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Long-term outcomes in patients with and without left bundle branch block undergoing electroanatomic mapping system-guided cardiac resynchronization therapy device implantation.

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Background: Implantation of left ventricular (LV) lead in segments with delayed electrical activation may improve response to cardiac resynchronization therapy (CRT). Electroanatomic mapping system (EAMS)-guided CRT implantation has proved to be safe, reliable and effective technique.

Objective: The aim of this study was to assess long term outcomes in patients undergoing electroanatomic mapping system-guided cardiac resynchronization therapy device implantation.

Methods: we enrolled consecutive patients were succesfully underwent to electroanatomic mapping system-guided cardiac resynchronization therapy device implantation. The activation mapping of the coronary sinus (CS) and relative branches were performed using an insulated guide wire. LV electrical delay (LVED) was defined as the interval between the beginning of the QRS complex on the surface electrocardiogram (ECG) and the local electrogram and expressed in milliseconds (ms). After discharge we scheduled a patients evaluation at our heart failure unit once year.

Results: 54 patients were included in this study (44 males, mean age 75 ± 7.2 years). 38 patients showed a left bundle branch block (LBBB) (70,4%, 20/38 a true-LBBB), and 13 a no-LBBB ECG pattern.

Overall, after a median follow-up of 36,6 months (12-60), left ventricular ejection fraction (LV-EF) significantly improved (29,3% vs 40,3%, P< 0,0001; LBBB 28,8% vs 40,2%, P<0,001) and left ventricular end sistolic volume (LV-ESV) declined (130,6 ml vs 104,6 ml, P=0,02; for LBBB 136 ml vs 104,6, P=0,04).

Moreover we found an enhancement of performance status, with an improving of New York Heart Association (NYHA) functional class (2,5 vs 1,7; P< 0,001; for LBBB 2,5 vs 1,7, P=0,006). 41/54 (78%) patients were classified as responders (improving NYHA class or reduction in LV-ESV at least 15%).

When focusing on the subgroup with no-LBBB, we found a significant improving of NYHA class (2,5 vs 1,8; P= 0,006) and 9/13 (82%) patients were classified as responders.

Conclusions: Electroanatomic mapping system (EAMS)-guided CRT implantation resulted in a positive LV structural remodeling and improving of NYHA functional class. The rate of CRT responder was high both in patients with LBBB and no-LBBB. Future studies should contain larger number of patient in order to provide more accurate data.