ejection fraction ≤35% and LBBB with QRSd ≥120ms who underwent CMR imaging before CRT implantation. CMR derived LV end-diastolic volumes (LVEDV) were used for QRSd normalization (i.e. QRSd/LVEDV). The primary endpoint was a combined endpoint of death, LVAD or HTx.
Results: During a median follow-up of 3.9 years, 79 (32%) patients reached the primary endpoint. In univariable Cox regression, unadjusted QRSd was unrelated to CRT outcome (p=0.116). In contrast, normalized QRSd was a strong predictor of outcome (HR 0.13 per ms/ml, p=0.008). An internally validated prognostic model built with backward elimination including age, gender, diabetes mellitus, atrial fibrillation, kidney function, strict LBBB morphology, LVEDV, LV end-systolic volume and etiology on LGE-CMR as other candidate predictors, yielded a prognostic model for CRT survival containing normalized QRSd together with age, atrial fibrillation, kidney function and etiology on LGE-CMR.
Conclusion: Normalization of QRSd to LV dimension improves prediction of survival after CRT implantation. QRSd normalization is a relatively simple method that might improve patient selection for CRT.

P5736
MPP reduces the ventricular arrhythmias burden compared to standard biventricular pacing in CRT patients

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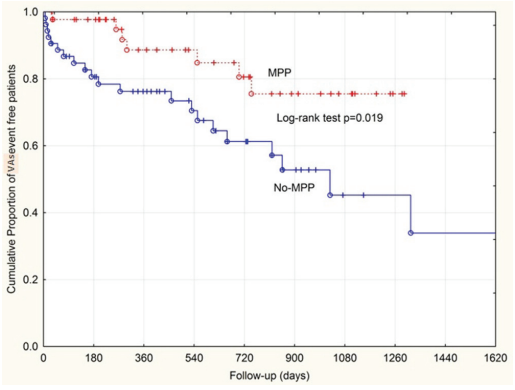
Background: Multipoint pacing (MPP) in CRT produces a more uniform ventricular depolarization and could reduce the arrhythmic burden in patients implanted with an ICD.
Purpose: Aim of the study was to compare the ventricular arrhythmic burden in a long term follow up in two homogeneous group of CRT patient, the first programmed with bipolar LV pacing configuration and the latter with MPP.
Methods: We retrospectively evaluated the incidence of ventricular arrhythmias in 100 patients implanted with CRT-Defibrillator (46 with MPP, 54 with standard biventricular pacing) over a mean follow up of 23±14 months. We considered the first ventricular event (VT and VF) requiring ICD intervention.
Results: No significant differences in clinical characteristics between the two groups were found. 7 pts in MPP group (15%) and 23 pts in non-MPP (43%) group experienced ventricular arrhythmias treated with ATPs or shocks. The time of the first event on average was 410 days in MPP group vs 498 in non-MPP group.



Ventricular arrythmias in MPP non MPP

Conclusions: In our series of CRT patients MPP reduced the ventricular arrhythmias compared to standard bipolar pacing.

P5737
Clinical performance of quadripolar left ventricular leads compared to biventricular leads

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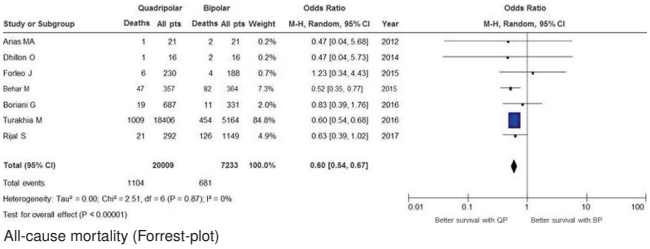
Background: Some retrospective and prospective studies in heart failure patients with indication for cardiac resynchronization therapy (CRT) suggest better clinical outcomes for quadripolar left ventricular leads over bipolar leads. Lead failure remains an important safety concern, when using these more complex, novel electrodes.
Purpose: To evaluate safety and efficacy outcomes for quadripolar versus bipolar left ventricular leads in patients receiving CRT.
Methods: We performed a comprehensive literature search through 2017, using "quadripolar", "bipolar", "left ventricular lead" and "CRT" in PubMed, Cochrane Library and Google Scholar databases to identify studies comparing patients with quadripolar and bipolar left ventricular CRT leads. Classical meta-analytic techniques were used to compare mortality and clinical outcomes.
Results: A total of 10 studies were selected for analysis comprising 27.377 patients (quadripolar lead: 20.085 pts; bipolar lead: 7.292 pts). Seven studies examined the effects of CRT on survival. In these studies, use of quadripolar electrodes was associated with significantly better survival compared to patients with bipolar LV-leads (OR=0.60; 95% C. I. 0.54–0.67, p<0.001). Lead malfunctions defined as LV lead failure resulting in lead deactivation (OR=0.55; 95% C. I. 0.42–0.73; p<0.001) or LV lead dislodgement requiring LV lead replacement/repositioning (OR=0.63 95% C. I. 0.45–0.90; p=0.01) were more often encountered among patients with bipolar leads compared to patients with quadripolar leads. Phrenic nerve stimulation was not different between both patient groups (OR=0.56; 95% C. I. 0.27–1.17; p=0.12). Clinical outcomes defined as clinical improval measured in NYHA functional class (OR=1.50; 95% C. I. 0.70–3.23; p=0.30) and hospitalization rates (OR=0.82 95% C. I. 0.59–1.15; p=0.25) were comparable between patients with bipolar LV leads and patients with quadripolar LV leads.



All-cause mortality (Forrest-plot)

Conclusion: Our meta-analysis suggests distinct benefits of quadripolar over bipolar electrodes in patients undergoing CRT.

P5738
Active fixation lead improves clinical response to cardiac resynchronisation therapy

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In cardiac resynchronisation therapy (CRT) the placement of a passive left ventricular (LV) lead is driven by anatomic variability such as the presence of suitable coronary sinus (CS) vein in lateral (L) or postero-lateral (PL) site and by stability issues solved wedging distally the LV lead in the vein. Accordingly the final obtained location can be suboptimal because of insufficient electrical delay at the pacing site ultimately leading to clinical non responder to CRT. Active fixation (AFix) lead can be purposely deployed in the latest available electrically activated site usually located in basal L or PL LV site irrespective of anatomic and stability considerations obtaining better electrical parameters of resynchronisation (EResync) possibly reducing non responder rate to CRT.
Objective: To compare the electrical and clinical performance of AFix LV lead with PLVL (passive LV lead).
Methods: Electrical and clinical performances of 91 consecutive PLVLs were compared with 42 consecutive AFixs in 133 heart failure (HF) patients with systolic dysfunction and prolonged QRS duration candidates to CRT. The parameters of EResync evaluated were: (1) local LV activation time (LAT) calculated from QRS onset (QRSo) to the electrogram registered from the distal bipole of LV lead positioned in the final site, (2) LAT to QRS duration ratio (LAT/QRS), (3) duration of QRS obtained with biventricular pacing (QRSbiv) and (4) QRSbiv to QRS ratio (QRSbiv/QRS). The clinical endpoint was all cause mortality and/or unplanned HF admission.
Results: The two groups were similar in term of clinical, echocardiographic, ECG parameters, number of CSVs and types of implanted devices (87 defibrillators, 65,5%).
AFix achieved better EResync parameters compared to PLVL, specifically LAT, LAT/QRS, QRSbiv, QRSbiv/QRS for AFix and PLVL were respectively 119,8±27 vs 99,3±37msec (p=0,002), 0,71±0,13 vs 0,60±0,19 (p=0,002), 135,3±20 vs 143,34±15msec (p=0,04) and 79,5±11% vs 92±15% (p<0,001). L or PL vein was targeted in 97,2% with AFix vs 74,4% with PLVL (p=0,003) and basal segment was the target site in 30,6% and 5,2% with AFix and PLVL respectively (p=0,001). HF admissions plus all cause mortality were statistically reduced in AFix vs PLVL (3,7% vs 40%, p=0.038) at 1 year follow up.
Conclusion: AFix was superior to PLVL in reaching a stable final position in later activated L and PL basal LV segments leading ultimately to a better EResync and therefore to an improved clinical response to CRT compared to PLVL.

P5739
LV lead apical position could be the best option in selected CRT patients

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Background: Pursuing the optimal left ventricular (LV) pacing site is crucial to increase the percentage of patients responder to cardiac resynchronization therapy (CRT). Purely anatomically defined regions do not seem to predict CRT response, although evidences in the literature suggest avoiding apical regions.
Objective: To evaluate the correlation between acute improvement in contractility and LV lead anatomical position.