

**Improvement in MR and in the Dyssynchrony Involving Mid Segments Predict Super Responders in Patients Undergoing Cardiac Resynchronization Therapy**

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Background: About 20-30% of patients in randomized trials do not respond clinically to cardiac resynchronization therapy (CRT).

Objectives: To estimate the effectiveness and safety of CRT in our routine practice and to find predictors of favorable response to CRT.

Methods: Retrospective analysis of all patients underwent CRT in our hospital from February 2003 until December 2007. Patients that improved in one class and two classes of New York Heart association (NYHA) were defined as responders and Super responders respectively.

Results: During the study period, 56 consecutive patients (73.2% men, age  $66.3 \pm 10.2$  years) with left heart failure (LHF) (ischemic cardiomyopathy 60.7%) received CRT and were followed for a mean of 27 months. After the implantation NYHA improved by one class ( $p < 0.001$ ), number of hospital admissions due to LHF reduced by 79%, ( $p < 0.0001$ ) and mean ejection fraction (EF) improved by 31% ( $p < 0.002$ ). Significant improvement in severity of MR was an important predictor of high responsiveness ( $p = 0.004$ ). Improvement of MR was associated with complete left bundle branch block (CLBBB) on the electrocardiogram ( $P = 0.04$ ) and lower total mortality ( $p = 0.005$ ). Among the patients with moderate to severe MR, super responders had decreased left ventricular end diastolic volume (LVEDV) prior the implantation ( $p = 0.05$ ). Improvement in synchronization between the mid lateral and mid septal segments, as was calculated with longitudinal strain was predictor of super responders ( $p = 0.008$ ). Absence delay between the mid posterior and mid anterior septal segments was associated with poor response ( $p = 0.006$ ).

Conclusions: CRT an effective therapy in long term follow up of symptomatic patients with LHF in real world practice. One of the main factors that predict clinical improvement and survival is significant reduction in MR. Baseline dyssynchrony involving mid segments predicts reduction in MR and significant clinical improvement post CRT.