LVESV by 15%, responders (decreased LVESV 15-30%) and super responders (decreased LVESV by >30%). After the first year no difference in occurrence of ICD therapy is observed. During the first year ICD therapy was received by respectively 14 (14%), 14 (14%), 13 (9%), 5 (4%) non-responders, 149 (29%) responders, 161 (31%) super responders. During follow-up the extent of response to CRT-D is associated with lower occurrence of ventricular arrhythmias. Due to LV reverse remodeling, accompanied with improvement of LV ejection fraction (LVEF), some patients outgrow eligibility for ICD. Data on extent of response to CRT and its association with ICD therapy remains scarce.

Methods: All patients who underwent primary prevention CRT-D implantation in combination with echocardiography at baseline and 6 months follow up are included. Patients are divided in subgroups according reduction in left ventricular end-systolic volume (LVEVS), 6 months after implantation. Subgroups are: negative responders (increased LVEFS), non-responders (decreased LVEFS 0-15%), responders (decreased LVEFS 15-30%) and super responders (decreased LVEFS >30%). During follow-up ICD therapy is registered.

Results: During a median follow up of 46 months (26th – 75th percentile 31 – 70), 512 patients were followed (101 (20%) negative responders, 101 (20%) non-responders, 149 (29%) responders, 161 (31%) super responders). During the first year ICD therapy was received by respectively 14 (14%), 14 (14%), 13 (9%), 5 (3%) negative responders, non-responders, responders and super responders (X2 p = 0.005). After the first year no difference in occurrence of ICD therapy is observed.

Conclusions: Clinical responders showed significant improvements in QoL scores between baseline and 6 months (decrease in LWHF 15 points [p < 0.0001]; increase in MICS 3 points [p=0.03]). Non-responders showed no significant changes compared to baseline on any of the QoL scores (all p-values > 0.30). Responders showed the only independent predictor of change in QoL scores; resynchronization mode (LV vs BiV), interaction between mode and responder status, age and sex were not independently associated with changes in QoL. Changes in the duration of submaximal exercise testing showed moderate but significant correlations with changes in LWHF (Spearman’s ρ = 0.98; p=0.0001) and PCS scores (p=0.46; p=0.0001). An exploratory regression tree analysis showed that using a cut-off value of 55% improvement in duration of submaximal exercise testing instead of 20% to define response provided the best discrimination in terms of QoL score change.

Conclusions: Submaximal treadmill exercise testing adequately reflects changes in quality of life after resynchronization therapy. Although this test should be compared to other means of assessing response and refined as to its best cut-off value, it has great potential in patient evaluation following resynchronization therapy.

P3161 I BENCH

The distribution of ICD therapy by extent of response to cardiac resynchronization therapy: results of long term clinical follow up

A.C. Van Der Heijden, U. Hoke, C.J.W. Borleffs, J. Thijssen, J.B. Van Rees, E.T. Van Der Velde, M.J. Schalij, L. Van Erven. Leiden University Medical Center, Department of Cardiology, Leiden, Netherlands

Purpose: The extent of response to cardiac resynchronization therapy-defibrillator (CRT-D), as measured by echocardiographic left ventricular (LV) reverse remodelling, is a powerful predictor of survival. Additionally response to CRT-D is associated with lower occurrence of ventricular arrhythmias. Due to LV reverse remodelling, accompanied with improvement of LV ejection fraction (LVEF) some patients outgrow eligibility for ICD. Data on extent of response to CRT and its association with ICD therapy remains scarce.

Methods: All patients who underwent primary prevention CRT-D implantation in combination with echocardiography at baseline and 6 months follow up are included. Patients are divided in subgroups according reduction in left ventricular end-systolic volume (LVEVS), 6 months after implantation. Subgroups are: negative responders (increased LVEFS), non-responders (decreased LVEFS 0-15%), responders (decreased LVEFS 15-30%) and super responders (decreased LVEFS >30%). During follow-up ICD therapy is registered.

Results: During a median follow up of 46 months (26th – 75th percentile 31 – 70), 512 patients were followed (101 (20%) negative responders, 101 (20%) non-responders, 149 (29%) responders, 161 (31%) super responders). During the first year ICD therapy was received by respectively 14 (14%), 14 (14%), 13 (9%), 5 (3%) negative responders, non-responders, responders and super responders (X2 p = 0.005). After the first year no difference in occurrence of ICD therapy is observed.

Conclusions: During the first year of follow up the extent of response to CRT-D is associated with a parallel reduction of appropriate device therapy. Hereafter there is no association observed. In total 23% of super responders is treated for a potentially life threatening arrhythmia during follow up.

P3162 I BEDSIDE

High value of right ventricular to left ventricular interlead electrical delay during right ventricular pacing predict favorable response in patients with cardiac resynchronization therapy


Introduction: Anatomical and electrical separation of left ventricular (LV) and right ventricular (RV) electrodes is significant for successful resynchronization therapy (CRT). During bi-ventricular pacing, the electrical activation was composed by RV and LV pacing wavefronts. So the region with latest activation during intrinsic rhythm might not correspond to the optimal pacing site during CRT.

Hypothesis: We assess the hypothesis that interlead electrical delay measurements during RV and LV pacing besides intrinsic rhythm could predict favorable response to CRT.

Methods and results: We evaluated 51 heart failure patients (age 64±13 years, LV ejection fraction 28±15%, QRS duration 155±53 ms) who transitioned from 2:1 RV to LV paced CRT. The LV-RV interlead electrical delay (IED) during intrinsic rhythm, RV pacing (RV pacing-LV sensing: RVP-LVs) and LV pacing (LV pacing-LV sensing: LVp-LVs) were measured intraoperatively by utilizing intracardiac electrograms. After CRT implantation, 33 (65%) patients responded to CRT. The responders showed a significantly higher value of RVP-LVs compared with non-responders (46±42 vs. 141±36 ms, respectively; p=0.04) and the absolute value of the difference between RVP-LVs and LVp-RVs was lower in responders than in non-responders (16±19 vs. 28±22 ms, respectively, p=0.04). The IED during intrinsic rhythm (71±53 vs. 40±44 ms, p=0.07) and LVp-RVs (170±47 vs. 146±35, p=0.06) showed higher tendency in responders, however they couldn’t predict responders. Moreover, among narrow QRS patients (n=21; median QRS duration 118ms, 95 to 140ms), RVP-LVs was significantly higher in responders than in non-responders (19±34 vs. 121±52ms, p<0.01). Same as the entire cohort, the IED during intrinsic rhythm couldn’t predict responders (59±24 vs. 35±36ms, p=0.11). At multivariate analysis, RVP-LVs was the only independent predictor of reverse remodeling in narrow QRS subgroup (p=0.03).

Conclusion: Interlead electrical delay during intrinsic rhythm couldn’t predict LV reverse remodeling after CRT. However high value of RVP-LVs measured intraoperatively was associated with favorable response irrespective of QRS width, which implies an optimal LV lead position during CRT implantation.

P3163 I BEDSIDE

Acute haemodynamic response to cardiac resynchronisation therapy is greater in patients with chronic RV pacing compared to patients with intrinsic bundle branch block

M. Das, F.Z. Khan, M. Mcondonald, J.D. Parker, K. Nanakumara, A.M. Suszko, S. Balmain. University Health Network and Mount Sinai Hospital, Toronto, Canada

Purpose: Cardiac resynchronisation therapy (CRT) is associated with acute haemodynamic improvement in patients with intrinsic bundle branch block and the magnitude of improvement has been correlated with QRS duration. The acute haemodynamic effect of CRT in patients with chronic right ventricular (RV) pacing is unclear. We investigated the magnitude and predictors of acute haemodynamic response to CRT in patients with chronic RV pacing compared to intrinsic bundle branch block (BBB).

Methods: We performed a retrospective, single centre study to compare the acute haemodynamic response to CRT between patients with RV pacing and patients with intrinsic BBB. Baseline intra-arterial pressure (PAP) and acute change in response to CRT (delta PAP) were measured. Baseline PAP, pre-CRT QRS duration and, were available, right heart catheterisation data were analysed for predictors of delta PAP.

Results: The RV paced group (n=99) displayed a significantly greater delta PAP compared to the intrinsic BBB group. (166±24 vs. 124±36 mmHg, p=0.0001, Figure 1). In multivariate linear regression analysis, predictors of delta PAP were: baseline mean pulmonary artery pressure, baseline PAP, and RV pacing (X2 = 0.164, p=0.001). QRS duration did not predict haemodynamic response to CRT.

Conclusions: Patients with chronic RV pacing display a greater haemodynamic