

REMODELING OF THE RIGHT HEART AND THE LEVEL OF BRAIN NATRIURETIC PEPTIDE IN PATIENTS WITH CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION: A COMPARATIVE CROSS-SECTIONAL OBSERVATIONAL STUDY

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Aim. To study the right heart remodeling and level of N-terminal brain natriuretic peptide (Nt-proBNP) in patients with chronic thromboembolic pulmonary hypertension (CTEPH).

Material and methods. Patients (n=79) after pulmonary embolism were included into the study. The main group consisted of patients (n=43) with an increase in systolic pulmonary artery pressure (SPAP) >30 mm Hg: 30 (37.9%) patients had pulmonary hypertension (PH) degree I (PHI), and 13 (16.5%) — PH degree II–III. Group of comparison consisted of 36 patients expired pulmonary embolism and having SPAP<30 mm Hg. The control group consisted of 20 people. 6-minute walk test (6-MWT) and Doppler echocardiography were performed in all patients. Besides myocardial tissue Doppler echocardiography and assessment of Nt-proBNP level were performed in 38 and 71 patients, respectively.

Results. Dyspnea occurred in 90.7% of patients with various degrees of PH and 80.5% of patients with normal SPAP. Patients without PH and with PH I degree complained of palpitations, weakness, fatigue, and dizziness with similar frequency. Patients with PHI were comparable with ones of comparison group in 6-MWT distance that dramatically decreased in patients with PHII–III. Enlargement of the right atrium (RA) and/or right ventricular (RV) was observed in 76.7% of patients with PHI and 100% of patients with PHII–III. RV diastolic function abnormalities ($E/A < 1$ and $E/A > 2$) were detected in 19.4%, 16.7% and 61.5% of patients of comparison group, PHI and PHII–III patients, respectively. According to myocardial tissue Doppler echocardiography $E_m/A_m < 1$ was observed in 8(72.7%) patients of the comparison group and in 13(76.4%) patients with PH. Nt-proBNP level was 17.3[2.3,33.9] fmol/ml in PHI patients and 142.1[62.1,171.8] fmol/ml in PHII–III patients. Nt-proBNP level was 6.5 [3.1, 18.3] fmol/mL in patients of the comparison group, and it was higher than this in patients of the control group (3.5 [1.8, 7.5 fmol/ml]).

Conclusion. Various indicators of heart remodeling and RV diastolic dysfunction were found in the majority of patients after pulmonary embolism, including those with normal SPAP. Elevation of Nt-proBNP level adequately reflects these verity of RV dysfunction in CTEPH patients only in PHII–III.