granda Hospital, Milano, Italy, A.O.U.S.Orsola Maplighi, Bologna, Italy, San Filippo Neri Hospital, Roma, Italy, S.Maria della Misericordia, Udine, Italy, S.Maria del Carmine Hospital, Rovereto, Italy, Dell'Angelo Hospital, Mestre, Italy, Borgo Trento Hospital, Verona, Italy, A.O.Sacro Cuore Don Calabria, Negrar, Italy, IRCCS Istituto Clinico Humanitas, Rozzano, Italy

Introduction: Cardiac resynchronization therapy defibrillator (CRT-D) may terminate slow ventricular tachycardia (VT) and fast VT (FVT) via antitachycardia pacing (ATP). We evaluated ATP efficacy, ATP safety, and whether ATP may be associated with mortality and heart failure (HF) hospitalizations.

Methods: 1404 ICD patients (286 female, 67±10 years) were prospectively followed in a multicenter observational research. Mortality and hospitalization rates were estimated in patients' sub-groups to uncouple the trigger (VT/FVT or other rhythms leading to inappropriate detections) from the effect of ATP; we focused on 304 patients with ATP only on true VT/FVT, 833 patients with no episodes/therapies and 43 patients with only inappropriate ATP.

Results: Over a median follow-up of 31 months, 2917 VT/FVT were treated by ATP in 361 patients. Adjusted ATP success rate was 63% (95% CI=57-69%) on FVTs and 68% (CI=62-74%) on VTs. Accelerations occurred in 55 (1.88%) and syncopes in 4 (0.14%) of ATP-treated VTs/FVTs. Rate of deaths, per 100 patient-years, was 5.6 (CI=4.3-7.5) in patients with ATP on true VT/FVT, 3.3 (CI=2.6-4.2) in patients with no episodes and 1.5 (CI=0.4-6.1) in patients with inappropriate ATP (p=0.045 vs. appropriate ATP patients and p=ns vs. patients with no episodes after adjusting for baseline differences between patients' groups). Freedom from the endpoint composed by death or HF hospitalizations is shown in the figure.

Conclusions: ATP was highly effective in terminating VTs/FVTs with a good safety profile. Patients with inappropriate ATP had a mortality significantly lower than patients with ATP on true VT/FVT and not different from patients without episodes.

