Title: Novel method for assessment of the right ventricular contractile dysfunction in patients with severe COPD

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Body: Aims and objectives: To develop a new diagnostic criterion for RV contractile function assessment in patients with COPD. Methods: Forty patients with COPD of III-IV stages (mean age of 58.4 ± 7.3) with precapillary pulmonary hypertension (PH, PA systolic pressure ± 43.9 mmHg) and 30 healthy individuals (mean age of 52.5 ± 6.9) were examined. For each patient the calculation of the geometric center of the right ventricle (RVGC), amplitude and angle of RVGC vector displacement, using an original method for secondary processing of ultrasound images normal and for COPD.

Results: The amplitude of the RVGC movement in healthy individuals was a=1.8±0.36 cm vs a¹=0.92±0.23 cm in patients with COPD (p <0.01), and the angle of RVGC vector displacement in normal a=137 ±15° vs a¹=155 ±14° in COPD (p <0.01). Conclusions: The assessment of amplitude and angle of movement of the RVGC vector can be used as a quantitative ultrasound criteria of the RV contractile dysfunction in COPD associated with PH.