

Underlying causes of under-utilization of cardiac resynchronization therapy in real-world heart failure settings

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Background: Despite well-established effectiveness of cardiac resynchronization therapy (CRT) in patients with heart failure (HF), it remained significantly under-utilized. The underlying causes are still not well described.

Aim: To investigate how many patients with HF were eligible for CRT and determine underlying causes why CRT was abstained for these patients in real life settings.

Methods: Retrospective review of medical data was carried out in all patients hospitalized for newly diagnosed HF from January 1, 2016 to December 31, 2019. Patients were identified from the local university hospital register with three affiliations by use of international classification of disease (ICD)-10 codes I50.0-I50.9. Medical journals, including electrocardiograms and echocardiograms, were reviewed. The indication for CRT was evaluated three months after mineralocorticoid receptor antagonists (MRA) were initiated as addition to angiotensin converting enzyme inhibitor /angiotensin-receptor blockers and beta-blocker treatment according to European guidelines for heart failure from 2016. Follow-up was minimum one year and up to two years after HF diagnosis.

Results: In 3456 patients with HF, 642 (18.6%) were patients hospitalized for new onset of HF with ejection fraction (EF) <40%. Out of those, 104

(16.2%) patients were excluded because of incomplete medical record as a result of referral to primary care. Finally, 538 were included in this study. Overall, 163 patients (30.3%) met CRT criteria with 22.5%, 2.6%, 1.9% complying with recommendation IA, IIA, IIB respectively, and 3.9% had more than 50% right ventricular pacing. Only 52 (9.7%) of patients received CRT with mean age 69.3±11.5 years, and 69.2% men and EF 31.9% ± 7.6. In all these patients with HF eligible for CRT, no difference was found in baseline data including hypertension, ischemic heart disease, atrial fibrillation, valvular heart disease, diabetes mellitus, stroke, cancer and renal failure nor medical treatment between those received CRT and those without CRT. Among underlying causes of under-utilization of CRT, 24.3% were due to multiple concomitant comorbidities, 4.5% due to patient's own wish, 12.5% due to other reasons such as socioeconomic problems and 58.6% with unknown reasons. Mortality rates were 20.7% in patients without treatment with CRT compared with 7.7% in those who received CRT (p=0.037).

Conclusion: In this real world HF cohort, 1/3 patients were eligible for CRT treatment. However only 1/3 received CRT and 58.6% had no contraindication but did not receive CRT, which emphasize urgent need for structured implementation methods for device treatment in patients with HF.