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Title: Heart rate variability: Possible implications for management of pulmonary arterial hypertension patients

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Body: The aim: to study heart rate variability (HRV) and its relationships with pulmonary hemodynamics and level of NT-proBNP in pulmonary arterial hypertension (PAH) patients. Material and methods. 6 patients with idiopathic PAH and 3 with congenital heart disease associated PAH with (mean age 31±12 years, 7 patients with FC II and 2 patients with FC III by NYHA/WHO) were enrolled. All subjects underwent right heart catheterization. Level of NT-proBNP was determined in blood. The short-time ECG records obtained in supine position and during orthostatic test were analyzed with Poly-Spectrum software (Neurosoft, Russia). Nine healthy subjects served as a control. Results. Severe pulmonary hypertension was found in all patients with mean pulmonary arterial pressure 53±14 mmHg, resting pulmonary vascular resistance 1180±650 dyn •s•cm-5. Total power of PAH patients ranged from 150 ms2 to 2540 ms2 with the very low frequency and low frequency bands predominance in the spectral structure. The orthostatic test caused dramatic lowering in all HRV indexes in PAH subjects. Borderline values of NT-proBNP (up to 400 pg/ml) in PAH subjects were accompanied by some decrease in HRV. Simultaneously, significantly increased NT-proBNP levels (400-3200 pg/ml) were associated with marked HRV lowering both in supine position and during orthostatic test. Conclusions. Patients with severe PAH were shown with individual various range of HRV parameters, correlating with the level of a neurohumoral activation marker NT-proBNP. HRV can be used in clinical practice to monitor progression of right-sided HF and, consequently, to determine prognosis in PAH patients.