Background: Left bundle branch area pacing (LBBAP) maintains or restores synchronous activation of the left ventricle, however at the same time, it introduces delay in activation of the right ventricle (RV) — expressed by R/r wave in lead V1.

Objective: To evaluate the effects of LBBAP on RV function as assessed with 2D-echocardiography.

Methods: Consecutive patients receiving LBBAP with significant ventricular pacing burden (>40%), R/r wave in lead V1 and at least one-year echocardiographic follow-up were included. Echocardiographic examination was focused on RV morphology and function and tricuspid valve function; final follow-up values were compared with baseline.

Results: A total of consecutive 100 patients were studied: age 76.7 ±10 years, female 41%, left ventricular ejection fraction 53 ±12%, ventricular pacing burden 87.6 ±20% and follow-up 21 ±7 months. There was no change in RV anatomy measured with RV basal, proximal or distal diameter (37 ±5 mm vs 37 ±4 mm, 29 ±4 mm vs 29 ±4 mm, 27 ±mm 4 vs 29 ±4 mm, respectively). There was no change in RV systolic function measured with S’ (13 ±3 vs 13 ±3) and fractional area change (41 ±11 vs 42 ±10) but there was a significant increase in tricuspid annular plane systolic excursion (22 ±5 mm vs 23 ±4 mm). Tricuspid regurgitation (TR) progression from low to moderate was observed in 8 patients. TR improved from severe to moderate in 2, and from moderate to low in 12 patients. There was no significant change in estimated TR maximal jet velocity (2.3 ±0.6 m/s vs 2.4 ±0.6 m/s).

Conclusion: Despite introduction of some delay in electrical activation of RV during LBBAP, the mechanical RV function seems to be unaffected.

CI-569-03

LEFT BUNDLE BRANCH AREA PACING FOR CARDIAC RESYNCHRONIZATION THERAPY: A MULTICENTER PROSPECTIVE STUDY

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Background: The societal guidelines recommend physiologic pacing for patients who are anticipated to require high burden ventricular pacing. This includes patients with a) AV block and LVEF between 35-50%, b) tachy-cardiomyopathy undergoing AV node ablation, c) chronic RV pacing induced cardiomyopathy, and d) failed CS lead implants as a rescue CRT strategy. There are limited data on the utility of left bundle branch area pacing (LBBAP) as an alternative to CRT in this patient sub-groups.

Objective: To evaluate the feasibility and outcomes of LBBAP in patients eligible for CRT.

Methods: Patients referred for pacemaker implantation at two academic centers between 02/2019-07/2021 were considered for LBBAP. LBBAP was performed by implanting the 3830 deflectable sheath (Medtronic, MN). Implant success rates, complications, electrophysiological and echocardiographic parameters were assessed.

Results: LBBAP was successful in 135/161 CRT eligible patients (84%). Mean age was 75±9 years and 34% were women. Failed cases were more likely to be men and had wider QRS duration at baseline (163±34 vs. 137±32, p<0.001) compared with successful cases. Among successful cases 20%
had RBBB, 25% had LBBB, 3% had IVCD, 12% were RV paced and 24% had narrow QRS complexes. PACing indications: AV block with LVEF 35%-50%: 48%, rescue CRT or pacing induced cardiomyopathy: 40% and refractory AF with LVEF<50%: 12%. Mean procedural duration was 84±45 mins and mean fluoroscopic time was 14±13 mins. Paced QRSd was 116±14 ms. Mean LV activation time was 74.6±12 ms at high output and 78±13 ms at low output. LBB potentials were noted in 20% patients. Transition from non-selective to selective LBBA or septal pacing was noted in 67%. Mean follow-up was 299±220 days (median 248 days). The were no chronic LBBA lead related complications such as lead perforation, threshold rise.

Conclusion: LBBA is safe and feasible alternative for CRT. LBBA is associated with stable intermediate term lead parameters, low complication rate, and is associated with improved echocardiographic outcomes.

CI-569-04

SEPTAL FLASH CORRECTION WITH HIS-PURKINJE PACING PREDICTS ECHOCARDIOGRAPHIC RESPONSE IN RESYNCHRONIZATION THERAPY

Margarida Pujol Lopez MD; Rafael Jimenez Arjona MD; Eduard Guasch MD, PhD; Adelina Doltza MD, PhD; Roger Borras Amoraga MSc; Ivo Roca-Luque MD, PhD; Maria-Angeles Castel MD, PhD; Paz Garre Anguera de Sojo BEng; Elisenda Ferró Lozano BEng; Mireia Niebla Bellido RN; Esther Carro Fernandez RN; Elena Arbelo MD, MSci, PhD; Marta Sitges MD, PhD; JOSE MARIA TOLOSANA MD, PhD and Lluis Mont MD, PhD

Background: His-Purkinje conduction system pacing (HPCSP) has been proposed as an alternative to cardiac resynchronization therapy (CRT); however, no predictors of echocardiographic response have been described. Septal flash (SF) is a marker of intraventricular dyssynchrony.

Objective: The study aimed to analyze whether HPCSP corrects SF in patients with CRT indication, and if correction of SF predicts echocardiographic response.

Methods: Prospective observational study (n=30). Left ventricular ejection fraction (LVEF) was measured with echocardiography at baseline and at 6-month follow-up. Echocardiographic response was defined as increase in 5 points LVEF. ECG Imaging was performed (CardioInsight Mapping Vest-Medtronic) in 2 patients to validate ventricular activation shortening and to study the basal and HPCSP activation pattern.

Results: HPCSP shortened QRS duration by 48±21ms and SF was significantly decreased (baseline 3.6±2.2mm vs HPCSP 1.5±1.5mm p<0.0001). At 6-months, mean LVEF improvement was 8.6% ± 8.7% and 64% of patients were responders. There was a significant correlation between SF correction and increased LVEF (r=-0.61, p=0.004). A correction of ≥1.5mm had 81% sensitivity and 80% specificity to predict echocardiographic response (area under curve 0.86, p=0.019).

Conclusion: HPCSP improves intraventricular dyssynchrony and results in 64% echocardiographic responders at 6-month follow-up. Dyssynchrony improvement with SF correction may predict echocardiographic response at 6-month follow-up.

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