

AUTONOMIC CARDIOVASCULAR CHANGES DURING VOLUNTARY HYPERVENTILATION TEST IN PD

T. Besleaga^{*}, V. Vovc, I. Moldovanu

State University of Medicine and Pharmacy "N. Testemitanu", Chisinau, Republic of Moldova

*Email: besleagatudor@yahoo.fr

Background: Voluntary hyperventilation test (VHT) was used to make the diagnosis of Hyperventilation Syndrome (HVS) [1], but some researchers doubt the validity of the VHT and of the concept of HVS [2]. More recent studies mentioned the sensitivity of the respiratory subtype of PD to this provocation [3]. We applied the VHT to evaluate cardiovascular autonomic responses to hypocapnia and respiratory alkalosis in panic disorder patients(PD).

Methods: Airflow and ECG were recorded with Biopac transducers during voluntary hyperventilation test VHT in 26 patients with PD and 24 healthy subjects (control group). VHT included REST- 3 min, HV –voluntary hyperventilation at rest frequency- 3 min, and nine minutes of recovery subdivided into: REC3m - first 3 min of recovery, following 3min interval - REC6m and the last 3 min interval - REC9m. Arterial pressure was measured in all periods of test. The analysis of Heart Rate Variability includes the determination of mean cardiac period and its variation coefficient, total power TP provided by spectral analysis of RR intervals, high -HF and low -LF frequencies bands of specter and RCF –frequencies centered to respiratory frequency. The power of these bands was normalized by dividing to TP minus VLF (very low frequencies).

Results: The values of systolic pressure and mean arterial pressure were significantly higher during HV, REC3m and REC9m periods in PD group. Cardiac periods were shorter during REST and REC9m periods;TP and variation coefficients of cardiac periods were weaker in PD group compared with control during all periods of test. The normalized power of the LF band and the LF/HF was higher during rest and HV periods, and RCF smaller during REST and REC9m periods in PD group compared with control group.

Conclusion: The activation of upper anxiogenic centers provides weaker cardio-vagal modulation of the heart and stronger simpatho-adrenal activation at Rest and during other periods of VHT in PD. VHT can be applied to evaluate autonomic changes in anxious patients.

- [1] R.A. Levis, J.B. Howell. Definition of the Hyperventilation Syndrome. *Bull Eur Physiopatol Respir*(1986) 22 vol 2, pp 201-205.
- [2] H. Hornsveld, B. Garsen, M.J. Dop, p.I. van Spiegel, J.S., De Haes. Double-blind placebo controlled study of the hyperventilation provocation test and the validity of the hyperventilation syndrome. *Lancet* (1996) vol 348, pp 154-158
- [3] A.E. Nardi, A.M. Valenca, F.L. Lopes et al. Clinical features of panic patients sensitive to hyperventilation or breath-holding methods for inducing panic attacks. *Braz J Med Biol Res*(2004) 37 vol 2, pp 251-257.