

THE EVALUATION OF RESPIRATORY-CARDIOVASCULAR INTERACTIONS IN THE DIAGNOSIS OF AUTONOMIC DYSFUNCTION IN OBESITY

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Introduction: The breathing is a human rhythm that exerts profound influences on the cardiovascular system – the heart rate and blood pressure. The aim was to test whether the evaluation of the cardio-respiratory interaction using the heart rate and blood pressure variability analysis and respiratory maneuvers can reveal early subclinical autonomic dysfunction in obese adolescents. **Methods:** Obese patients (20; 12 girls, 8 boys) aged 12-18 years were investigated. The control cohort consisted of 20 healthy probands matched for sex and age. The continuous ECG signal was obtained using ECG device Chirastar 60 (CHIRANA, Slovakia) and continuous finger blood pressure was monitored by Finapres 2300 (Ohmeda, USA). Spectral power in high frequency band (0.15-0.5 Hz) of the heart rate variability (HF-HRV) reflecting respiratory sinus arrhythmia was taken as an index of the cardiac vagal control and spectral power in high frequency band of the blood pressure variability (HF-BPV) as a reflection of mechanical effects of the respiration. Respiratory maneuvers - deep breathing test and Valsalva manoeuvre - were examined. **Results:** The obese group had a significantly reduced spectral power in the HF-HRV and marginally significant lower coefficient of variation (CV_{R-R}) in the deep breathing test. No significant differences were found in either parameters and in the Valsalva maneuver. **Conclusions:** Our study has revealed reduced respiratory sinus arrhythmia indicating cardio-vagal dysfunction in obese adolescents. No differences were detected in the HF-BPV spectral analysis. The evaluation of respiratory sinus arrhythmia using various methods (deep breathing test, spectral analysis of the HF-HRV) can provide important diagnostic information concerning early subclinical autonomic dysfunction in the obesity.

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