

THE SIGNIFICANCE OF TISSUE DOPPLER IMAGING IN DIAGNOSING PULMONARY EMBOLISM IN PATIENTS WITH CHRONIC HEART FAILURE

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Introduction. Pulmonary embolism (PE) is the most dangerous type of venous thromboembolism. Chronic heart failure (CHF) is an important risk factor for PE, whereas its presence increases mortality in patients with PE.

Aim. To evaluate the usefulness of tricuspid and mitral annular velocities analysis by Doppler imaging in patients with CHF and suspected PE with the use of trans-thoracic tissue Doppler echocardiography.

Materials and methods. This paper describes a prospective study including 80 patients with previously diagnosed CHF admitted to hospital due to acute resting dyspnea with suspected PE. All patients underwent standard echocardiography (System 5, Vingmed General Electric) and echocardiography with the use of color tissue Doppler imaging with computerized analysis of the recorded images (Echopack 6.3). Mitral annular lateral systolic velocity (SmLV) and tricuspid annular lateral systolic velocity (SmRV) were determined. Thoracic spiral computed tomography scan was performed in order to confirm PE in studied patients. In 35 patients PE was confirmed, in the remaining 45 it was not confirmed.

Results and discussion. SmLV in the PE(+) group was higher than in the PE(-) group and reached 6.0 cm/s (2.0–13.8 cm/s) and 4.2 cm/s (1.3–9.1 cm/s), $p = 0.0014$, respectively.

The ratio of tricuspid annular lateral systolic velocity to mitral annular lateral systolic velocity (SmRV/LV) in the PE(+) group was lower than in the PE(-) group and was: 1.05 (0.50–2.50) and 1.57 (0.63–4.50), $p = 0.000006$, respectively.

Conclusions. SmLV over 5.5 cm/s and the ratio of SmRV to SmLV smaller than or equal to 1.23 are quite sensitive and specific prognosticators of PE in patients with CHF. These patients require PE diagnostics. Echocardiography with tissue Doppler imaging is useful in diagnosing PE in patients with CHF.