of whom 120 (68%) and 56 (32%) were low-intermediate and high risk, respectively. Cancellation rate of ICA after FFRCT was significantly higher compared to only using CTA in both the low-intermediate (75.2% vs. 47.7%, p<0.001) and the high (91.5% vs. 74.5%, p<0.001) risk groups. Planned revascularisation was performed in 25 (4.3%) and 29 (19.0%) patients in the low-intermediate and high risk groups, respectively. The composite end-point occurred in 19 patients with 1.7% and 5.8% in the low-intermediate and high risk groups, respectively (p=0.008).
Conclusion: FFRCT assessment in patients at high pre-test risk of having significant CAD is feasible. However, this strategy is associated with higher subsequent risk when compared to CTA FFRCT testing in a standard low-intermediate pre-test risk group. Additional studies of using non-invasive CTA- FFRCT testing in high risk patients are needed.

FROM IMPLANTATION TO EXTRACTION: CURRENT ISSUES IN DEVICE TREATMENT

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His bundle pacing in left bundle branch block patients

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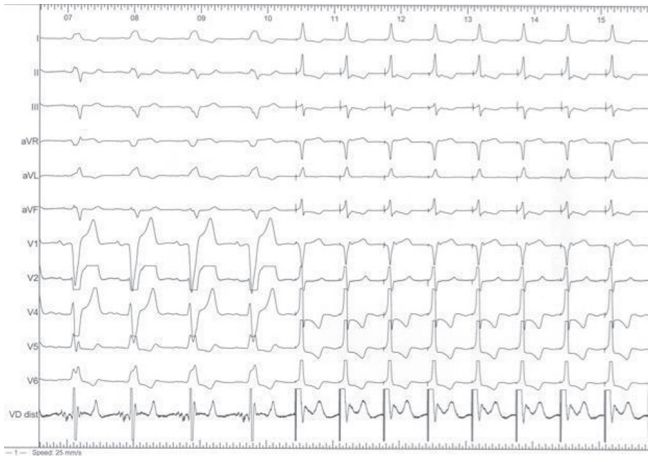
Background: His bundle pacing (HBP) can correct left bundle branch block (LBBB) allowing QRS normalization and correction of ventricular dyssynchrony.
Objective: Aim of the present study was to analyze technical and clinical outcomes of HBP in LBBB patients referred for PM implantation with preserved ejection fraction (EF).
Methods: 36 patients (75±8 years; 17 males) presenting LBBB (mean QRS duration 163±23 ms) received permanent HBP. Indications for pacing were AV block (25 pts; 70%), sinus node disease (8 pts; 22%), AF with slow ventricular rate (3 pts; 8%). A back up lead was implanted in RV apex in 15 (42%) patients. 5 (14%) pts had ischemic cardiomyopathy, 30 (83%) pts had hypertension, 6 (17%) pts had diabetes, and 2 (5%) pts had severe kidney disease. 4 (16%) pts had permanent AF. Basal mean EF was 53±11%. Mean NYHA class was 1,7±0,7.
Results: In 32 patients (89%) we obtained selective HBP: in 19 patients (53%) HBP normalized QRS morphology and duration (LBBB disappeared) and in 13 patients (36%) QRS remained unchanged. In the remaining 4 patients (11%) we obtained non-selective HBP with slight QRS enlargement and local myocardial capture. HBP threshold at implant was 1.5±0.9 V@0.5 ms. During a mean follow-up of 5.3±3.6 years, 31 (86%) patients showed persistence of effective HBP while 5 patients (14%) showed technical problems that in two cases required new lead implant. During follow-up 14 pacemakers reached EOL. VP>40% was recorded in 86% of pts (mean VP 84%). High AF burden (AT/AF>50%) was found in 33% pts. A back-up lead during follow-up was added in 1 patient. The mean EF at the end of follow-up was 56±11% (P=NS). The subgroup of patients with QRS normalization showed a slight improvement of EF from 50±11% to 54±12%. In the whole population only one patient experienced heart failure hospitalization.



HBP correct LBBB

Conclusion: Permanent HBP completely corrected LBBB in 53% of pts referred for PM implantation. The physiological ventricular electro-mechanical activation contributed to preserve normal LV function during high percentage of pacing and during a long-term follow-up. The system showed a good technical performance.

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The VALID-CRT risk score reliably predicts outcome after cardiac resynchronization therapy in an real-world population

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Background: Several risk-stratification algorithms have been proposed as tool being able to predict outcome after cardiac resynchronization therapy (CRT). However most of them are based on complex variables makes them unreliable and impracticable in clinical practice. The VALID-CRT risk-stratification algorithm is based on few variables that are routinely available.
Purpose: To confirm the value of the VALID-CRT risk score in predicting outcome and assess its association with clinical response in an unselected real-world CRT population.
Methods: The present analysis included all consecutive CRT patients (pts) enrolled in the CRT-MORE registry from 2011 to 2013 with complete data and outcome information. Patients were stratified in five groups (quintile 1–5) according to the VALID-CRT risk score. Adverse events for the analysis of clinical outcome comprised death from any cause and nonfatal heart failure (HF) events requiring hospitalization, whichever occurred first after CRT implantation. Clinical Response (CR) at 12-month follow-up was also assessed according to a hierarchical composite criteria which includes alive status, hospitalization for HF, and variations in NYHA functional class, respectively.
Results: We included 905 patients (mean age 70±10 years, 73% male, 47% ischemic, 61% NIHA III/IV, 21% with atrial fibrillation at the time of implantation, mean LVEF 29±7%). During a median follow-up of 1005 [627–1361] days 134 patients died, 79 had at least one HF hospitalization and 199 met the combined endpoint of death or HF hospitalization. 69% of pts displayed an improvement in their CR at 12 months. The mean VALID-CRT risk score was 0.317, ranging from -0.419 of Q1 to 2.59 of Q5. The risk-stratification algorithm was able to predict total mortality after CRT (survival ranging from 93% -Q1- to 77% -Q5-; HR=1.42, 95% CI: 1.25 to 1.61, p<0.0001), HF hospitalization (event-free ranging from 95% to 90%; HR=1.24, 95% CI: 1.06 to 1.45, p=0.009) and the combined endpoint of death or HF hospitalization (event-free anging from 78% to 69%; HR=1.34, 95% CI: 1.21 to 1.48, p<0.0001). In comparison with pts with low-to-intermediate Risk profile (Q1–2-3) the CR was significantly lower in pts with high-to very high risk profile (Q4–5) (55% vs 79%, p<0.0001) and it decreases according to the severity of the risk profile (ranging from 89% -Q1- to 49% -Q5-).
Conclusion: The VALID-CRT risk score reliably predicts outcome after CRT in an unselected, real-world population. Of interest, even if this score was validated for total and cardiovascular mortality, it seems to be useful for predicting CRT response. The score may be of value in tailoring follow-up and treatment strategies in clinical practice.

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Achieved biventricular pacing during the first year of follow-up predicts long-term outcome in patients with heart failure treated with cardiac resynchronization therapy

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Background: In heart failure (HF) patients treated with cardiac resynchronization therapy (CRT), preoperative atrial fibrillation (AF) is common and associated with poor outcome. Insufficient biventricular pacing (BivP) is more common in patients with AF, however it is not fully clarified to what extent insufficient BivP contributes to the poor outcome of CRT in AF patients with HF and whether high degree of achieved BivP can mitigate deleterious effect of AF on the outcome.
Purpose: To assess the relationship between the extent of BivP in patients with AF and the long-term prognosis in CRT recipients.
Methods: All CRT recipients at a tertiary care hospital were included in the study (n=379, median age 71, 85% male). Data regarding prevalent AF was obtained from the Swedish National Patient Registry, hospital records and preoperative ECGs. The extent of BivP was assessed from device interrogations during the first year of follow-up. Kaplan-Meier curve and Cox regression analyses adjusted for age, ischemic etiology of HF, left ventricular ejection fraction, left bundle branch block and NYHA class III/IV were performed to assess the impact of AF and BivP dichotomized by earlier suggested 98% cut off on the risk of death or heart transplantation at 10 years of follow-up.
Results: Preoperative AF was found in 206 patients (54%) and 31 patients had AF detected during the first year of therapy so that the total prevalence of either pre-procedural or device-detected AF adds up to 63% of all patients by one year after CRT implantation. During first year of treatment, 45% of AF patients had BivP ≤98%, which was associated with poor outcome compared with those without AF (HR=1.9, 95% CI 1.2–3.0, p=0.005; See Figure) whereas AF and BivP >98% was not (HR 1.4, 95% CI 0.9–2.3, p=0.14). No significant differences were found regarding baseline heart rate, demographics, medications or clinical characteristics at CRT implantation when AF patients with high versus low BivP were compared.
Conclusion: In patients with congestive HF treated with CRT, AF is a very com-