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Case report

DECOMPRESSIVE THERAPY IN A YOUNG PATIENT WITH A HERNIATED DISC

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ABSTRACT

This case is presented by a 23-year-old male patient when he attended the department for the first time in 2024 with complains of lower back pain and left foot pain with tingling down the S1 dermatome started on the left. Reports inability to walk independently, inability to bend forward, difficulty standing up from a sitting position, accompanied by severe pain. Based on medical history, he has been playing water polo intensively for several years. Òhe complaints appeared during physical exertion. He has not taken any treatment, and the pain syndrome increased and appeared scoliosis. The MRI scan established a L5-S1 disc herniation - large paramedian disc herniation on the left with a wide base, reaching the left neuroforamen, measuring over 10mm with initial caudal migration. The patient refused surgery. In October 2024 he was admitted for treatment at the Pavel Banya Medical Center in the town of Pavel Banya with increasing lower back pain and left foot tingling, difficulty walking on his own for more than 10 meters and severe vertebral syndrome. In this case were used 3 courses of 10 underwater lumbar spinal decompression procedures by the method of Prof. G. Gechev in Medical center for rehabilitation that is adapted for these devices.

Keywords: MRI, vertebrology, scoliosis, spinal decompression, herniated disk,

INTRODUCTION

The human spine is the body organ in the evolution of the animal world, supporting the body in an upright position, which is the indisputable result of the ape to human evolution [1]. The human vertebral column still remains a rather troubled zone phylogenetically due to recurrent anomalies and diseases. Modern sedentary lifestyle caused by the ever growing automation, computerization and technological progress has a rather negative impact on the locomotor system, especially the spine, and places Homo Sapiens in a certain “evolutionary stress” [1].

The spine diseases have been the subject of research by numerous authors, but different medical physicians have different access to spinal disorders. They treat them to some extent and in different ways based on their specific methods and practices. For example: The radiologists portray the visible morphological changes without describing the function of the spine. Another example is that the neurologists look for the affected spinal cord, nerve roots, etc., without thinking about the dynamic and static spine function. In addition, the orthopedist draws attention to morphological changes and the protective function of the spine, and neurosurgery specialists show interest in several spine segments. This is where the role of vertebrology comes in. Vertebrology has a holistic approach to the spine, to determine the deficit in its three basic functions, which are dynamic, static and protective [2].

The definition of Degenerative disk disease (DDD) is progressive structural failure that is irreversible and closely associated with mechanical dysfunction and pain [3].

This Degenerative disk disease causes about 45% of LBP cases with herniation and annular fissures as the main accelerant for progressive pain and extra degeneration [4]. With the subsequent inflammatory granulation, neovascularization, as well as the impact of sinuvertebral nerve endings, is emboldened at later stages of DDD [4]. Some authors prove that these nerve endings are visceral and cause the excruciating qualities of back pain [5].

Magnetic resonance imaging (MRI) is the method of choice for patients who refuse conservative

treatment after 5 to 6 weeks, or for those who are scheduled to undergo surgery due to, for example, neurological deficits [6].

MRI imaging studies still show a weak correlation between clinical symptoms and morphological findings in MRI. Roughly, 1/3 of the asymptomatic patients 50 years old or older show at least one herniated disk [7]. Lumbar disk herniation is still an important finding in symptomatic patients as it significantly worsens the prognosis of the disease and medical status [7].

The increasing incidence of vertebrogenic diseases in young people nowadays has made us summarize, by presenting this case, our experience in opportunities for noninvasive intervention treatment, namely for underwater decompressive therapy used to treat acute disk herniation and the accompanying, as known, "vertebral syndrome". The "vertebral syndrome" includes acute scoliosis, acute pain and rigid paravertebral muscles. The symptom of scoliosis in this syndrome is without structural changes. As mentioned in the James classification (1979), scoliosis divides into two groups: without structural changes in the vertebrae and with structural changes in the vertebrae, which also cover the discs, the arches and the facet joints [8].

AIM

The purpose of this case report is to evaluate the MRI result on the treatment of an acute disc herniation using conservative treatment – the underwater lumbar decompression method in a young patient who refused surgery.

MATERIALS AND METHODS

1. Participants. One male patient was included in the study. He was 23 years old when he attended the medical center to seek medical help.

2. MRI images were used to compare the result after the treatment. Two MRI were performed – one at the beginning of the treatment - 20.04.2024, when the disk herniation L5-S1 was discovered and the second one, after the treatment or 3 courses of underwater decompressive treatment – 30.03.2025

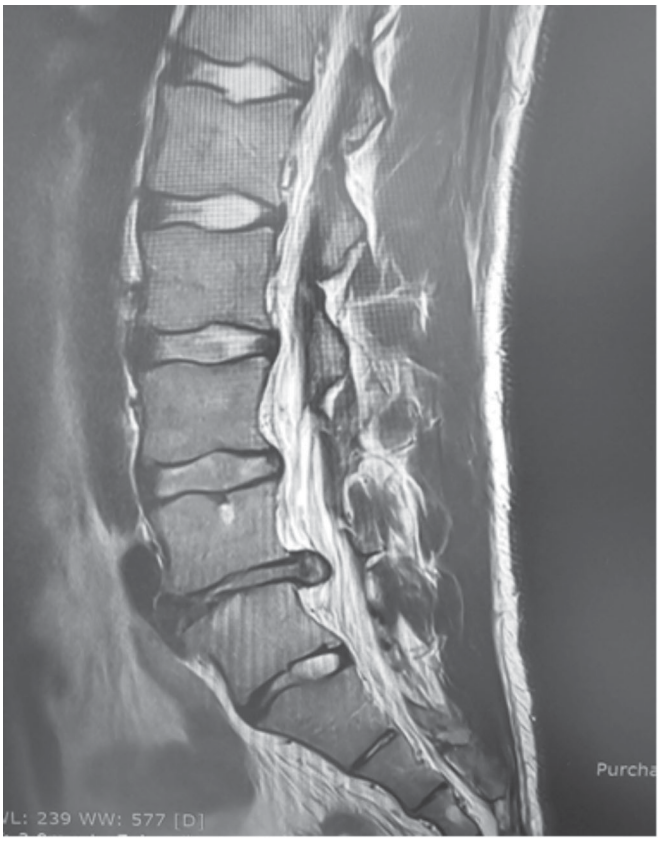
3. Clinical examination of the patient. À detailed neurological and orthopedic examination was performed before, during and after the treatment. The vertebral syndrome was evaluated in each examination. Spinal measurement methods for spinal mobility were used – SHOBER's test, OTT's test, fingers-floor test. Palpation was used to verify the degree of paravertebral muscle rigidity. The manual muscle test was used to measure the power of the lower limbs. VAS was used to assess the level of pain of the patient before and at the end of the treatment.

4. Decompressive table "PO GECHEV". The combined extension-traction therapy is a complex of hydro and traction-therapeutic procedures according to a specific methodology and specialized equipment – an extension table. It is performed in the non-stressful Williams posture and in a water environment, which has a relaxing effect with its temperature factor and helps traction according to Archimedes' low. The three main orthopedic principles – relaxation, extension and immobilization are the main elements when performing the procedures. Optimal traction was applied, we gradually increased the weight according to the patient's sensations, reaching 60 kg. After the procedure, the patient was immobilized using a lumbar support and bed rest in the Williams position using a prism.

CASE DESCRIPTION

The patient in this case is a young 23-year old man with a sedentary profession, i.e. a 9-to-5 desk job on a computer, in an incorrect position of the spine, often accompanied by lower back pain. In October 2024, for no obvious reason, he experienced severe lower back pain, which immobilized him. In a few days, the pain irradiated down the left leg with tingling along the S1 dermatome. The tingling didn't last long, but the pain in my back got worse. The patient sought medical help from his GP and started taking nonsteroidal anti-inflammatory drugs, which had a temporary effect - Baclofen 3 x 1, Milgamma 2 x 1 for 20 days. The GP referred the patient for hospitalization because of deterioration of the condition with deepening pain syndrome and a beginning and deepening kyphoscoliosis with concavity to the right side without possibility to flex the lumbar lar to the spine. He refused hospitalization in the Neurosurgery Department. At the end of October 2024, he was admitted to the Pavel Banya Medical Center for examination and consultation. He presented with persistent lower back pain and tingling in the left leg, severe spine curvature making it impossible to walk on his own, severely restricted spinal movements in all planes. The MRI findings were the following: Lumbar lordosis straightening; at L1-L2 level - no disk protrusion visualizes; at L2-L3 level - no disk protrusion visualizes; at L3-L4 level - no disk protrusion visualizes; at L4-L5 level - no disk protrusion visualizes; Small "Schmorl bodies" formed on the upper and lower disc surfaces in the vertebral bodies. The MRI scan established a L5-S1 disc herniation - large paramedian disc herniation on the left with a wide base and not very long history, reaching the left neuroforamen, measuring over 10mm with initial caudal migration. Marked compression of the anterior arachnoid space and left lateral recess. Expressed neuroforaminal stenosis on the left, with accompanying moderate root compression on the left. (Figure 1)

Fig. 1. First MRI of the lumbar spine at the beginning of the treatment- large paramedian disc herniation on the left /10mm./



Severe spinal canal stenosis. He underwent a neurological examination, and several measurements of the spine were taken: no signs of spinal cord injury were found. Shober test: 0sm, severely limited lateroflexions, fingers – floor test: left 35sm., right 32sm.; Ott test – 1sm; VAS scale – 10; Valleix's points 1,2,3,4,5 (+++) on the left; Lasègue's test (+) at 45 degrees on the left; scoliosis (+++) on the left; rigidity of the paravertebral muscles (+++) on the right.

After the medical examination, the patient began physical therapy courses, including Diadynamic Therapy, Interferential Current Therapy, Monophasic Pulsed Current Therapy and Phonophoresis simultaneously with the underwater spine decompression. The patient held 3 courses of 10 underwater lumbar decompressions for reducing the pain syndrome as well as the vertebral syndrome and to treat the herniated L5-S1 disk. The methodology of the lumbar decompression is based on 3 essential orthopedic principles:

1. Relaxing the spine and body muscles, which are rigid in this case, in the aquatic environment.

2. Lumbar traction with maximum thrust, well tolerated by the patient, in the Wilson position.

3. Immobilizing the patient after the decompression with a lumbar belt, known as "Lumbostat" and bed mode.

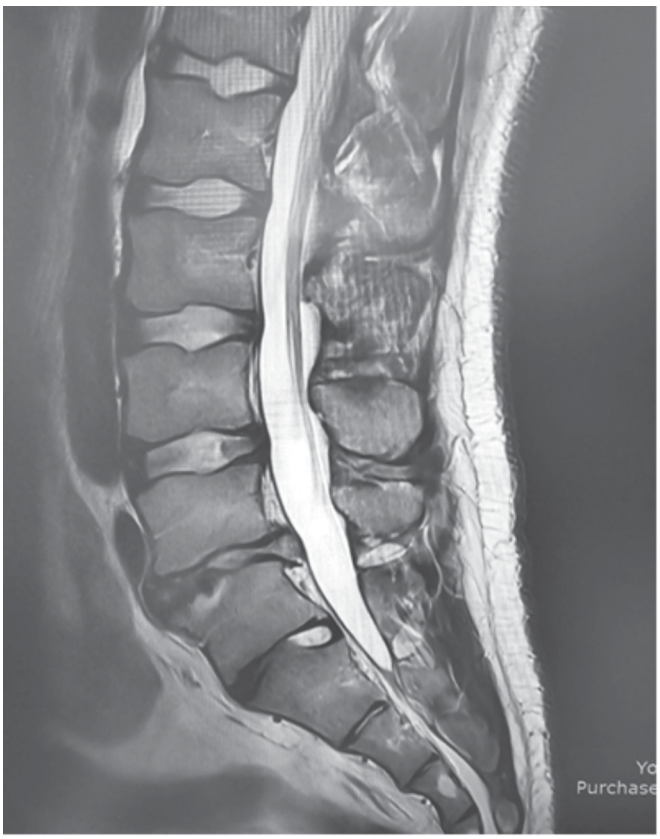
The whole decompression table with a traction unit is immersed in a mineral hot water bathtub, and only the traction pulley system remains out of the water. The maximum pull we applied to the patient was 60 kg, gradually and daily increasing the weight by 5 kg per day until reaching the maximum. We took into account the patient's subjective feelings during weight gain. He tolerated the procedure well during each of the three courses. There were no complications.

RESULTS

1. fter the third 10-day course of treatment was: Stance – upright, with a slight kyphoscoliosis. Gait - improved without needing any assistance. A slightly pronounced vertebral syndrome: scoliosis (+) on the left; rigidity of paravertebral muscles (+) on the right; trigger points symptom (-) bilaterally; mildly painful lateral flexion bilaterally; Schöber's test 5 sm. without any pain; Lasègue's test (-); sensitivity on L5-S1 dermatome for the left leg – restored; Achilles reflexes D = S. Valleix's points 1,2,3,4,5 (-) on the left. Fingers – floor test: left 25 sm., right 22 sm.; Ott test – 2sm; VAS scale – 3.

2. Results from MRI images of the lumbar spine. The second important result in this case is the lumbar spine MRI done 5 months after the treatment, on 30. 03.2025, i.e. after 3 courses of underwater lumbar decompression, 10 days each. (Figure 2)

Fig. 2. MRI of the lumbar spine after 3 courses of underwater lumbar decompression - reduction in the size of the herniated disc /8mm./



Comparison with the previous MRI examination from 20.04.2024. Preserved height and contours of the lumbar vertebrae. As in the previous MRI, reduced disc height at the L5-S1 level with dehydration. Small "Schmorl bodies" formed on the upper and lower disc surfaces in the vertebral bodies. L1-L5 levels: the intervertebral discs at these levels are presented with preserved shape, height and signal intensity. Preserved width of the neuroforamina. L5-S1 compared to the previous MRI, the described disc herniation is of reduced size - 8 mm (previous MRI 10 mm). In the present study, the disc herniation was located in the median position. Stenosis of the anterior epidural space and moderate compression in the anterior part of the dural sac were detected. Bilateral initial foraminal stenosis and contact with the lateral recesses. No evidence of root compression. No root compressions are visualized.

DISCUSSION:

In recent years, there has been a catastrophic increase in the incidence and severity of some socially significant debilitating diseases that seriously damage the patient's quality of life, such as disk herniation, which is one of the most common spine disorders treated in Pavel Banya.

We consider that the negative effects of sedentary lifestyle with the increasing computerization of modern life have recently led to crossing the classical limits of orthodox medicine and to focus on the natural and traditional physical factors for spine disorders management [9].

The most common cause of lumbar disk damage is, most of all, as we call it "microtrauma" due to sedentary life, computerization, as is the case with our patient. Other reasons are trauma, regardless of whether it is acute – fall, jumping, direct hit or chronic-overload [9]. In most cases, the clinical expression of disk herniation depends on the type of herniation – whether it is central or lateral. Most unfavorable are the central type that can crush and damage the spinal cord [10]. Spinal cord injuries are characterized by signs besides pain including sensory, motor, cardiovascular etc., in the lumbar spine – but also motor disorders in the limbs and violations of the genitourinary system [8]. Usually, lateral herniations of the spine disks are the highest percentage of all herniations. Pain here can be either in the lumbar region or along ischiadicus of the relevant low extremity [10]. A particular characteristic feature is the curvature of the spine, or scoliosis, left, right or forward and limiting the range of motion of the spine. The patient prescribed in this case has acquired a distortion on the right.

Knowledge of disk herniation as a disease is necessary because it affects the active, creative life stage and causes working disability for most likely young people, as in our case with this 23-year-old man.

The most important role and foremost task of conservative treatment is to eliminate mechanical irritation of nervous tissue elements that has been successfully resolved in Pavel Banya with the underwater spinal decompression traction treatment. The case we present here is the evidence.

CONCLUSION:

The case of our patient who has a desk job, suffering from a herniated disc, once again shows that a sedentary lifestyle puts more stress and pressure on the lumbar region than an upright stance. This case proves that underwater decompression of the spine completely reduces the pressed disk herniation, and this conservative treatment is a good choice for physicians to treat acute disk herniation. Working in a forced position, such as working on a computer, requires some physical exercises to be carried out. To prevent spinal damage, it is necessary to acquire habits to stabilize the spine muscles and sport, and to remember that a sedentary lifestyle is the enemy of man. Aquatic spinal decompression remains an effective, noninvasive method of treating vertebral syndrome in patients refraining from operative treatment.

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