PRE-IMPLANT LEFT VENTRICULAR DILATION IS AN IMPORTANT PREDICTOR OF RESPONSE IN PATIENTS UNDERGOING CARDIAC RESYNCHRONIZATION THERAPY

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Introduction: Little is known regarding the impact of pre-implant left ventricular dilation on the reverse remodelling effects of cardiac resynchronization therapy (CRT) in patients with advanced heart failure.

Methods: We examined clinical, echocardiographic, and laboratory data on 546 consecutive patients undergoing the new implantation of a CRT device between 1/7/2005 and 8/6/2007. Patients without a pre-CRT echocardiogram or a US social security number were excluded. Endpoints were all-cause mortality and change in ejection fraction (EF). A multivariate model was constructed to evaluate predictors of mortality determined by the US Social Security Death Index. Changes in EF were recorded in relation to pre-CRT left ventricular end-diastolic diameter (LVEDD).

Results: 471 patients met inclusion criteria. The mean EF(%) and LVEDD(cm) were 23.0±8.4 and LVEDD 6.1±1.0, respectively. In multivariate analysis, pre-CRT LVEDD remained a strong predictor of overall mortality (HR 1.1-1.9, p=0.017). 334 patients had both pre-CRT and follow up echocardiograms at a mean of 13.6±10.9 months. Patients without ventricular dilation experienced the greatest improvement in EF whereas those with severe LV dilation, starting at approximately 7.0 cm, had less improvement.

Conclusion: LVEDD is a strong predictor of mortality in patients undergoing CRT. Patients without ventricular dilation have the largest improvements in EF with CRT; whereas patients with severe dilation derive less benefit.