CRT09
EXPERIENCE WITH 255 TRANSVENOUS CORONARY SINUS LEAD IMPLANTATIONS FOR CARDIAC RESYNCHRONIZATION THERAPY

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Introduction: Cardiac Resynchronization therapy (CRT) using coronary sinus (CS) leads is a new method for the therapy of congestive heart failure (CHF) in the case of inter- and intraventricular conduction delays. Because the intervention is more complex than regular pacemaker implantations more informations on the feasibility of this intervention are of interest.

Methods: From 1999-2004 n=255 transvenous coronary sinus leads were implanted in 234 CHF patients (mean age 61±17 years, 14-90 years age spectrum). 88% were over the wire leads, 71% preshaped and over the wire. Perioperative data were analyzed retrospectively.

Results: 84% of pts. were male, 44% of pts. had coronary artery disease, 30% of pts. were in atrial fibrillation, 78 pts. had preexisting pacemakers (upgrade procedure). 43 (16%) were implanted from the right subclavian vein, the others from the left side. Coronary sinus leads were positioned according to variable vein anatomies: 130x posterolateral, 97x anterolateral and 28x anterior (A). The mean operation time was 110 min +,-, mean fluo time was 15.8 +,- 11min. Severe complications were: CS dissection 5 cases (contrast media paravasation), ventricular fibrillation: 4 cases (defibrillation needed), asystole: 5 (pacing needed), pulmonary edema: 1 case, pneumothorax: 2 cases, acute CS lead dislodgement 5 cases, infection 1 case. In total we observed 23 severe complications. 12 patients had phrenic nerve stimulation, 5 of them needed reoperation. There were no deaths during the perioperative phase. 88% of pts. showed an improvement in their NYHA class and could be classified as responders regardless of the underlying disease, the preexistence of atrial fibrillation or a conventional pacemaker. In regard to anterior lead position the rate of responders was lower (55%).

Conclusion: Coronary sinus lead implantation is a complex procedure with some hazards. The complication rate is in the range of 10%, but in our series these could be managed without mortality or persistent morbidity. Most patients responded very well to the procedure. Therefore CRT should be offered to otherwise untreatable CHF patients. Anterior CS lead positions should be avoided.

CRT10
USE OF THORACIC IMPEDANCE MEASUREMENTS FOR THE SURVEILLANCE OF HEART FAILURE PATIENTS UNDER RESYNCHRONIZATION THERAPY

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Introduction: Early detection of volume overload prior to clinical decompensation is crucial in the management of the heart failure patients. To reach this goal thoracic impedance measurements generating an index with alarming functions (Optivol) are integrated in a newly released defibrillator (Living CHF, Sorin), connected to a right ventricular lead microaccelerometer sensor to record the PEA signal, was implanted. At implant and 3 months later, for each pacing configuration (BiV0, LV, LR20,LR40,RL20,RL40), ADV scanning (ranging from 60 to 300 ms) was performed and PEA was continuously recorded. PEAwas calculated as the mean of PEA values during ADV scanning.

Results: At 3 months follow-up, in 4 patients PEA method confirmed the optimal pacing configuration. 9 patients died at implant time. In 2 patients the optimal pacing configuration was changed and 2 patients resulted non responder (n.r.).

Conclusion: PEA signal versus ADV scanning may be a valid means to assess CRT response and to guide CRT reprogramming during follow-up.

CRT11
VARIATION OF CRT RESPONSE DURING FOLLOW-UP: ASSESSMENT AND REPROGRAMMING

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In CRT follow-up, when heart remodelling occurs, what is lacking is a means for a continuous monitoring of individual responses to automatically guide, when it is necessary, an optimal reprogramming of pacing configuration. The area of Peak Endocardial Acceleration (PEAa) curve versus AV delay (AVD) depends on changes of both transmitral Doppler flow and contractility. Consequently the selection of CRT configuration corresponding to the maximum PEAa allows to obtain the greatest hemodynamic benefit at implant and during the follow-up.

Aim of the study: to evaluate individual response to CRT during follow-up by the assessment of PEAn, at different pacing configurations.

Methods: In 8 patients with impaired LV function (NYHA class III or IV and QRS>150ms) a biventricular pacemaker (Living CHF, Sorin), connected to a right ventricular lead microaccelerometer sensor to record the PEA signal, was implanted. At implant and 3 months later, for each pacing configuration (BiV0, LV, LR20,LR40,RL20,RL40), ADV scanning (ranging from 60 to 300 ms) was performed and PEA was continuously recorded. PEAn was calculated as the mean of PEA values during ADV scanning.

Results: At 3 months follow-up, in 4 patients PEAn method confirmed the optimal pacing configuration. 9 patients died at implant time. In 2 patients the optimal pacing configuration was changed and 2 patients resulted non responder (n.r.).

Conclusion:

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3 months

Conclusions: PEA signal versus ADV scanning may be a valid means to assess CRT response and to guide CRT reprogramming during follow-up.

CRT12
MYOCARDIAL VIABILITY IS A BETTER THAN QRS DURATION IN PREDICTING CLINICAL BENEFIT FROM CARDIAC RESYNCHRONISATION THERAPY

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Background: Although the benefits of cardiac resynchronisation therapy (CRT) are well established, they are difficult to predict from clinical, ECG or echocardiographic parameters. Gadolinium DTPA-enhanced magnetic resonance (Gd-MR) imaging is the gold-standard for the in vivo identification of myocardial scarring. This study hypothesised that the clinical benefit of CRT can be predicted from the assessment of left ventricular (LV) myocardial viability using Gd-MR.

Methods: 29 patients with heart failure due to coronary heart disease or dilated cardiomyopathy, aged 71.3 (1.8) yrs [mean (SEM)], in NYHA class II (n=1), III (n=21) and IV (n=7) and with a QRS of 154 (12) ms underwent a clinical assessment, including a 6-min walk test, before and after CRT. A Gd-MR scan (1.5 TGE Signa scanner) was obtained at baseline,10 min following 0.1 mmol/Kg Gd-DTPA i.v. using a multiphase inversion recovery fast gradient-echo (IR-FGRE) sequence. Scar volume was calculated by planimetry from short axis sections and expressed as a % of total LV myocardial volume. Non-responders (NR) were defined as patients who died or in whom, at the most recent follow-up, NYHA class and/or 6 min walking distance had either not changed or decreased.

Results: After a follow-up period of 418.0 (44.9) days, 6 NR were identified. % scar volume was 30.7 (8.9) cm3 in NR and 12.5 (2.0) cm3 in responders (R) (ANOVA, p=0.0041). In logistic regression analyses, % scar volume emerged as a predictor of NR (p=0.0194), whilst LV ejection fraction, baseline QRS duration and aetiology did not. In survivors, % scar volume emerged as a predictor of change in walking distance from baseline to follow-up (p=0.0337).

Conclusion: Myocardial viability assessed by Gd-MR is a predictor of outcome in patients undergoing CRT. Further studies are needed to determine the role of Gd-MR in selecting patients for CRT.