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FEATURES OF STRUCTURAL AND GEOMETRIC REMODELING OF THE HEART IN PATIENTS WITH CHRONIC HEART FAILURE WITH A PERMANENT TYPE OF ATRIAL FIBRILLATION

Atrial fibrillation (AF) and chronic heart failure (CHF) often coexist because they share common pathophysiological mechanisms and risk factors. However, the effect of CHF on heart remodeling in patients with permanent AF has been insufficiently studied.

The aim: To investigate the influence of CHF on changes in structural and geometric parameters and diastolic function of the heart in patients with permanent AF.

Materials and methods. The study enrolled 100 patients (men - 60% (n = 60); women - 40% (n = 40)) of CHF of ischemic origin with AF, stage II AB, II-IV FC for NYHA, and 16 patients (men - 62.5% (n = 10), women - 37.5% (n = 6)) on coronary heart disease with AF without signs of CHF. Patients were comparable in age (p = 0.267), height (p = 0.406), weight (p = 0.518), body surface area (p = 0.388). Doppler echocardiography was performed on the device "Esaote MyLab Eight" (Italy) according to standard methods.

Results. Patients with AF with signs of CHF were dominated by individuals with eccentric hypertrophy (49% vs. 19%; p = 0.0270), and patients with AF without

signs of CHF - with eccentric remodeling (0% vs. 25%; $p = 0.0001$). Patients with AF and signs of CHF had significantly higher systolic pressure in the pulmonary artery (54.85 ± 14.23 mm Hg vs. 42.99 ± 11.94 mm Hg; $p = 0.028$) and pulmonary capillary wedge pressure (PCWP) (12.18 (9.80; 15.33) mm Hg vs. 8.92 (7.62; 10.50) mm Hg; $p = 0.005$) than in patients with AF without signs of CHF, pointed out more pronounced pulmonary hypertension and a more significant increase in left atrium pressure. In patients with AF with signs of CHF was more significant left ventricle end-diastolic pressure (LVEDP), as evidenced by the parameters: E/E' medial (9.87 ± 5.24 vs. 6.15 ± 1.39 ; $p = 0.001$), E/E' mean (8.38 ± 4.21 vs. 6.06 ± 1.97 ; $p = 0.005$), e' medial (9.96 ± 3.79 cm/s vs. 12.81 ± 3.60 cm/s; $p = 0.004$).

Patients with AF with signs of CHF had decreased LV EF ($55.58 \pm 14.65\%$ vs. $65.44 \pm 10.87\%$; $p = 0.006$), decreased systolic velocity of the medial fibrous ring of the mitral valve S (6.92 ± 2.41 cm/s vs. 8.40 ± 2.03 cm/s; $p = 0.015$), and there were probably higher values of TEI RV (0.58 ± 0.16 c.u. vs. 0.48 ± 0.11 c.u.; $p = 0.011$), and decreased TAPSE values (16.22 ± 4.60 mm vs. 19.54 ± 5.00 mm; $p = 0.067$), indicating more pronounced systolic dysfunction in both ventricles.

Conclusions. Adherence CHF to AF in patients is accompanied by an increased share of eccentric hypertrophy (49%; $p = 0.027$), more pronounced systolic dysfunction of the left and right ventricles, increased LVEDP, PCWP, systolic pressure in the pulmonary artery, dilation of the inferior vena cava.