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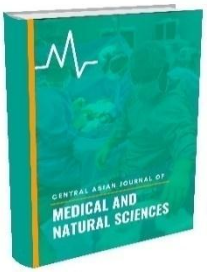

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Analysis of the Observed Dynamics of Neurological Abnormalities in the Treatment of Lumbosacral-Costal Disc Herniation in the Pre- And Post-Operative Period

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Abstract: Pain in the lower back at different periods of life occurs in 2/3 of the adult population and is the most common reason for limiting the professional activity of people of working age. According to epidemiological studies, after respiratory and cardiovascular diseases, back pain is the second reason for seeking medical attention. The main, most pronounced clinical manifestation of vertebrogenic diseases is pain syndrome, caused in most cases by degenerative-dystrophic changes in the spine. Degenerative-dystrophic changes in the intervertebral discs (IVD) under certain conditions lead to the formation of hernial protrusions, which in turn contributes to the development of compression radicular and radicular-vascular syndromes.

Keywords: vertebrogenic diseases, prolapsed, vascularized epidural space, osteochondrosis.

A healthy intervertebral disc consists of end plates, an annulus fibrosus, in the center of which is the nucleus pulposus - this is a very strong elastic formation that can withstand significant loads. Therefore, with a spinal injury, its fractures are more often observed than damage to the IVD. Over the years, degenerative processes (nutritional disorder) develop, they begin with the intervertebral disc, move to other elements of the spinal motion segment and are defined as osteochondrosis of the spine. This is a chronic multifactorial recurrent disease, a genetic predisposition to it is observed in 80% of people. It is important to note that degeneration (degeneration) of the disc and its natural aging are one process, but at different rates, complicated by herniation. Early age-related deterioration of the spine is an expression of the lack of human biological perfection - as a tribute to nature for the transition to an upright position.

Initially, intradiscal changes (protrusion) of the IVD are observed, then the annulus fibrosus cannot withstand the load, and the nucleus pulposus ruptures it, forming a true IVD hernia (prolapse). Nucleus prolapse can have different directions: upward or downward, the so-called Schmorl's hernia (clinically insignificant); anteriorly; and the most unpleasant - posteriorly, when fragments of the nucleus fall out into the epidural space of the spinal canal and often lead to a disco-radicular conflict. In this case, the degenerative process spreads both up and down to other IVDs (most often to L4-L5,

L5-S1, C5-C6, C6-C7) and even to the spine - more often the lumbar, then the cervical (up to 30%) and less often - chest (less than 1%).

The scheme of stages of posterior herniation proposed by Armstrong J. (1952) is best known in clinical practice:

- Stage 1: initial dystrophic changes in the nucleus pulposus and the posterior part of the annulus fibrosus,
- Stage 2: displacement (protrusion) of the nucleus pulposus posteriorly,
- Stage 3: prolapse of the nucleus pulposus sequesters into the spinal canal, where itsresorption or fibrosis begins.

In the "pre-computer era," many researchers noted that disc sequestration was absorbed, and this process was faster in the vascularized epidural space. New high-resolution methods of neuroimaging made it possible to observe this process in dynamics. The first portion of the prolapsed nucleus pulposus can significantly decrease in size on CT during the period of remission, but unsuccessful movement or overload leads to the repeated loss of another portion of the nucleus, causing an exacerbation. At first, neurosurgeons who removed IVD hernias considered them benign chondromal tumors and did not associate the pathology with the IVD.

The studies of the Dresden School of Pathologists, headed by G. Schmorl (3), helped to understand. In a postmortem analysis of 5000 spines of people of different ages, cartilaginous nodules were found in 38% of cases (as a rule, in people over 50 years old). Modern data obtained on volunteers also echo these results: in 50% of CT scans of the spine and in 37% of myelograms performed in the population of all ages, pronounced pathological changes in the IVD were determined. And the patients had no complaints. The older the patient, the more often spinal osteochondrosis manifested itself on CT / MRI, and in old age (> 60 years) it is observed in 100% of cases.

This is an attempt to eliminate the disco-radicular conflict with minimal trauma to the spine, without violating its stability. During percutaneous operations, when the nucleus pulposus is reduced (evaporated) or mechanically removed (without opening the spinal canal) to reduce intradiscal pressure. It is impossible to influence the fallen out IVD hernia sequesters. Therefore, the indications for these interventions are hernias of less than 6 mm (see "Medical Bulletin" dated 12.02.2009 No. 7, "HERNIA AND" STO "ROADS OF THE NEUROSURGER, Percutaneous methods of treatment of herniated intervertebral disc (MPD) '). It is believed that with this size, the annulus fibrosus has not completely ruptured and the process of hernia formation is at stages 1–2.

For a hernia greater than 10 mm, other surgical techniques are appropriate. Now more than a hundred of them are known, and new ones are appearing.

Standard microdiscectomy. It is called the gold standard for neurosurgical treatment of IVD hernias. The dropped out part and the remnants of the nucleus pulposus in the IVD are removed. In acute development of the disease (patients note that something "crunched", "shot" in the back) in middle-aged and young people, the results of treatment are good. Although the operation involves minimal trauma to the tissue (the skin incision in experienced neurosurgeons is 2–3 cm), it still aggravates the degenerative-dystrophic process in the operated IVD and reduces its height; as a result, the predicted result is not always achieved. To preserve the functionality of the IVD after removal of the hernia, it was proposed to suture the wound of the annulus fibrosus. A new operation, annuloplasty, was specially developed. However, it turned out to be ineffective due to high loads and low regeneration potential of the annulus fibrosus; recurrent hernias were observed again.

The results of standard micro discectomy deteriorate due to the age of the patients, the long duration of the disease, repeated micro discectomies at the same level; improve - manifestations of osteochondrosis only at one level, removal of large IVD hernias (> 6 mm according to CT).

The indications for standard microdiscectomy have been developed for a long time and are based on the neurological manifestations of hernias. Divided into relative and absolute. With regard to the absolute indications for standard microdiscectomy, all authors are unanimous: compression of the caudaequina, intractable severe pain attack, or the phenomenon of myeloradiculoischemia with paralysis of certain muscle groups (like an acute abdomen) require urgent intervention. But the justification of microdiscectomies with relative indications is not recognized by everyone (Ya. Yu.Popelyansky, 2003; E. L. Tolpekin, F. V. Oleshkevich, 2006).

Targeted prolonged treatment with a complex of drugs (bupivacaine, lidase, vit.B12) through a catheter placed through the inferior sacral foramen into the epidural space under Rtg control. The technique allows you to deliver drugs directly to the zone of disco-radicular conflict without violating the integrity of the anatomical structures. The criterion of effectiveness is the reduction in the size of the hernia during control CT examinations. When analyzing the results of treatment using this technology, it was revealed that the best ones were obtained with hernias of more than 6 mm, when there is a rupture of the annulus fibrosus and the posterior longitudinal ligament, and lidase directly affects the sequesters of IVD hernias.

Based on the facts of the pathogenesis of the disease, the above treatment results, it cannot be argued that the size of IVD hernias is a fundamental factor for indications for surgical treatment.There is no clear correlation between the size of the hernia and the severity of neurological manifestations, and, conversely, with acutely developed intractable lower back pain with a pronounced clinical picture of radiculopathy, in most cases we find large IVD hernias. Posterior disc herniation is a pathology of the musculoskeletal system and the peripheral nervous system, therefore, there are two positions in the principles of providing surgical care - neurosurgeons and orthopedists.

Most neurosurgeons believe that the main cause of suffering is the compression of nerve structures caused by IVD hernia, and its surgical removal is the key to recovery.

Orthopedists adhere to other positions, focusing on the degenerative-dystrophic process in the IVD, therefore, they direct their efforts to restore the correct anatomical relationships in the spinal motion segment. (10)

The ideal solution to the problem would be not only the elimination of the disco-radicular conflict, but also the restoration of the function and height of the IVD. This is not an achievable goal yet. Surgical treatment for multilevel lesions also remains unresolved.

In recent decades, at the intersection of these disciplines, a new science has been formed - vertebral neurology. Conferences and symposia on this topic are convened almost every year. In 1992, at the Soviet-American symposium on the treatment of spinal osteochondrosis, the American vertebral neurologist A. White noted that the effectiveness of treatment of such patients depends on the quality of joint work of multidisciplinary "spinal" teams, which should include a therapist, surgeon, psychiatrist, radiologist, physiotherapist. The leading physician of the team should not be a surgeon, but a specialist who better knows the patient, his psychosocial status, working conditions, material circumstances, and rehabilitation resources. Such a doctor would take responsibility for making decisions about surgical treatment, pre- and post-operative management. In our country, the solution to this problem lies in the creation of centers of vertebral neurology, where patients could receive emergency and planned assistance from all specialists working in this field. Patients with back pain would not have to visit a neurologist (therapist) at a polyclinic several times, then wait for a CT / MRI examination, which significantly increases the preoperative period.

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