Additional benefit of echocardiographic optimization of cardiac resynchronization therapy devices according to specific echocardiographic and clinical parameters


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Introduction: Cardiac resynchronization therapy (CRT) contributes to left ventricle ejection fraction and NYHA improvement in patients with severe heart failure. In literature, echocardiographic (ECHO) benefits of CRT were found in a wide spectrum of different ECHO parameters. In this study we compared ECHO benefit of echocardiographic optimization of CRT device with the standard, ECG method in a spectrum of different ECHO parameters.

Patients and Methods: An overall of 146 patients were analyzed according to the method of CRT optimization. The first group (OPT) was optimized by ECHO signs of dyssynchrony whereas the second group (ECG) was analyzed using QRS duration. Changes in QRS duration, NYHA, left ventricle end-systolic volume (Δ ESV), end-diastolic volume (Δ EDV), ejection fraction (Δ EF), global longitudinal strain (GLS), mean pulmonary artery pressure (PAP), mitral regurgitation (MR), ΔNTproBNP, septal flash (SF), atrioventricular dyssynchrony (AVd), interventricular dyssynchrony using difference in onset of pulmonary and aortic ejection (PV/AV) and quality of life using SF-36 questionnaire were compared between the groups in a follow up period of 6 months.

Results: No additional benefit of one group over the other was found for QRS duration reduction (p=0.366), NYHA (p=0.221), Δ ESV (p=0.093), Δ EF (p=0.218), GLS (p=0.665), MR (p=0.278), PAP (p=0.433) and QoL (p=0.213) whereas a faster and higher reduction in Δ EDV (p=0.045), ΔNTproBNP (p=0.037), SF (p=0.0014), AVd (p=0.002), PWAV (p=0.041) was found in OPT group favoring ECHO optimization.

Conclusion: Echocardiographic optimization of CRT contributes to an additional echocardiographic benefit over the standard method in reduction of NTproBNP, ΔEDV and SF, AVd and PWAV.

LITERATURE