Abstract: P4527

Cardiac resynchronization therapy in patients with non-ischemic cardiomyopathy and severe heart failure may influence the development of unstable ventricular tachycardia

Authors:
DI Lebedev¹, AI Mishkina¹, MV Lebedeva¹, SV Popov¹, ¹Cardiology Research Institute, Tomsk National Research Medical Center of RAS - Tomsk - Russian Federation,

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Objective: The aim of the study was to determine the effect of cardiac resynchronization therapy (CRT) on the development of unstable ventricular tachycardia in patients with non-ischemic cardiomyopathy (CMP) and to analyze the potential of radionuclide methods in predicting life-threatening arrhythmias in the background of CRT.

Materials and methods. The study included 100 patients with non-ischemic cardiomyopathy aged from 32 to 75 years (55 ± 12 years). Patients had III functional class of heart failure (HF); left ventricular ejection fraction (LV) (EF) 30.1 ± 3.8%; 6 minutes walk at a distance of 290.5 ± 64.3 m; and the final diastolic volume of the left ventricle (EDV) is 220.7 ± 50.9 ml. Before implantation of the device with CRT and after 1 year, all patients underwent a 24-hour ECG monitoring. Patients were divided into two groups depending on the presence or absence of paroxysms of unstable ventricular tachycardia. The 1st group included 55 patients (55%) with registered paroxysms of unstable ventricular tachycardia with adequate doses of antiarrhythmic drugs. Group 2 consisted of 45 patients (45%) without reported episodes. Prior to CRT, myocardial metabolism defect (MMD) was evaluated in all patients using radionuclide methods.

Results. Control tests were performed 1 year after the onset of CRT and showed positive clinical dynamics: the left ventricular EF increased from 30.1 ± 3.8% to 42.8 ± 4.8% (p = 0.001); functional class decreased from III to II; The 6-minute walking distance increased from 290.5 ± 64.3 m to 377.2 ± 45.3 m (p = 0.001); and LV EDV decreased from 220.7 ± 50.9 ml to 197.9 ± 47.8 ml (p = 0.005). During 1 year of observation in the first group: 48 patients (80%) had no episodes of unstable ventricular tachycardia; In 7 patients (20%), episodes of unstable ventricular tachycardia were recorded. Evaluation of the effect of increasing EF and reducing EDV on the development of VT paroxysms was performed after the distribution of patients with CRT into subgroups based on the presence or absence of VT episodes. The data showed that in patients whose EF increased by 14%, and EDV decreased by 35 ml during 1 year of CRT, there were no VT episodes, even if VT paroxysms were recorded before CRT. Patients who had VT paroxysms showed an increase in EF of only 9% and a decrease in EDV of only 13 ml. Phase 2 of the study was to assess the impact of MMD changes. In the presence of CRT in patients with less than 15% MMD, there were no VT episodes. VT paroxysms were reported in patients whose MMD exceeded 15%.

Conclusions: (1) Effective CRT in patients with non-ischemic cardiomyopathy significantly reduces the number of VT episodes. (2) Improving fatty acid metabolism (LVD MMD less than 15%) in patients with non-ischemic cardiomyopathy reduces the incidence of VT episodes against the background of CRT.