Assessment of Relationship between Heart Rate Turbulence Parameters and Hemodynamic Indices in Patients with Pulmonary Hypertension

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Background: Pulmonary hypertension (PH) leads to chronic right heart failure, which is associated with an increase in sympathetic tone. The reaction affects adversely hemodynamics. We investigated heart rate turbulence (HRT), autonomic activity marker in relation to hemodynamics in patients with PH.

Methods: We enrolled 38 patients with PH (mean age 44±15 years, 33 women). All patients underwent a 24-hour Holter electrocardiogram and a right cardiac catheterization. We assessed two HRT parameters: turbulence onset (TO) and turbulence slope (TS) and hemodynamic indices: pulmonary artery (PA) pressure and pulmonary vascular resistance (PVR). According to previously published reports, TO>0% and TS<2.5msec/RRI were defined as abnormal, respectively.

Results: Of the enrolled patients, two HRT parameters were utilized in 28 patients. A mean PA pressure and PVR in abnormal TO patients were worse than those in normal TO patients (50±11 versus 42±12 mmHg, P=0.04; 12±5 versus 8±2 wood unit, P=0.01, respectively). However, no significant difference of hemodynamic indices was achieved between abnormal and normal TS patients.

Conclusions: HRT was not so strongly associated with hemodynamic indices in patients with PH because results of two parameters were not concordant.

Keywords: heart rate turbulence, pulmonary hypertension, hemodynamicity