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## Diabetic autonomic cardiac neuropathy and the effectiveness of anti-hypertensive therapy

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**Statement of the Problem:** One of the most significant factors in the progression of internal organ pathology in diabetic patients is vegetative dysregulation, hypersympathicotonia with centralization of management processes, reflecting disruption in the mechanisms of adaptation and determining the rate of progression of concomitant diseases along with the quality of compensation of diabetes mellitus (DM). What effect do these factors have on the effectiveness of antihypertensive therapy is a matter requiring study. The purpose is to study the relationship between indicators of cardiac rhythm variability and rehabilitation capabilities of the body of patients with diabetes complicated by cardiac autonomic neuropathy (CAS) and appreciate the effectiveness of anti-hypertensive therapy depending on the degree of diabetes compensation.

**Methodology & Theoretical Orientation:** Comparative analysis of spectral characteristics was carried out in 45 patients with diabetes and diagnosis of HTN. About 19 patients with type-1 diabetes (mean age  $37 \pm 6.4$ ) and 26 patients with type-2 diabetes (mean age  $54 \pm 5.9$ ). The estimation of the indicators was carried out taking into account the absolute and the relative power values of the spectrum of each frequency range (VLF, LF, HF), index of vegetative balanced (IVB)=LF/HF, IC (index of centralization-ratio of the activity of the Central contour of regulation to Autonomous) assessed the prognosis of the disease morpho-function index (MFI) as a component of the rehabilitation potential.

**Findings:** The negative influence of metabolic disturbances on body reserves was reflected in the decrease in the effectiveness of anti-hypertensive therapy. Almost half of patients with diabetes mellitus with a low level of rehabilitation potential required combined anti-hypertensive therapy, which included three or more drugs. The efficacy of ACE inhibitors and moxonidine was evaluated in patients with type-1 and type-2 diabetes depending on the quality of diabetes compensation (satisfactory/unsatisfactory). In patients with DM-1, the homeostasis was preserved due to the activation of energy mechanisms-an increase in the tone of the sympathetic nervous system. The worse the quality of DM compensation was, the higher in the hypersympathicotonia. The appointment of an ACE inhibitor to patients with DM-1 had no effect on vegetative imbalance and in patients with DM-1 it eliminates the vegetative imbalance and brought it closer to the age norm. The activity of central regulatory mechanisms (decrease of VLF, IC) and adaptation voltage ( $MFI < 1$ ) decreased. In patients with DM-2, hyperparasympathicotonia predominate the patients with unsatisfactory compensation of the disease. The low efficiency of monotherapy with ACE inhibitors in this group was associated with the effect of bradykinin in hyper parasympathetic tonus. Treatment with ramipril in patients with DM-2 contributed to a decrease in activity of central humoral-metabolic processes of heart rate regulation (decrease in VLF) and extension of adaptation mechanisms ( $MFI: 0.54 \pm 0.1$ ). Unsatisfactory compensation of type-2 diabetes mellitus with activation of parasympathetic reactions reduced the effectiveness of moxonidine administration and in some cases led to deterioration of the adaptation parameters (MFI increase). In this group, the level of ULF increased to  $42.6 \pm 7.1\%$  which makes it impossible to assess the effectiveness of the provided assistance as sufficient.

**Conclusion & Significance:** The effectiveness of the use of anti-hypertensive drugs can be affected by autonomic cardiac neuropathy and the resulting autonomic dysfunction. The effectiveness of anti-hypertensive drugs varies depending on the orientation of vegetative responses and the quality of compensation DM.

### Biography

Irina Kurnikova is a Professor of Medicine in Peoples' Friendship University of Russia, Moscow, Russia and has extensive experience in the field of scientific and practical endocrinology for over 20 years. Her area of research is the optimization of the system approach to the treatment and rehabilitation of patients with diabetes mellitus, diseases of the thyroid gland.

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