CARDIAC RESYNCHRONIZATION THERAPY IN PATIENTS WITH ISCHEMIC HEART FAILURE AFTER BONE MARROW CELL TRANSPLANTATION

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Monday, April 04, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Predictors of Long Term Outcomes in CRT
Abstract Category: 28. Cardiac Pacing
Session-Poster Board Number: 1089-422

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Background: Most studies have confirmed the beneficial effects of the autologous bone marrow mononuclear cell (BMMC) transplantation on angina, myocardial perfusion, regional wall motion, and LV ejection fraction (LVEF). However, it is still unclear if cell transplantation can affect ventricular dyssynchrony. The aim of this study was to evaluate additional benefit from combination of BMMC transplantation with endocardial CRT system implantation in patients with severe heart failure (HF) and ventricular dyssynchrony.

Methods: Twenty six patients with HF and dyssynchrony underwent intramyocardial transplantation of the BMMC and endocardial cardiac resynchronization therapy (CRT) system implantation. This randomised, single-blind, cross-over study compared clinical and echocardiographic parameters during two periods: 6 months of active CRT (BMMC+CRTact group) and 6 months of inactive CRT (BMMC+CRTinact group) pacing.

Results: In the BMMC+CRTact group more patients significantly improved NYHA classes (p<0.001), 6-minutes walk test (p<0.001) and quality of life (p=0.004) compared with the BMMC+CRTinact group. Both groups improved myocardial perfusion by SPECT. The summed rest and stress score decreased significantly within 12 months in the BMMC+CRTact and BMMC+CRTinact groups compared to baseline. The CRT as contrasted with cell injection did not influence the myocardial perfusion pattern, on the contrary cell injection did not influence on the ventricular dyssynchrony. Echocardiography revealed an improved significantly LVEF (p=0.001), reduced LV end-systolic volume (p=0.03), and improved LV synchrony in the BMMC+CRTact group compared to the BMMC+CRTinact group.

Conclusions: Combining CRT procedure and intramyocardial bone marrow cell injection allows to considerably reduce ventricular dyssynchrony and, as a result, significantly improve LV function and the outcome of patients with severe HF and ventricular dyssynchrony.