

P543

Cardiac resynchronization therapy in left ventricular non-compaction: long-term results in a series of 40 patients

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Background: Left ventricular non-compaction (LVNC) is a structural cardiomyopathy (SC) with a high probability of LV systolic dysfunction. Left bundle branch block (LBBB) frequently occurs in SCs.

Purpose: We sought to analyse the evolution of LVNC-CRT (LC) patients in general and compare it with the non-LVNC-CRT group (nLC).

Methods: We analysed 40 patients with contrast-MRI documented LVNC (concomitant positive Petersen and Jacquier criteria) implanted with CRT devices in CEHB. The follow-up included 7 hospital visits for each patient (between baseline and 3 years). Demographics, risk factors, usual serum levels, pre-procedural planning factors, clinical, ECG, TTE and biochemical markers were recorded. Statistical analysis was performed using software. Notable differences were reported as either p-values from crosstabs (discrete) or mean differences, p-values and confidence intervals from t-tests (continuous). A p-value of .05 was chosen for statistical significance (SS).

Results: Subjects in LC were younger (-7.52 ys; <.000; (-3.617;-11.440)), with no sex predominance, more obese (45.9 vs. 28.3%; <0.24) and had less ischaemic disease (17.9 vs. 39.7%; <.007). LC implants were usually CRT-Ds (91 vs. 49.5%; <.000) and more frequently MPP-ready (35.8 vs. 8.4%; <.000). At baseline, sinus rhythm was predominant in LC (97.4 vs. 79.8%; <.007) and permitted frequent use of optimal fusion CRT (75.5 vs. 46.6%; <.002). Although initial LVEFs were similar, LCs had much larger EDVs (+48.91 ml; <.020; (+7.705;+90.124)) and ESVs (+34.91; <.05; (+1.657;+71.478)). After an initial encouraging □ 1 year evolution the LC-CRT group crashed its performance in terms of both LVEF and volumes. Thus, at 1 year follow-up, when compared to nLCs, LVEFs were far lower (-22.02%; <.000; (-32.29;-11.76)) while EDVs and ESVs much higher - (+70.8 ml; <.037; (+49.27;+ 189.65)) and (+100.13; <.039; (+5.25;+195)) respectively - in LCs in spite of similarly corrected dyssynchrony. The mean mitral regurgitation (MR) degree at 1 year was much higher in LCs (+1.8 classes; <.002; (+0.69;+2.97)) certainly contributing to the poor results. The cumulated super-responder/responder (SR/R) rates were constantly lower and decreasing at both 1 year (37.5 vs. 72.4; <.040) and 2 years of follow-up (10.1 vs. 80%; NS).

Conclusions: CRT candidates with LVNC are significantly more severe at the time of implant. After an initial short-term improvement (probably due to acute correction of dyssynchrony) most patients fail to respond in the long term. Severe dilation with important secondary MR probably plays an important role.