

 **Heart Failure****SYSTOLIC HEART FAILURE AND CARDIAC RESYNCHRONIZATION THERAPY: FOCUS ON DIASTOLE**

Moderated Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 9:45 a.m.-10:30 a.m.

Session Title: Insights into Cardiac Resynchronization and Device Therapies in Heart Failure
Abstract Category: 15. Heart Failure: Clinical
Presentation Number: 1219M-269

Authors: *Paolo Marino, Emanuela Facchini, Marco Varalda, Chiara Sartori, Università del Piemonte Orientale, Novara, Italy*

Background: Conflicting data exist about the effects of cardiac resynchronization therapy (CRT) on diastolic function (DF).

Objective: Primary objective was to assess if and how CRT did affect DF in systolic heart failure (HF). Secondly, we investigated potential relations between CRT-induced changes in ventricular characteristics and combined endpoint (HF/cardiac death) over a mean follow-up (FU) of 3 years.

Materials and Methods: We included 119 patients (70±9 years) with indication for CRT (ejection fraction [EF] ≤35%, QRS≥120ms, NYHA>II). They underwent clinical evaluation and echocardiography before CRT and after 4 months. We assessed diastolic function quantifying transmitral velocities (E/A waves, deceleration time [DT], E/DT), early diastolic mitral annulus velocity (E'), E/E'ratio and 2-D speckle tracking strain rate during isovolumetric relaxation (SrIVR). End diastolic pressure-volume relationship (EDPVR) was also assessed, noninvasively, by means of a computational model using a single beat. Overall stiffness was quantified normalizing EDV, derived from EDPVR, at a LV pressure of 20 mmHg (EDV20).

Results: NYHA class improved significantly at 4 months (from 2.7±0.7 to 1.9±0.6, p <0.001). Diastolic filling improved as well (E/DT from 0.48±0.29 cm/s² to 0.39±0.31cm/s², p=0.01). On the contrary diastolic relaxation (E', SrIVR) and filling pressures (E/E', E/SrIVR) did not significantly change. Stiffness (EDV20) increased (from 191±66 ml to 179±66 ml, p=0.009). Also systolic function improved (systolic volume from 147±59 ml to 125±52 ml; EF from 0.26±0.07 to 0.32±0.09, p <0.001 for both). A Cox regression model was used to assess which, among the above variables, predicted the combined endpoint at FU. We found that only changes (Δ) in diastolic, but not in systolic indexes, besides age, correlated with the combined endpoint (age p=0.019, ΔEDV20 p=0.005, ΔE/DT p=0.014), with increment in the last 2 parameters, single or combined, greatly increasing the risk of HF/cardiac death (p=0.003).

Conclusion: short-term increment in passive stiffness, coupled to better filling, rather than improvement in systolic function, predicts clinical prognosis long-term post-CRT.