

## Diabetic autonomic cardiac neuropathy and the effectiveness of Antihypertensive Therapy

Dr. Irina Kurnikova

Peoples' Friendship University of Russia, Russia

### Abstract

**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 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 antihypertensive 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. 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 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). Was assessed the prognosis of the disease - morpho-function index – MFI as component of the rehabilitation potential (patent № 2344751RU). **Findings:** The negative influence of metabolic disturbances on body reserves was reflected in the decrease in the effectiveness of antihypertensive therapy. Almost half of patients with diabetes mellitus with a low level of rehabilitation potential required combined antihypertensive 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 DT1s, 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 the hypersympathicotonia. The appointment of an ACE inhibitor to patients with DT1u had no effect on vegetative imbalance, and in patients with DT1s it eliminated 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 DT2, hyperparasympathicotonia predominated of 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 hyperparasympathetic tonus. Treatment with ramipril in patients with DT2s 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±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 antihypertensive drugs can be affected by autonomic cardiac neuropathy and the resulting autonomic dysfunction. The effectiveness of antihypertensive drugs varies depending on the orientation of vegetative responses and the quality of compensation

## **Biography**

Irina Kurnikova - MD, PhD, Professor of Medicine of RUDN University (Peoples Friendship University of Russia), Moscow, Russia, Curator of the Scientific Direction Endocrinology has extensive experience in the field of scientific and practical endocrinology for over 20 years. The main areas of 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.

This work was partially presented at 19<sup>th</sup> Asia Pacific Diabetes Conference on July 20-22, 2017 held in Melbourne, Australia