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Biocontrollable electrostimulation in clinics of nervous diseases

Bio-controllable electrostimulation is a method of non-pharmaceutical treatment of various diseases and functional disorders of the human body. The method was developed about 20 years ago in the town of Taganrog by Development Bureau MIDAS (now Development Bureau "RITM Ltd"). The appliances which later were called "adaptive neurocontrols" were developed there. Unlike the existing methods of electrotherapy, these appliances were not limited by blind unilateral impact, and the signal's form was similar to the structure of the nervous impulse, and a "biological feed-back" was produced according to parameters of dynamic electrodermal impedance. The appliance followed the organism's reaction and respectively transformed its impact in order to achieve best therapeutic effect [5].

The appliances of adaptive neurocontrol were later called "SCENAR". SCENAR is the name of a therapeutic method and the name of the appliance that performs this treatment, and this abbreviation stands for "self-controlled energy neuro-adaptive regulator". SCENAR can be classified as an appliance with physical factor of impact, such as electrostimulation, electrosleep therapy, interferential therapy, therapy with sinusoidal modulated current, fluctuorization, impulsive electropuncture [3,4].

General reflectory (generalized) reactions, segmental and local (regional) reactions take part in forming the therapeutic effect of the method. The general reflectory reactions occur as a result of the impact of ascendant impulsive flows onto cortico-subcortical structures (cortex, thalamus, hypothalamus, reticular formation, hypophyse, limbic system) and further formation of a general response, which is realized through neuro-humoral system.

The segmental reaction occurs in meta-measures responding to the locations of the impact. Afferent impulse from sensitive nervous fibers through internuncial neurones activates neurones of lateral and frontal horns of the spinal cord with subsequent formation of effector impulsive flows, which spread towards vegetative ganglions and organs of the respective segment of the spinal cord.

The local reactions are connected with changes in the area of transformation of the local vascular control and endogenous regulators of the immunity response and inflammation. The regulative effect on the microcirculatory is performed by contraction of the isolated smooth muscular tissue, changes of arterioles' tonus, the diameter of capillaries and venules. The local effects are performed using biologically active substances (kinines, prostaglandins, cytokines) and mediators (acetylcholine and histamine). As the result of the filtration through endothelium they move to interstice and accumulate superficial dermal layers and various tissues. Further biochemical reactions cause decrease of secretion from cells, which were mediators of inflammation, inhibit development of inflammation process, using macrophages inhibit synthesis of components belonging to the complementary system, transform the metabolism and trophism of tissues, have a local effect on free nerve-endings located in the area of their release [1,2].

Due to biological feedback available in the appliance each subsequent impact differs from the previous one and the body almost does not need to adapt to SCENAR-therapy and decrease of orientating reflex, reflectory humoral response is performed. Non-damaging, very short and simultaneously extremely powerful impact from the point of view of activating nervous tissues, activates all the structures of the organism because it is strong enough to activate nervous tissues of the central and vegetative nervous systems. The appliance generates electric impulses, which have similar characteristics to the impulses of human nervous system, which are used to impact patients' skin and then follow the reaction of the organism to its own impact and transforms it so that the highest adaptive reaction of the body is caused and the best therapeutic effect is achieved. SCENAR can normalize damaged functions of different organs and systems, compensate organic transformations as well as improve organisms' resistance. SCENAR is a multifunctional regulator of organism's functions, which allows SCENAR-therapy to be used for wide range of diseases.

Use of SCENAR is recommended at any stage of the diseases, at pathologically transformed functions of the organism and damages of the adaptive processes of the nervous system. Bio-controllable electro-stimulation using SCENAR appliances is recommended for musculoskeletal diseases and locomotor system (myositis, radiculitis, neurite, osteochondrosis, arthritis, arthrosis), vascular diseases of the brain (discirculatory, encephalopathy, consequences of acute dysfunctions of cerebral circulation). Positive results of achieved after therapy of vegetative vascular dystonia. Among the contraindications of SCENAR-therapy are: individual intolerance, implanted pace-maker in patient's heart (theoretically SCENAR break its normal functioning) can it is possible, alcohol intoxication (risk of worsening the extent of intoxication); acute infections of vague etiology; symptom complex of surgical abdomen at pre-hospital stage; acute psychiatric diseases. The main advantages of SCENAR-therapy compared with other methods of therapy are the biological feedback; the organism does not need to adapt to the impact; the appliance is user friendly; reduced number of contraindications; lack of negative side effects.

We have used SCENAR in our hospital for 2 years. 187 patients with steady painful syndrome of lumbosacral spine were treated. Before the start and in process of treatment a complex of electropuncture diagnostics was performed to make the control of the therapy objective (diagnostics using methods of FOLL, Nakatani and auricular diagnostics). A complex of electropuncture diagnostics "Rista - EPD" was used to examine the patients. After three courses of SCENAR-therapy the values of electropuncture diagnostics stabilized and a steady positive effect was noticed. Our

observations show that SCENAR-therapy is efficient in complex treatment with other methods of non-pharmaceutical treatment such as laser therapy, traditional acupuncture, and homeopathy in order to achieve a faster and stronger effect.

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