

Case presentation: The interdisciplinary and rehabilitation treatment of lumbar disc hernia on a patient with corticotherapy dependency and history of lymph node TB

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Abstract

Introduction. Disc herniation means the movement of an intervertebral disc. Lumbar disc herniation is an evolutionary phase of lumbar vertebral discopathy, by de Seze classification: phase I (low back pain), phase II (lumbar pain and paravertebral contracture), phase III (discal hernia, with three stages, radicular pain, paresthesias and motor deficiency). **Materials and Methods.** We are presenting the situation of a female patient, aged 62, from the urban area, with confirmed vices of smoking and sedentary lifestyle, which presented in Emergency Room in Constanta for lumbosciaticalgias and paresthesias, impaired walking and presence of antalgic positions that required hospitalization in Neurosurgery section. The patient has a 15 points Glasgow score, with medical history of Hypertension, Rheumatoid Arthritis with corticotherapy, minor stroke and lymph node Tuberculosis. The muscular and osteoarticular system: apparently integral, with difficulty for active movements. The magnetic resonance examination reveals 2 lumbar disc hernias at level L4. The neurosurgical treatment was applied: discectomy in the L4 disc herniation bilaterally with the removal of the disc fragments. Subsequently, the patient was transferred to the medical rehabilitation department from Techirghiol Sanatorium. The patient was evaluated clinically, functionally in dynamics to track the effectiveness of the neuromotor rehabilitation program. **Results.** Through the program of early rehabilitation established, the therapeutic yield was significant with the improvement of the clinical symptomatology as well as the marked increase of the functional parameters, assuring the patient a high degree of mobility, of autonomy, but also of reintegration in the social and family life. **Conclusions.** The peculiarity of this case was the critical condition of the patient at the hospitalization, corticodependence, which makes the surgery but also the medical rehabilitation much complicated by functional osteoporosis and low bone consistency. Neurosurgery together with medical rehabilitation have sounded excellent together with in many cases, with ability to restore strength, functionality as well as better health of patients, which creates an indispensability between the two specializations.

Keywords: corticodependency, lumbar disc herniation, rehabilitation, neurosurgery,

Introduction

Disc herniation means the movement of a fragment from pulposus side of an intervertebral disc. Lumbar disc herniation (LDH) is an evolutionary phase of lumbar vertebral discopathy (LVD), (Fig1,2).

tool for disc herniation is magnetic resonance (MRI), and treatment may range from painkillers to surgery. Protection from disc herniation is best provided by core strength and an awareness of body mechanics including posture (1). When a tear in the outer, fibrous ring of an intervertebral disc allows the soft, central portion to bulge out beyond the damaged outer rings, the disc is said to be herniated. Disc herniation is frequently associated with age-related degeneration of the outer ring, known as the annulus fibrosus, but is normally triggered by trauma or straining by lifting or twisting. Tears are almost always postero-lateral (on the back of the sides) owing to the presence of the posterior longitudinal ligament in the spinal canal (1,2).

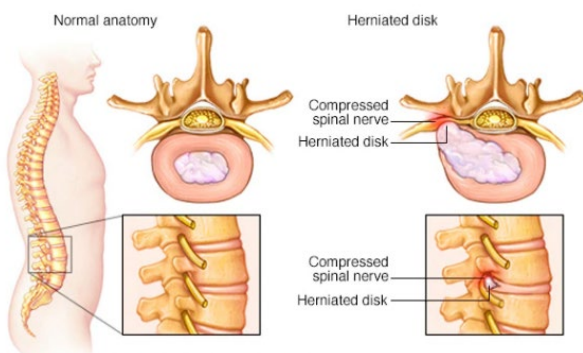


Fig 1 source: <https://www.mayoclinic.org/diseases-conditions/herniated-disk/symptoms-causes/svc-20354095>

Spinal disc herniation is an injury to the cushioning and connective tissue between vertebrae, usually caused by excessive strain or trauma to the spine. It may result in back pain, pain or sensation in different parts of the body, and physical disability. The most conclusive diagnostic

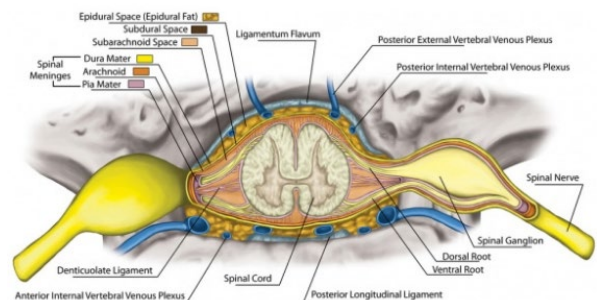


Fig 2 source: Shutterstock, Cervical, Thoracic and Lumbar Spine Anatomy Overview

Long-term cortisone use can lead a patient to become dependent on the substance. The body develops a tolerance to the drug and quickly needs it to function. A physical or psychological dependence on cortisone can be observed. When treatment is discontinued, feelings of anxiety and/or symptoms that suggest depression may occur. When these symptoms disappear, when treatment is reintroduced, this may be diagnosed as corticosteroid dependence. A gradual decrease in dosage could help prevent this phenomenon (3).

Corticosteroid drugs — including cortisone, hydrocortisone and prednisone — are useful in treating many conditions, such as rashes, lupus, arthritis and asthma. But these drugs also carry a risk of serious side effects. Working with your doctor, you can take steps to reduce these side effects so that the benefits of corticosteroid treatment outweigh the risks (3). Corticosteroids mimic the effects of hormones your body produces naturally in your adrenal glands, which are small glands that sit on top of your kidneys. When prescribed in doses that exceed your body's usual levels, corticosteroids suppress inflammation. This can reduce the signs and symptoms of inflammatory conditions, such as arthritis and asthma. Corticosteroids also suppress your immune system, which can help control conditions in which your immune system mistakenly attacks its own tissues (3).

Corticosteroids carry a risk of side effects, some of which can cause serious health problems. In our case the side effects of cortisone and their interest may be imposed on what is likely to be depressed during its presence, and the patient is not 2 years after therapeutic therapy to become infected with tuberculosis (TB) that resulted in a form of Lymph node TB. After the appearance of biological therapies, it is an opportunity to accept one of them, but as they are estimated, they are contraindicated in case of a patient with historical TB, the option of choice remaining therapeutically restricted (3). Given the patient's underlying pathology, namely Rheumatoid Arthritis (RA), she underwent treatment with Prednisone, as was customary many years ago until the advent of biological agents therapies today. But as it is known after multiple studies on Cortisone it can lead to damage to the immune system but also to osteoporosis, changes in bone consistency, creating a more friable structure and difficult to manage in case of interventions (3,4).

The recognition of an increased risk of TB reactivation in patients on tumor necrosis factor-alpha (TNF-a) inhibitor treatment has led to the publication of numerous guidelines on screening and treatment for latent TB infection (LTBI) in these patients, but many uncertainties remain. This issue of the International Journal of Rheumatic Diseases contains two retrospective cohort

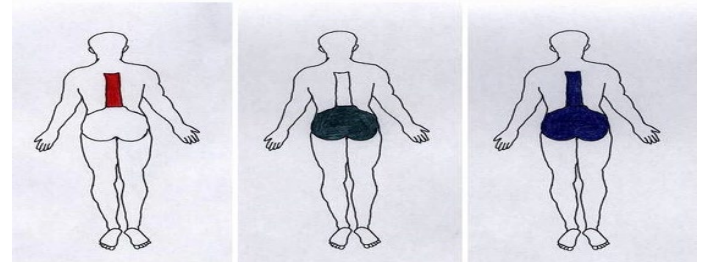
studies from South Korea that contribute to the discussion about the risk of TB associated with TNF-a inhibitor treatment and the optimal LTBI screening strategy in patients due to commence treatment with biological agents, respectively (5).

The introduction of biological agents has revolutionized the management of rheumatic diseases. However, the immunomodulatory effect of these drugs is associated with an increased risk of infection, especially an increased risk of TB reactivation – a fact of which the medical community has been well aware ever since a study on TB case reports after infliximab therapy was published in 2001 (5).

Another piece of the same article proves that the combination therapy of biological therapy could not be used together with corticotherapy, so our patient had the only opportunity that led to the complication of the neurosurgical procedure and to its recovery in a longer period comparing to other patients.

A systematic review of randomized controlled trials found that the risk for TB is significantly higher when TNF-a inhibitors are combined with methotrexate or azathioprine compared to TNF-a inhibitor monotherapy (5).

Corticodependence is also associated with multiple



changes in the spine, low back pain being very common found on patients case studies.

Fig 3: Low back pain in advanced Corticodependent patients comparing with different vertebral pathologies. Source: Friedrich, M., Gittler, G. & Pieler-Bruha, E. Misleading history of pain location in 51 patients with osteoporotic vertebral fractures. Eur Spine J 15, 1797–1800 (2006).

The study illustrated above (Fig 3) investigate associations between the location of osteoporotic vertebral fractures and the patient's localization of pain. Fifty-one consecutive patients (M 6, F 45; average age 74.8 years) with diagnosed osteoporotic vertebral fractures between T8 and L2 were included in the study (3). Exclusion criteria were fractures above T8 and below L2, spondylolisthesis, disc herniations, tumors, infections (3,6,7), and instability. Pain location was assessed by pain drawing, subdivided into thoracic, lumbar, and thoracic plus lumbar pain areas, and pain intensity using a 101 numeric rating scale. Furthermore, the onset of back pain and the lack or the indication of a trigger event at the onset of pain were documented. Only four of 20

patients with thoracic fractures reported thoracic pain, while the other 16 (80%) reported only lumbar pain (3).

OBJECTIVES

Demonstrating the effectiveness and need for interdisciplinary collaboration between the neurosurgery and rehabilitation and balneology department in the complete treatment of patients with lumbar disc disease associated with other complications (8,9).

MATERIALS AND METHODS

We are presenting the situation of a female patient, aged 62, from the urban area, with confirmed vices of smoking and sedentary lifestyle, which presented in Emergency Room in Constanta for lumbosciatalgias and paresthesias, impaired walking and presence of antalgic positions that required hospitalization in Neurosurgery section. The patient has a 15 points Glasgow score is known to have Hypertension, RA, minor stroke and lymph node TB.

The muscular and osteoarticular system: apparently integral and difficulty to active movements.

Physical examination

Diagnosis of spinal disc herniation is made by a practitioner on the basis of a patient's history and symptoms, and by physical examination. During an evaluation, tests may be performed to confirm or rule out other possible causes with similar symptoms – spondylolisthesis, degeneration, tumors, metastases and space-occupying lesions, for instance – as well as to evaluate the efficacy of potential treatment options.

The *Roland-Morris Disability Questionnaire* is designed to assess self-rated physical disability caused by low back pain (10). It is most sensitive for patients with mild to moderate disability due to acute, sub-acute or chronic low back pain (11).

There are different questionnaires available, which differ from each other in the number of statements: 24-, 18- and 11-item questionnaire (10,12).

On our study we used the 24 item questionnaire.

The patient is asked to tick a statement when it applies to him that specific day, this makes it possible to follow changes in time (9).

The items in the questionnaire refers to the daily activity of each person, such as walking, climbing stairs, getting dressed, standing, lying down, appetite, sleeping, picking up heavy luggage, etc.

The *Quebec back pain disability scale* is a condition-specific questionnaire developed to measure the level of functional disability for patients with low back pain that was designed, developed and validated by Kopec et al in 1995 (12). The originally purpose of the questionnaire is to take into account the functional limitations related to pain, to monitor the progress of individual patients and to compare the evolution of low back pain subjects incorporated in rehabilitation programs (13).

The Quebec back pain disability scale consists of 20 daily activities that can be categorized into 6 types of activities:

Bed/rest items	1–3
Sitting/standing items	4–6
Ambulation items	7–9
Movement items	10–12
Bending/stooping items	13–16
Handling of large/heavy objects items	17–20

Patients are asked to answer the Quebec back pain disability scale according to the difficulty they have to perform the activities the current day (12)The scale examines how the lower back pain affects your daily life. It is very important that the patient gives a score for every activity; it is not allowed to skip an activity (12).

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The Oswestry Disability Index is a patient-completed questionnaire which gives a subjective percentage score of the level of function (disability) in activities of daily living in those rehabilitation from low back pain (12).

The questionnaire examines perceived level of disability in 10 everyday activities of daily living (11). The 6 statements are scored from 0 to 5 with the first statement scoring 0 through to the last at 5, e.g.,

Pain intensity:

I have no pain at the moment. Score = 0

The pain is very mild at the moment. Score = 1

The pain is moderate at the moment. Score = 2

The pain is fairly severe at the moment. Score = 3

The pain is very severe at the moment. Score = 4

The pain is the worst imaginable at the moment. Score = 5.

RESULTS

Through the program of early recovery established, the therapeutic yield was significant with the improvement of the clinical symptomatology as well as the marked increase of the functional parameters, assuring the patient a high degree of mobility, of autonomy, but also of reintegration in the social and family life.

Final diagnosis

- Lumbar disc herniation L4 bilateral (Fig 4)

- Foraminal lumbar stenosis

- Essential (primary) hypertension grade III

- Chronic ischemic heart disease, unspecified

- Corticosteroid-dependent rheumatoid arthritis

Lymphnode TB history

Objective examination:

Good overall awareness, awareness and cooperation with a Glasgow score of 15 points

Muscular and osteoarticular system:

- apparently intact and difficult to mobilize

- Barthel incapacity scale: 35/100 points.

- IADL index: 3/8 points.

- ADL score: 3/10 points.

-Changes in polyarthritis of the hands, normoponderal. - Roland-Morris Questionnaire: 24 points before neurosurgical and rehabilitation treatment and 19 points after

Quebec back pain disability scale: 82 points before neurosurgical and rehabilitation treatment and 68 points after

Oswestry disability index: 4 points before neurosurgical and rehabilitation treatment and 3 points after.

Immediate treatment. Neurosurgical treatment was applied: Discectomy and foraminotomy at the level of L4 bilateral disc herniation with removal of the disc fragments arranged intracanalicularly, one with cranial oriented direction, and the second caudal.

Postoperative treatment. Medical rehabilitation in Balneal and Rehabilitation Sanatorium of Techirghiol (BRST), considering that within the last years balneal therapy became an important therapy and hence the need for a scientific research into the benefits of the so-called thermal medicine (14). Techirghiol lake is well known for its salt water and sapropelic mud, which is rich in mineral and organic substances (15). The mud and the lake waters are used for their balneotherapy properties since the 19th century. Also, the climate of the area is temperate continental, steppe, with marine influences due to the geographical location of the resort, 3 km from the Black Sea (15).

This type of climate leads to reduced thermal comfort, which implies an intense adaptation of the body, especially through its thermoregulation mechanisms (16). The climatic factors such as air temperature, water temperature and humidity were recorded daily during the treatment (15).

The treatment of the patient consists of cold mud baths and adjuvant procedures such as: electrotherapy, kinotherapy (improved Williams program for stabilization of the lumbar spine), massage therapy.

The application of the peloidotherapy consist in progressive general heliotherapy, application of mud followed by immersion into the lake (8,9).

The patient was evaluated clinically, functionally in dynamics to track the effectiveness of the neuromotor rehabilitation program.

Prognosis

- Vital, immediately: reserved in the absence of medical recovery treatment

- Health status: decreased Barthel disability scale, IADL index, ADL score, Roland-Morris, Questionnaire, Quebec back pain disability scale, Oswestry disability index

- Functional: functional immobility

Work capacity: retirement.

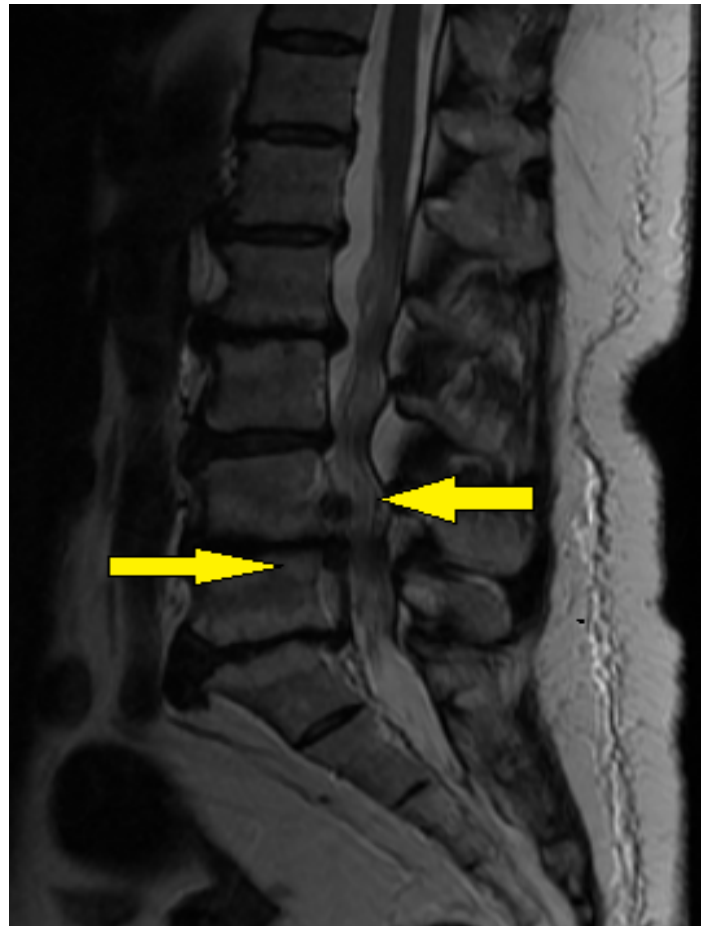


Fig 4. MRI of patient

ONCLUSIONS

The peculiarity of this case was the critical condition of the patient at the hospitalization, corticoid dependence, which makes the surgery but also the medical rehabilitation much complicated by functional osteoporosis and low bone consistency. Neurosurgery together with medical rehabilitation have sounded excellent together with in many cases the ability to restore strength, functionality as well as better health of patients (17,18,19), which creates an indispensability between the two specializations.

Declaration of conflict of interests/Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

Informed consent

Informed consent was obtained from the patient included in this study

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