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**Comparison of endocardial vs epicardial LV pacing in patients receiving CRT**I. Karpenko<sup>1</sup>; A. Abramova<sup>1</sup>; M. Chanafi<sup>1</sup>; D. Lopin<sup>2</sup>; D. Volkov<sup>2</sup><sup>1</sup>Odessa National Medical University, Odessa, Ukraine; <sup>2</sup>GI "Zaycev V.T. Institute of General and Urgent Surgery of NAMS of Ukraine", Kharkiv, Ukraine

**Background:** Physiological ventricular depolarization proceeds in endo-to-epicardial direction. Thus excitation from the LV endocardium with total endocardial BiV pacing might be beneficial.

**Purpose:** Comparison of endocardial vs epicardial LV pacing for CRT.

**Methods:** Two groups of CRT patients were retrospectively analyzed: 1st group, n=48 pts, aged 61±8 yrs, 33 males with conventional LV epicardial pacing through CS tributaries and 2nd group, n=21 pts, aged 58±7 yrs, 14 males with LV endocardial pacing by interventricular septum (IVS) puncture. Patients of both groups were comparable by gender, HF etiology, EF, NYHA class, mitral regurgitation (MR), CHA2DS2VASc score, AFib prevalence and FU duration. In 2nd group active-fixation lead placement by IVS puncture close to the basis of postero-lateral papillary muscle guided by ICE or TEE with additional use of 3D mapping in 4 pts was achieved in 20 of 21. 16 pts (76%) in the 2nd group had at least one failed previous transvenous epicardial attempt. 7 patients had endocardial LV implantation during first procedure just after unsuccessful transvenous CS epicardial access.

**Results:** In the 1st group 7 periprocedural complications including 2 CS dissections (no tamponade), 2 LV epicardial lead dislodgement (3 with successful second transvenous attempt, 1 with open-chest LV lead placement), 3 phrenic nerve stimulation solved by reprogramming were observed. In the 2nd group 3 complications were observed: VF during RF energy delivery to cross IVS, guidewire ventricular perforation (no tamponade) and LV lead dislodgement (with next day successful in-place repositioning). FU period was 31±10 month and 27±7 months respectively. Mortality rate in the 1st group was 16.7% (1 pts due to SCD, 6 pts – HF progression, 1 pts – oncology); 2nd group – 14.3% (3 pts): 2 pts by SCD (no ICD back-up), 1 pts due to HF progression. There were 2 non-disabled strokes in 1st group and 2 TIA in the 2nd group. 37 of 48 (77%, 1st group) and 18 of 21 (86%, 2nd group) were responders to CRT. EF increased after 12 months FU from 23±5% to 38±6% (p<0.01) in the 1st group and from 21±5% to 39±8% (p<0.01) in the 2nd group (p=NS between groups). QRS duration with CRT decreased from 178±23 ms to 139±11 ms (p<0.01) in the 1st group and from 165±19 ms to 117±15 ms (p<0.01) in the 2nd group. QRS shortening in the 2nd group was statistically greater (p<0.01). MR decreased in both groups: 2.5±0.5 vs 2.0±0.6 and 2.6±0.4 vs 1.7±0.5 respectively (p<0.01), and more substantial in the 2nd one (p=0.049).

**Conclusion:** LV endo pacing is safe, technically feasible and seemed more physiological with significant pacing QRS shortening, mitral regurgitation diminishing, more pronounced patients' EF and NYHA class improvement and better survival trend as compared to LV epicardial one. Beyond the option for non-responders this approach can be used directly if standard CRT implantation fails avoiding oblige necessity of postponed second procedure.

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**Does every left bundle branch block say the same in cardiac resynchronisation therapy?**A M W Van Stipdonk<sup>1</sup>; I A H Ter Horst<sup>2</sup>; R. Hoogland<sup>1</sup>; H J G Crijns<sup>1</sup>; FW. Prinzen<sup>1</sup>; M. Meine<sup>2</sup>; AH. Maass<sup>3</sup>; K. Vernooij<sup>1</sup><sup>1</sup>Maastricht University Medical Centre (MUMC), Cardiology, Maastricht, Netherlands;<sup>2</sup>University Medical Center Utrecht, Cardiology, Utrecht, Netherlands; <sup>3</sup>University

Medical Center Groningen, Cardiology, Groningen, Netherlands

**Funding Acknowledgements:** This research was performed within the framework of CTMM, the Centre for Translational Molecular Medicine (www.ctmm.nl), project COHFAR (grant 01C-203)

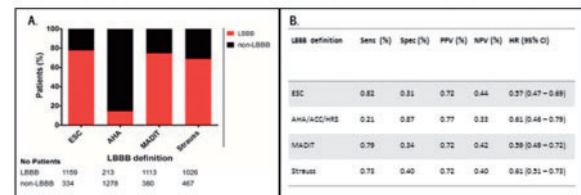
**Background:** Left bundle branch block (LBBB) morphology is strongly associated with positive response to cardiac resynchronisation therapy (CRT) and hence an important criterion for patient selection in current guidelines. There are, however, multiple definitions for LBBB, all consisting of a different set of morphological ECG features.

**Objective:** To evaluate the association of LBBB according to different definitions and outcome to CRT and to investigate which morphological ECG features predominantly contribute to this association.

**Methods:** A retrospective multicentre study was conducted in 1,492 CRT patients with a baseline 12-lead ECG available. Patients were classified as LBBB or non-LBBB according to definitions used by European Society of Cardiology (ESC), American Heart Association (AHA), the MADIT-CRT trial, and Strauss et al. Primary endpoint was the combination of all-cause mortality, cardiac transplantation or left ventricular assist device (LVAD) implantation.

**Results:** Correlation between classification by different LBBB definitions varied significantly (phi-coefficient (0.22-0.92), with AHA standing out as highly specific, classifying only 18% of patients as LBBB (panel A). For each LBBB definition there was a significant association of the presence of LBBB to the primary endpoint, with a relative risk reduction ranging from 39 to 43% (panel B). Each definition contained morphological ECG criteria not contributing to the association with the primary endpoint. Criteria independently associated to outcome are QS or rS in lead V1, Notch in lead V5-6, I or aVL, and absence of a Q in lead V5-6, I, and aVL.

**Conclusion:** Patient groups classified as LBBB by different definitions show large discrepancies; with very high specificity for AHA definition. Though LBBB patients according to any definition have significantly better outcome to CRT than non-LBBB patients, with only small differences in strength of association. Each LBBB definition contained redundant morphological criteria, not contributing to the association with outcome. Only three of a total of eleven criteria are independently associated to outcome in CRT.



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**CRT follow-up in LV only pacing without RV lead: exercise test is essential**C. Vacarescu<sup>1</sup>; L. Petrescu<sup>2</sup>; C. Momos<sup>1</sup>; EV. Goanta<sup>3</sup>; RA. Cozla<sup>2</sup>; D. Cozma<sup>1</sup><sup>1</sup>Timisoara Institute of Cardiovascular Medicine, Timisoara, Romania; <sup>2</sup>University ofMedicine Victor Babes, Cardiology Department, Timisoara, Romania; <sup>3</sup>Emergency

County Hospital, Cardiology, Craiova, Romania

**Background:** LV only pacing is at least non-inferior compared to biventricular pacing and the role of systematic exercise test in these patients (pts) is less studied although of obvious importance.

**Purpose:** To assess the incidence of CRT device reprogramming and medication optimization (special focus betablocker(BB)/ivabradine) after systematic exercise test in patients with true LV fusion pacing without RV lead.

**Methods:** Consecutive pts with RA/LV only DDD pacing system were included. Prospective data were collected at every 6 months follow-up visits: device interrogation, exercise test, echocardiography data. CRT assessment during exercise test included: maximal heart rate, beat to beat ECG analysis of true LV fusion pacing, loss of LV capture occurrence, improvement of exercise capacity. In case of LV loss of capture or unsatisfactory LV fusion pacing, reprogramming was performed individualized for each patient and exercise tests were redone. Patients who needed BB/ivabradine optimization were rescheduled in no later than one month to be reassessed by exercise test. Redo exercise tests were also counted.