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The role of autonomic neuropathy in the development and progression of arterial hypertension in patients with diabetes type 2

Statement of the Problem: Known factors of cardiovascular risk - modifiable and non-modifiable have been published. The main known endogenous risk factors for the development of cardiovascular diseases in patients with diabetes type 2 (DT2) are: macroangiopathy (endothelial dysfunction), obesity and dyslipidemia, disorders in the blood coagulation system due to diabetes. However, autonomic dysfunction attention is not enough. The purpose of this study: to assess the influence of disturbances in the system of vegetative regulation caused by diabetic autonomic neuropathy on the risk of formation and rate of progression of diseases of the cardiovascular system in patients with DT2.

Methodology & Theoretical Orientation: 28 patients with DT2 associated with HTN were evaluated autonomic regulation by the method of spectral analysis of daily variability of the heart rhythm power spectrum of oscillation in three frequency bands: 0.004-0.08 Hz (very low frequency-VLF), 0.09-0.16 Hz (low frequency-LF), 0.17- 0.5 Hz (high frequency-HF). Were studied parameters of daily monitoring of blood pressure as criteria for clinical and functional diagnosis and forecasting factor. IC-index of centralization (LF+VLF)/HF.

Findings: In the "DT2+HTN" group, an increase in LF (38.5±12.7%) was observed, which is characteristic of chronic stress, which is significantly higher than in the comparison group ($p=0.001$; $r=0.31$). Reduction of HF (15.4±5.5%) is often observed in patients with cardiovascular pathology and indicates a state of chronic stress. The level of ULF (%), which was already above the normal values in DT2 patients, was even higher in patients with arterial hypertension ($p=0.0002$, $r=0.48$), which is characteristic for the failure of vegetative regulation. In two patients from this group, the values of ULF (%) occupied almost the entire spectrum (76% and 91%). In both cases, patients died of heart failure for half a year despite active antihypertensive therapy. In the group of patients with arterial hypertension, activation of central ergotropic and humoral metabolic processes (VLF 31.5±7.3%) was observed, exceeding the value not only in the comparison group ($p=0.001$; $r=0.37$), but also standard indices healthy individuals (28.6±11.2%).

Conclusion & Significance: The effect of HTN on metabolic homeostasis in patients with diabetes explains the reasons why it is difficult to achieve satisfactory compensation in patients with concomitant HTN and one of the mechanisms of progression of complications. The increase in IC (4.1±0.9) in the "DT2+HTN" group confirmed the high activity of the central contour of regulation in relation to the autonomic regulation. What, as a forecast factor, indicated depletion of regulatory mechanisms and a high risk of developing "vascular accidents" (OR=2.7, $p=0.001$).

Biography

Irina Kurnikova is a Professor of Medicine at RUDN University (Peoples Friendship University of Russia), Moscow, Russia. She has extensive experience in the field of scientific and practical Endocrinology. The main areas of her research are the optimization of the system approach to the treatment and rehabilitation of patients with diabetes mellitus, diseases of the thyroid gland. The main directions of scientific research are the influence of disturbances in the system of regulation of the organism and other endogenous factors (comorbidity, disruption of the mechanisms of interstitial humoral transport) on the effectiveness of treatment and the quality of compensation for diabetes and other endocrine diseases.

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