



Case report

DEPARETIC PHENOMENON DURING UNDER-WATER LUMBAR EXTENSION

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ABSTRACT

The purpose of this study is to evaluate the effect of underwater lumbar extension on the motor dysfunction of the paretic leg of a patient with a herniated disk and the patient's recovery rate after the treatment. Some authors describe a deparetic phenomenon in some patients with inability to dorsiflex the foot during extension therapy. When loading up to 40-45 kg, normal dorsiflexion occurs in some cases. When the loads are returned to 40-30 kg, motor function is lost again. Two patients were included in the study, 1 male and 1 female. Patients with proven disc herniation on CT or MRI with evidence of paresis - dorsiflexion with a score of 3- and 2- on MMT and EMG data were included. In both patients, dorsiflexion, 5 minutes after optimal traction during the underwater lumbar extension "PO GECHEV", was affected: In the male patient, dorsiflexion increased from a score of 3- to 5-, in the female patient, from 2- to 4+.

Keywords: deparetic phenomenon, paresis, underwater lumbar traction, herniated disk, motor dysfunction, dorsiflexion,

INTRODUCTION

Motor dysfunction is expressed by varying degrees of disturbances in the control of movements, coordination between different parts of the body [1]. The condition is expressed in the inability to perform complex movements, ranging from the complete absence of such movements to difficulties walking and standing independently. The object of our research is the motor dysfunction caused by a mechanical factor, disruption in the integrity of intervertebral disks [1, 2].

Basic research of muscle groups and individual muscles is done with manual muscles testing and electromyography [8]. From our experience, we know that in nearly half of patients with disk disease, disturbances in muscle function are found to a greater or lesser extent, most often in the area of L4, L5 and S1 roots.

To determine motor dysfunction in the ankles and fingers, we have the patient walk on their toes and heels, but since the unaffected leg can mask insufficiency in the injured one, the patient must stand alternately on their heels and toes with each leg separately [3, 4]. Inability to stand on tiptoe indicates weakness of calf muscle strength (primarily the 5th root), and inability to stand on heel indicates involvement of the dorsiflexors of the foot (primarily the 5th root). The fibular muscles are tested in the supine position by applying resistance to the outer edge of the feet against the movement that the patient will make with them laterally and dorsally [3]. Nerve roots B5 and B6 innervate the muscles that perform abduction, extension, and external rotation of the hip.

Some patients under the influence of pain do not notice the motor impairment and often associate weakness in the foot or knee with the pain. Weakening or loss of movement in a given area is a sure sign of involvement of the motor fibers of the corresponding root [4, 5].

According to our data, the percentage of patients with pronounced paretic phenomena is significantly high in patients with a difficult to treat vertebral syndrome: about 17% [6, 7]. The data of other authors show a smaller percentage [8, 9]. These authors attribute the paretic phenomena most often to L.-root. Paretic sciatica sometimes occurs without pain symptoms, which can mislead the

doctor into thinking that it is a case of neuritis.

The disappearance of pain after a paralysis is explained by some authors Guyu, Faivre in 1967, cited by V. Mitkov in 1968, with a physiological "radicotomy" carried out by the compressing disc. In our cases, paresis is more common than paralysis of the foot. Paresis usually occurs gradually, less often suddenly [9, 10]

Most authors explain [10] the motor and sensory disorders in disc disease with the mechanical factor (compression or tension). Others attach importance to the vascular factor represented by the accessory radicular artery.

We support the opinion about the mechanical factor in the genesis of paretic phenomena. This was proven by Prof. Georgi Gechev in 1979 with the results of the extension treatment and in an acute experience, when during extension (under 45 kg of traction) the paretic phenomenon was removed in some of the patients, albeit temporarily.

MATERIALS AND METHODS

1. Participants. Two patients were included in the study, 1 male and 1 female. Patients with proven disc herniation on CT or MRI with evidence of paresis - dorsiflexion with a score of 3- and 2- on MMT and EMG data were included.

2. Clinical Examination of patients. Each patient's dorsiflexion was tested with a protractor and on the MMT scale from 0 to 5, before the traction and 5 minutes after optimal traction in the bathtub.

3. Extension table "PO GECHEV". Optimal traction was applied, we gradually increased the weight individually according to the subjective sensations of each patient, reaching 50-60 kg.

4. After the procedure, each patient was immobilized using a "PO GECHEV" lumbar support and bed rest in the Williams position using a "PO GECHEV" prism.

RESULTS

In both patients, dorsiflexion, 5 and 10 minutes respectively after optimal traction during the underwater lumbar extension "PO GECHEV", was affected: In the male patient, dorsiflexion increased from a score of 3- to 5-, in the female patient - from 2- to 4+.

The first patient is a female. She was presented with postoperative paresis of the peroneus on the right, or unable to step on the heel. Operated for a herniated disc in 2003 without having paresis, she developed it after the operation, and her right leg became weak. She has not undertaken further treatment so far. She was assigned the following therapy for 15 days: low-frequency pulsed magnetic field, interferential current, as well as electrical stimulation of the paretic nerve. Before the underwater lumbar extension, a relaxing procedure was performed in a mineral water bath. The extension lasted 20 minutes, the

maximum traction was obtained at the 5th minute from the beginning of the procedure. In this case, a nerve response occurred 5 min after maximum traction during underwater lumbar extension, and the patient was able to lift the foot in dorsiflexion.

The second patient is a male. He has had a lumbar disc herniation and paresis of the peroneus nerve (cannot step on the heel) for one month. He has incomplete dorsiflexion of the foot of his left leg from the occipital position. He was assigned the following therapy for 15 days: low-frequency pulsed magnetic field, interferential current, electrical stimulation of the paretic nerve. Before the underwater lumbar extension, a relaxing procedure was performed in a mineral water bath. The extension lasted 20 minutes, the maximum traction was obtained at the 10th minute from the beginning of the procedure. The patient improved the range of motion (almost full range) of the foot of the left foot 10 min after maximum traction during underwater lumbar extension.

DISCUSSION

Prof. G. Gechev describes several patients with symptoms of L5 root loss (with inability to dorsiflex the foot) who underwent extension therapy. When loading up to 35-40 kg, movement in the fingers was not noticeable, after 40-45 kg, in some cases, normal dorsiflexion appeared. When the weights were returned to 40-30 kg, the motor function was lost again.

This is conclusive evidence that during extension therapy, optimal traction should be achieved and low weights should not be relied upon.

This deparetic phenomenon can be explained by the parabolic state of compressed or stretched fibers in the root, which under decompression conditions restore their functions.

Functional paretic phenomena in disc disease differ from paretic phenomena in permanently anatomically interrupted efferent pathways of the motor neuron [10]. Fortunately, not every paresis of discogenic or vertebrovascular nature is permanent, irreversible. These clinical cases prove the reversible nature of some of the paresis. The latter are most likely due to functionally suppressed (in parabiosis) motor fibers, which after decompression, can (although rarely) immediately or after some time (20-30 days) eliminate paresis.

We can only talk about effective therapy of paretic phenomena if we take into account the orthopedic requirements of changes in the spine.

The decompression therapy we apply through underwater lumbar extension with correction of disc prolapse, as well as correction of arteriovenous stasis, allows for the greatest efficiency in restoring withdrawal symptoms by facilitating and supporting the recovery processes in the roots: remyelination and collateral reinnervation

CONCLUSIO

The general physiotherapy complex is important only in cases where there is no pronounced root symptomatology or after its removal for residual phenomena. According to this study and our opinion, it is a mistake to treat a radicular symptomatology with physiotherapy until the patient's pain subsides and to consider that he is already cured, since in most cases, paresis occurs after the pain subsides. Vertebrogenic residual neurological

symptoms are a special case of the compression-ischemic manifestation of discordial conflict in disc disease, and their treatment should be primarily aimed at decompression of the spinal column. Our clinical cases show that the loss of motor function is reversible, regardless of the age of the complaints. Moreover, motor deficits have a significantly greater chance of recovery after root decompression than sensory deficits.

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