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 measured 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 87.8 ± 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-569-02

CONDUCTION SYSTEM PACING FOR CARDIAC RESYNCHRONIZATION THERAPY IN PATIENTS WITH HEART FAILURE

Fatima Ezzeddine MD; Margarida Pujol Lopez MD; Michael Lavelle MD; Elaine Y. Wan MD, FHRS; Kristen K. Patton MD, FHRS; Melissa R. Robinson MD, FHRS, CCDS; Adi Lador MD; Kamala P. Tamrisa MD, FHRS; Saima Karim DO, FHRS; Soufian AlMahameed MD, FHRS; Cecilia Marianne Linde MD, PhD; Ratika Parkash MD, MS, FHRS; W. Savindu Botheju; Jordana Kordi MD, FHRS; Richard K. Shepard MD; Gautham Kalahasty MD; Bernice Tsang MD; Yaariv Khaykin MD, FHRS; Alfredo A. Pantano MD; Jayanthi N. Koneru MBBS; Kenneth A. Ellenbogen MD, FHRS and Yong-Mei Cha MD, FHRS

Background: Whether conduction system pacing (CSP) is an alternative option for cardiac resynchronization therapy (CRT) in patients with heart failure and reduced ejection fraction (HFrEF) remains to be determined.

Objective: To assess the technical and echocardiographic outcomes of His Bundle pacing (HBP) and left bundle branch area pacing (LBBAP).

Methods: This multi-center retrospective study included 121 patients who fulfilled CRT indications for HFrEF and received HBP or LBBAP. The implant and echocardiographic outcomes were assessed.

Results: Mean age was 71 ± 13 years (67.8% male). 80 (66.1%) patients had de novo implant while 41 (33.9%) patients had upgrade of an existing device. HBP and LBBAP were performed in 79 (65%) and 42 (35%) patients, respectively. The mean follow-up duration in the HBP and LBBAP groups was 312 ± 238 and 248 ± 199 days, respectively. In the HBP group, the pacing threshold was 1.32 ± 0.93 V at implant and 1.34 ± 1.00 V at follow-up (p = 0.88). In the LBBAP group, the pacing threshold was 0.91 ± 0.56 V at implant and 0.97 ± 0.54 V at follow-up (p = 0.49). Left ventricular ejection fraction (LVEF) significantly improved from 38 ± 13 to 48 ± 13 in the HBP group (p < 0.001), and from 33 ± 11 to 42 ± 13 in the LBBAP group (p < 0.001) (Table 1). The incidence of lead revision was 8.9% in the HBP and 2.4% in the LBBAP group (p = 0.26).

Conclusion: Both HBP and LBBAP resulted in significant ventricular resynchronization in patients with HFrEF. Large-scale randomized trials are needed to validate these outcomes and further investigate the different options available for CSP.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-CRT</th>
<th>Post-CRT</th>
<th>P-value</th>
<th>Pre-CRT</th>
<th>Post-CRT</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVEF [%]</td>
<td>38 ± 13</td>
<td>48 ± 13</td>
<td>&lt;0.001</td>
<td>33 ± 11</td>
<td>42 ± 13</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LVEDD [mm]</td>
<td>55 ± 10</td>
<td>51 ± 10</td>
<td>0.002</td>
<td>55 ± 17</td>
<td>52 ± 16</td>
<td>0.013</td>
</tr>
<tr>
<td>LVEDVI [mm]</td>
<td>44 ± 13</td>
<td>41 ± 11</td>
<td>0.027</td>
<td>45 ± 18</td>
<td>40 ± 16</td>
<td>0.008</td>
</tr>
<tr>
<td>TRV [m/s]</td>
<td>41 ± 12</td>
<td>37 ± 15</td>
<td>0.007</td>
<td>42 ± 16</td>
<td>42 ± 15</td>
<td>0.842</td>
</tr>
<tr>
<td>MR grade</td>
<td>1.66 ± 1.02</td>
<td>1.07 ± 1.03</td>
<td>0.002</td>
<td>1.44 ± 0.88</td>
<td>1.31 ± 1.03</td>
<td>0.379</td>
</tr>
<tr>
<td>TR grade</td>
<td>1.72 ± 1.33</td>
<td>1.35 ± 1.20</td>
<td>0.053</td>
<td>1.19 ± 1.12</td>
<td>1.16 ± 1.19</td>
<td>0.845</td>
</tr>
</tbody>
</table>

CI-569-03

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

Santosh K. Padala MBBS; Paula Sanchez Somonte; Jeffrey Kolominsky MD; Alexandre Raymond-Paquin MD; W. Savindu Botheju; Jordana Kordi MD, FHRS; Richard K. Shepard MD; Gautham Kalahasty MD; Bernice Tsang MD; Yaariv Khaykin MD, FHRS; Alfredo A. Pantano MD; Jayanthi N. Koneru MBBS; Kenneth A. Ellenbogen MD, FHRS and Atul Verma MD, FHRS

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 lumenless lead using the CI315 fixed curve or CI304 His 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%