

Heart rate variability and effort tolerance in patients with type II diabetes mellitus

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Abstract

Background. Cardiovascular autonomic neuropathy (CAN) is a common form of autonomic dysfunction in diabetes mellitus (DM) patients and associates abnormalities in heart rate control, and in central and peripheral vascular dynamics.

Aims. The purpose of this study was to evaluate the impact of DM on heart rate variability (HRV) parameters, measured with 24 hours – ECG registration, in a group of DM patients with or without cardiovascular symptoms specific for autonomic neuropathy.

Methods. The study group consisted of 50 patients, both males and females, diagnosed with type 2 diabetes mellitus. We created two study groups, with and without cardiovascular symptoms. HRV was measured using a 24-hour ECG monitoring system.

Results. The study demonstrated statistical significant differences between disease duration (and not age), greater in patients with cardiovascular symptoms. Asymptomatic patients were more often treated with oral drug, as opposed to symptomatic ones, treated especially with insulin. Symptomatic patients had a worse control of the disease, reflected in higher levels of HbA1c.

Conclusion. Subclinical autonomic neuropathy could and should be detected using autonomic function tests, including 24 hours – ECG monitoring, which is more and more accessible in later years. Alterations in effort tolerance in DM patients has many mechanisms and appears before systolic function of the left ventricle which is affected, correlating with autonomic system imbalance.

Keywords: diabetes mellitus, effort tolerance, heart rate variability.