Pathogenesis of intervertebral disc degeneration, accompanied by pain syndrome and bioresonance therapy

Tikhomirov D.D., Solomatin V.A.
(Medical Center of High Technologies under the Association of the Union "Chernobyl", St. Moscow, Russia)

It is known that the spine provides the vertical position of the human body when erect, when the main load from the body weight is borne by 24 vertebrae, between which there are 23 intervertebral discs. In turn, the discs are located between the cartilaginous plates covering the flat surfaces of the vertebrae lying opposite each other. And the cartilaginous endplates adjoin the flat surfaces supporting the weight and form part of the structure of each vertebra. During the movement of each vertebra, the intervertebral disc should slide as little as possible between these endplates. Thus, approximately 75% of the weight of the upper half of the body is supported by the hydraulic properties of the discs, which continuously absorb (absorb), desorb (excrete) and retain water in their cores [1].

In the event of a violation of the processes of absorption (assimilation) and retention of fluid, when the load of body weight constantly squeezes out - desorbs (dissimulates) the water content of the discs during movement and bending (especially during intense physical exertion, climate change, tissue nutritional disorders, etc.) , it is not possible to completely replace the lost fluid. Then the discs lose their shock-absorbing properties and can move back and put pressure on the nerves located behind them. With displacements in the lower part of the spine, pain is projected into one or the other leg. In any case, the appearance of pain syndrome caused by degeneration of the intervertebral disc, compression of nerves and reflex muscle spasm further causes excessive tension of the tendons and ligaments of the spine in a "vicious circle".

When the intervertebral disc has lost fluid, its sliding ability decreases, and the feeding epithelium of the cartilage sends an alarm signal of pain, expressed in a change in the acid-base state of the environment surrounding the intervertebral disc. The normal state of the environment is slightly alkaline. With degeneration and pain syndrome, the state of the environment is acidic, and this acidity is recorded by interoreceptors.

The intervertebral disc, like any cartilage formation, is a gelatin-like compound that exists within a strictly limited zone of acid-base balance. In addition, like the entire organism and its structure, the intervertebral disc is an open system through which water and other constituent elements constantly flow. Constant
acid-base balance is rigidly fixed for the human body and averages 7.38 for blood (6.4 in urine). Thus, any processes that violate the constants are pathological [2].

The development of pain syndrome is ensured education neurotransmitters - chemicals produced by the nervous system, which uses them as carriers of encoded information. The same nerve fiber can be used to transmit different

coded information at the same time, while the information is packed into specific ranges of amplitude-frequency characteristics of electromagnetic energy. Upon receipt of the encoded
an electromagnetic pulse transmitted along the walls of the nerve, neurotransmitters of various natures receive a command to activate. One of the main such neurotransmitters is histamine, the activation of which is aimed at rehydration and activation of the immune system. The microcirculatory bed of the nervous system is also controlled by histamine located on its receptors, and in the case of further unwinding of the pathological process, the process of osteoporosis is initiated, caused by prostaglandin E, a substance activated at the command of a neurotransmitter
- histamine, since there is a large amount of
mast cells, which are the producers of histamine. And the consequences of prolonged activation of prostaglandin E by histamine affect the depletion of calcium reserves as a result of osteolysis, and as a result leads to osteoporosis, as a violation of the continuous relationship between ostegenesis and osteolysis [1].

Chronic painful the syndrome consists fromtwo components: peripheral pain and pain caused by the brain. By the beginning of the peripheral phenomenon indicative of a violation pain is a local process structurization, and later - this is stress with the localization of focal zones of excitation in the effector zones of the brain and the resulting redistribution of affector commands to the pituitary gland. In this case, the operational command of the nervous system is taken over by the 5 main hormonal regulators, which have individual electromagnetic codes that set one or another mode of the body's work with the help of the subsequent cascade of biochemical reactions. This is, firstly, vasopressin, which provides rehydration of cells and tissues, and secondly, it is a cortisone-releasing factor that stimulates the production of the adrenal hormone, cortisone, which suppresses the functions of the immune system, including the production of interferon and interleukin-2. Thirdly, these are endorphins that increase the pain threshold, fourthly, it is renin-angiotensin, which is responsible for the redistribution of blood in various parts of the body and, fifthly, it is prolactin, which is responsible for an important function in maintaining water balance, especially in women, and especially during lactation. In addition, under the influence of constant stress in the psychoemotional sphere in connection with discomfort in the pineal gland, the production of the neurotransmitter serotonin from the amino acid tryptophan is initiated, and serotonin produces the production of the hormone melatonin, which in turn leads to a state of excitement in the acute phase of pain syndrome and mental exhaustion - chronic pain. At the same time, the amount of the essential amino acid tryptophan, which comes only with food, is also depleted. under the influence of constant stress in the psychoemotional sphere due to discomfort in the pineal gland, the production of the neurotransmitter serotonin from the amino acid tryptophan is initiated, and serotonin produces the production of the hormone melatonin, which in turn leads to a state of excitement in the acute phase of pain syndrome and psychotic chronic exhaustion-depression. At the same time, the amount of the essential amino acid tryptophan, which comes only with food, is also depleted. under the influence of constant stress in the psychoemotional sphere due to discomfort in the pineal gland, the production of the neurotransmitter serotonin from the amino acid tryptophan is initiated, and serotonin produces the production of the hormone melatonin, which in turn leads to a state of excitement in the acute phase of pain syndrome and psychotic chronic exhaustion-depression. At the same time, the amount of the essential amino acid tryptophan, which comes only with food, is also depleted.

So, the processes in the peripheral zone are stereotyped and lead, ultimately, to the depletion of the neurotransmitter system and the hormonal system.

Based on the above, an effective etiotropic bioresonance therapy can be built, aimed, firstly, at eliminating violations of the hydraulic properties of intervertebral discs, and secondly, at

normalization systems neurotransmitters, third, normalization hormonal system, fourthly, balancing the levels of local and general acid-base balance and, fifthly, stabilizing the psychoemotional sphere. Here, both medicinal and
drug-free treatment methods. In particular, such a drug-free method of highly effective treatment is the use of coded signals of electromagnetic information at various frequencies with an amplitude, as well as a signal shape, tested individually for a patient according to the principle of positive feedback. This encoded information has a superposition in the fibers of the nervous system, aimed at activating the adrenal cortex and producing cortisone, and secondly, it has

antiserotonergic action, thirdly, it reduces autoimmune activity in the pain zone and normalizes the balance of calcium and phosphorus. This therapy does not exclude standard generally recognized methods of treatment, but rather complements them and, in some cases, individually corrects them, since the metabolism of drugs, including hormonal ones, takes into account individual characteristics, which reduces the likelihood of side effects from drug therapy. In addition, the use of injections in the area of pain of electronic copies of selected frequencies recorded in saline solution promotes local tissue rehydration and restoration of normal acid-base balance.

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