Study of the resources of the adaptive function of the autonomic nervous systems by the method of segmental bioelectronic functional diagnostics

M.Yu. Gotovsky, N.S. Kirgizova
(Center "IMEDIS", Moscow, Russia)

Introduction

Adaptation is one of the main properties of living organisms, ensuring their existence in various changing environmental conditions. Restoration of the impaired functions of the body is carried out due to the inclusion of compensatory-adaptive reactions aimed at maintaining the working constants of homeostasis. Intersystem and intrasystem connections are one of the conditions for the existence of an organism. The autonomic nervous system (ANS) ensures the adequacy of functional systems to the required stationary level of regulation and adjusts the optimal
somatovisceral synchronization by activating ergotropic and
trophotropic mechanisms. It is generally accepted that the sympathetic part of the ANS provides regulation of the ergotropic activity of the body, while the parasympathetic part regulates the trophotropic activity of the body. In order to describe the state of the ANS, it was proposed to establish the functional characteristics [3]:

1. Initial vegetative tone.
2. Vegetative reactivity.
3. Variant of vegetative provision. For the purpose of studyinginitial vegetative tone (IWT), patients are tested using tables of vegetative tone [3], integral indicators: Kerdo vegetative index, coefficient

Hildebrandt, and the techniques of hardware
(cardiointervalography) and laboratory research. The division of people into the categories of sympathotonics, vagotonics and normotonics is accepted, a group of people with amphotonia (general increased tone of the ANS) is distinguished.

Vegetative reactivity (VR) reflects the ability of the ANS to quickly respond to external and internal stimuli. In this regard, VR mainly characterizes the functional state of the central regulation circuit. To assess VR, at present, hardware techniques are most often used that record the state of the ANS in a person in horizontal and vertical positions.

On the basis of BP, there is a division into 7 categories:
1. General sympathicotonia.
2. Partial sympathicotonia.
3. General vagotonia.
4. Partial vagotonia.
5. Mixed reaction.
6. General intense reaction.
7. General weak reaction.
Availability of VR with sympathetic activation in most cases, the inclusion of testifies to adaptation mechanisms, while hypersympathetic activation is observed with a decrease in reserve

possibilities of autonomic regulation. The detection of asympathicotonic and weak VR indicates unsatisfactory adaptation.

The state of the ANS during long-term maintenance of VR at a certain level is determined vegetative provision. Vegetative support is studied by registering the state of the ANS during a prolonged orthostatic test with the study of heart rate and arterial

pressure. Inadequate vegetative supply is accompanied by   signs vegetative   dystonia,   but in   some   cases   -   development sympathicotonic crisis or orthostatic collapse.

Materials and research methods

In order to study the state of adaptive mechanisms, patients with various pain syndromes in the back were examined. Dorsalgia is a pain syndrome in the back caused by dystrophic and functional changes in the tissues of the musculoskeletal system (facet joints, intervertebral disc, fascia, tendons, ligaments) with possible involvement of adjacent structures (root, nerve) [6]. The most common are the combined forms of pain syndromes: muscle-tonic, neurodystrophic, neurovascular.

Study design includes   generally accepted   techniques: interview, neurological and orthopedic examination, clinical, laboratory, hardware diagnostic methods, the study of autonomic status, reactivity and support. Additionally, the state of adaptation was studied by the method

segmental bioelectronic functional diagnostics on apparatus for electropunctural diagnostics, drug testing, adaptive bioresonance therapy and electro-, magnetic and light therapy according to BAP and BAZ computerized "IMEDIS-EXPERT "

produced by CIMS "IMEDIS" (Moscow).

The segmental bioelectronic functional diagnostics (SBFD) technique is a type of electropuncture diagnostics. SBPD uses the principle of segmental innervation of internal organs according to the zones discovered by the British neurobiologist G. Ged, and consists in taking and processing indicators from biologically active zones of the feet, palms, and head.

The mechanism of information and functional connections between certain biologically active areas of the skin and internal systems and organs due to cortical-visceral, viscero-visceral, viscero-cutaneous interactions and the influence of psychoemotional states makes it possible to evaluate biochemical, bioelectric and other processes.

The SBPD method reflects the idea of   the functioning of the body and its individual parts through time-dependent graphic functions and coefficients, as well as deviations from the norm in the regulation functions in response to dosed irritations. This makes it possible to implement the concept of considering premorbid and the formation of morbid states as a mobile process of maintaining or "disrupting" adaptive self-regulation [8].

Consideration of adaptive self-regulation as a process of activating the mechanisms of the ANS makes it possible to assess the resources and mobility of the ergotropic and, to a lesser extent, trophotropic function.

In order to study the initial vegetative tone, the data of the first sampling of SBPD indicators before the current load were investigated. The calculation of the average index of electrical conductivity of the skin, lateral asymmetry, vector of vertical distribution was carried out.

To determine the vegetative reactivity, the indicators after the current load were studied: the change in the average indicator of the distribution of electrical conductivity, as well as the change in the indicators on individual leads.

The variant of vegetative provision was studied on the basis of data obtained at   study of SBPD pickups after functional tests (orthoclinostatic and long-term orthostatic load).

We studied the parameters of SBPD in 70 patients with dorsalgia and in 30 patients in the control group.

Survey results

The first group consisted of 46 patients in whom the nature of the pain syndrome reflected the state of inflammation, there were main complaints of acute pain, aggravated by movement, physical exertion,
decreasing at rest from analgesics, non-steroidal anti-inflammatory drugs (NSAIDs). When viewed in the area of   painful irritation - edema, painful tissue tension, antalgic posture. On radiographs, CT, MRI, there are no signs of degenerative changes. A similar picture of the state reflects functional disorders in the musculoskeletal system with pain and muscle-tonic syndromes. The patient's condition can be regarded as subcompensated.

A study of vegetative indicators was carried out. Testing IWT according to A. Wein's tables [3] gave a picture of weak and moderate vegetative dystonia, the Kerdo and Hildebrandt indices of autonomic reactivity during the use of light load tests were in the corridor close to the normotonic indices. Vegetative supply was at a level close to sufficient.

When conducting SBPD, indicators were obtained that were close to the norm, while light and prolonged stress tests improve adaptation indicators.

In the second group - 24 patients - there were complaints of aching, breaking, pulling, brain pains, mainly at rest and at night, sleep disturbances, decreased mood and appetite. Disturbance of the vascular supply of the brain with dizziness, tinnitus, decreased vision, hearing, dysfunction of the abdominal organs by the type of an unsatisfactory act of defecation, peristaltic noises, etc. were often noted. The effect of the use of analgesics, NSAIDs is insignificant. In a number of cases, there were vegetative disorders of the type of dystrophic changes in the skin. X-ray, CT, MRI showed signs of degenerative-destructive disorders in the lumbar spine. This picture of the state characterizes a decompensated process with lesions of the structures of the musculoskeletal system.

The study of the VNS was carried out. IWT testing revealed a dissociative picture, 15 patients had a picture of severe autonomic dystonia, 9 patients had minimal autonomic disturbances. Moreover, more often in patients with severe autonomic dystonia,

parasympathetic tone, deterioration of the parameters of autonomic reactivity, testing of autonomic support often led to the threat of orthostatic collapse. Patients with minimal autonomic disturbances showed either pronounced baseline sympathicotonia or amphotonia. Carrying out tests for the study of autonomic reactivity and autonomic support gave a picture of the rigidity of indicators.

The pattern of SBPD in 15 patients with severe autonomic symptoms corresponded to the initial parasympathetic activity, lateral asymmetry was expressed, vertical distribution indicated
sympathetic arousal in the inferior leads. The study of autonomic reactivity and autonomic support gave a picture of a decrease in the adaptive capabilities of the ANS, with signs of deterioration or some rigidity of indicators. In 9 patients with minimal autonomic complaints, there was a picture of the results of SBPD, characteristic of amphotericity with a pronounced initial sympathetic tone. In some studies, there was gross sympathicotonia with pronounced lateral asymmetry; vertical distribution indicated sympathetic arousal in the superior leads. The study of autonomic reactivity and autonomic support revealed a pronounced rigidity of the ANS.

The study of the ANS in the control group using conventional methods and SBPD does not reveal significant deviations from the parameters of the norm.

conclusions

The study showed:

1. It is necessary to study the adaptive function of the ANS when diagnostics of the state of health.

2. The lability of the ANS is due to the patient's state of health.

3. Research of ANS by conventional methods does not give a complete picture. state and pathology of the ANS.

4. The SBPD method reflects the state of the adaptive function of the ANS and allows you to judge the general state of the ANS.

5. Indicators of SBFD in the case of compensated and subcompensated states are congruent with the results of generally accepted research methods.

6. In the case of decompensated states, the results of the WBFD are more complete reflect a picture of violations in the ANS.

Literature

1. Alekseev V.V., Yakhno N.N. Pain. Diseases of the Nervous System: A Guide for doctors / Ed. N.N. Yakhno and D.R. Shtulman. - M .: Medicine, 2001; 1: 106-24.

2. Baevsky R.M., Kirillov O.I., Kletskin S.Z. Mathematical analysis changes in heart rate during stress. - M .: Science. 1984. - S. 39–93.

3. Vein A.M., Solovyova A.D., Kolosova O.A. Vegeto-vascular dystonia. - M .: Medicine, 1981 .-- 320 p.

4. Danilov AB Neuropathic pain. - Neuromedia, 2003 .-- 86 p.

5. Kukushkin M.L., Khitrov N.K. General pathology of pain. - M .: Medicine, 2004 .-- 144 p.

6. Borenstein D. Epidemiology, etiology, diagnostic evaluation and

treatment of low back pain // International. honey. zhurn. - 2000. - No. 35. - P. 36-42.

7. Gotovsky Yu.V., Kosareva LB, Kempe N., Samokhin A.V. Segmental bioelectronic functional diagnostics. Method. recommendations. - M .: IMEDIS, 2005 .-- 130 p.

8. Razumov A.N., Bobrovnitskiy I.P. Restorative medicine - scientific fundamentals and ways of integrating primary and secondary prevention // Resortology and health resort business. - M., 2006. - No. 1. - P. 28-58.

M.Yu. Gotovsky, N.S. Kirgizova Research of the resources of the adaptive function of the autonomic nervous system by the method of segmental bioelectronic functional diagnostics // XV