REVIEW

The value of the rehabilitation treatment in the non-specific low back pain

Wartość leczenia usprawniającego w leczeniu niespecyficznym bólu części lędźwiowo-krzyżowej kręgosłupa

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Abstract

Nowadays, pains in the lumbosacral region of the spine are one of the most common spinal illnesses in general. Non-specific back pain of this episode occurs in almost 85% of cases. Its etiopathogenesis is elaborate to determine, but the patient’s lifestyle is of great importance - the profession and physical effort during sports activities. Referring to current data from international literature, the fundamental therapeutic method in the non-specific pain of the lumbosacral spine should be rehabilitation treatment. The article refers to and discusses a set of relaxation positions and exercises recommended in this condition.

Keywords: non-specific back pain, physiotherapy, exercises

Streszczenie


Słowa kluczowe: niespecyficzny ból pleców, fizjoterapia, ćwiczenia
Introduction

The non-specific low back pain (LBP) is caused by muscles, ligaments and periarticular tissues overload changes. Facet joints are also exposed to this type of change [1]. It is essential to distinguish them from specific low back pain, which is only 15% of all kinds of pain in the lumbar part of the back. This less-common issue can be occurred by hernia of the nucleus pulposus, spondylolisthesis, spinal stenosis, vertebral fractures, tumor, or by inflammatory process [2]. LBP is defined as a symptom which pathology is difficult to find. It is a painful experience regarding the musculoskeletal system [3]. This type of low back pain is common and 84% of patients can experience it during their lifetime. It is estimated that over half of them will experience several pain episodes [4].

Aim of the research

The purpose of the work is to show that non-specific low back pain is a distinct diagnostic and therapeutic problem in relation to all pain syndromes of the lumbosacral spine. It contains the largest part of them. The methodology of work used current data from international literature.

Epidemiology

The non-specific low back pain is a pain syndrome occurring in the range of 75-85% of all pain in the lumbosacral spine. It belongs to one of the most frequent reasons for patients reporting to primary care physicians and neurologists [5]. These patients should be treated by doctors specializing in rehabilitation medicine and exercise program should be implemented by experienced physiotherapists.

Causes

Causes of LBP can be divided into two main groups: overload and extension of ligaments or overload of muscle groups [6]. These factors lead to anatomical and neurophysiological changes in this segment of the spine [7]. On the other hand, the most common risk factors causing the disease are:
- work performed in non-physiological positions (including work in sitting position with maintaining incorrect body position),
- incorrect position during sleep and rest [8],
- sudden, uncontrolled movements,
- overload resulting from various sports activities or physical work,
- road accidents [5].

Methodology and determination of medical diagnosis

In establishing the diagnosis, the critical element is to take a scrupulous medical history. It is important to pay attention to the patient's lifestyle, type of job, sports activity and circumstances that caused the first pain incident [9].

The next stage is a physical examination in which pain in the lumbar region of the spine occurs during palpation. Increased paravertebral muscle tone is also present. Due to pain, the range of motion can be limited in all its planes. In the neurological examination, we can not detect any deficiencies in the form of sensory disturbances, weakening of reflexes and irritation of the nerve roots. McKenzie's repeated motion test can be helpful in physical examination [10]. Radiological and imaging tests do not provide any significant explanation regarding the diagnosis [11].

Course of the disease

Depending on the duration of non-specific back pain, the following periods can be distinguished:
- acute period – usually lasts up to six weeks (red flags),
- subacute period – up to three months,
- chronic period – over three months [6].

Establishing a diagnosis of non-specific low back pain poses no major problems. However, in some cases differentiation with specific back pain syndromes such as intravertebral discs and vertebral lesions, inflammatory changes of the vertebral bodies, malformations of the spine, osteoporosis, rheumatic diseases and intracanal stenosis should be considered.

Treatment

The treatment of nonspecific back pain is based on the patient's education on how to lead a healthy lifestyle- performing everyday and professional activities in a way that prevents overloading of the spine [12]. Patients usually use the advice of a physician who should consider a prevention and rehabilitation program. This program should be realized at home. During periods of exacerbation of the disease, checks should be carried out on the patient's functional status. The basis of treatment is kinesitherapy, in which appropriate exercise groups should be included:
- improving the range of motion of the lumbar region,
- stretching,
- exercises to correct body posture and maintain its correct position,
- exercises strengthening postural and paravertebral muscles,
- general fitness and breathing exercises,
- post-isometric relaxation is necessary in some cases.
From the program of the exercises, the patient should exclude those that intensify pain or which he can not perform [13].

### Relaxation positions

The patient should choose the best relaxation position for him, one in which he feels comfortable and does not experience any increase in pain.

1) Lying on the back with slightly bent lower limbs in the knee joints.

2) Lying on the side: the lower limbs are bent in the knee joints with a pillow located between them.

3) Lying on the abdomen with straight upper and lower limbs. Modification is possible by placing a pillow under the hips.

### Exercises

During periods of worsening lumbar spine pain or when the exercises increase the discomfort, they should not be performed. However, in the treatment of chronic pain, it is advisable to do physical exercises [14]. The presented scheme is recommended to be performed daily, even during periods of remission of ailments. Each of the proposed exercises should last 10 seconds, in a series of 10 repetitions with a 3 seconds break between each repetition.

1) Pelvic tilts - lower limbs bent in the knee joints with the lumbosacral spine pressed to the ground. Slow, smooth pelvis movements, resulting in flexion and extension of the lumbosacral spine, should be performed.

2) Knee rolling - lying on the back with lower limbs bent in the knee joints. Slowly moving your knees sideways to both sides of the body with stopping at the starting position.

3) Hip flexion - lying on the back with one lower limb erect and the other one bend in the knee and hip joint at an angle of 90. Slow and gentle pull of the bent lower limb with your hands to your chest.
4) Pulling abdomen in towards your spine- lying on the back with lower limbs bent in the knee joints. Pulling the abdomen together with pressing the lumbosacral spine towards the ground. Do not forget about normal breathing.

5) Lying on the abdomen with support- lying on the stomach with palms placed in line of arms and upper limbs bent in the elbows joints. Slowly straightening the upper limbs and lifting the body with the pelvis still adhering to the ground. The movement should be made within comfort limits. Return to the starting position.

6) Extension in the sitting position- sitting on a chair with lower limbs bent in the knees at an angle of 90 and hands on the chest. Slowly move the torso back and return to the starting position.

7) Flexion in the sitting position- sitting on a chair with knees bent at an angle of 90, hands are on your knees. Slowly moving your hands along the front of shins up to your ankles with the body slope. Return to the starting position.

8) Pelvic tilting in the sitting position- sitting on a chair with lower limbs bent at the knees at an angle of 90. Slow tilting the pelvis backwards until lumbar lordosis is reduced. Then tilting the pelvis forward so that the lumbosacral spine forms a concave arch. Return to starting position.
9) Extension in the standing position- standing tall with feet hip-width apart with hands resting on hips. Performing a slight bend back and return to the starting position.

10) Cat and camelback exercise- getting down hands and knees on the floor. With exhalation, the spine bends upward in the thoracic region, the head is positioned between the shoulders, and the chin touches the sternum. Then the head is raised up and the spine is lowered down so that the abdomen is as close as possible to the ground. Return to starting position.

Discussion

The literature data show that there is no clear scientific evidence confirming the impact of exercise upon pain reduction. However, it is believed that exercise has a significant impact on improving your overall condition, improve muscle blood supply, reduce muscle tone and prevent atrophy and strengthen their strength and endurance [17].

According to Mohammad Hosseinifar, Asghar Akbari and co-authors of Zahedan University of Medical Sciences in Iran, methods of treating low back pain such as rest, medication and rehabilitation exercises are used [18]. Hudes believes that the stability of the spine should be increased in patients suffering from low back pain [19]. Workouts stabilizing the spinal muscles place more emphasis on the deep muscles and posterior roots of the spinal cord, in particular, the transverse muscles of the abdomen. These exercises improve body posture stabilization and also have to reduce pain by stabilizing the roots of the spinal cord. On the other hand, static and dynamic balance exercises include activities performed to overcome limitations in maintaining body balance.

Summary

The course of non-specific back pain is different: in some patients, the symptoms disappear spontaneously, although no therapeutic procedures are used. It often helps to position the patient in the right analgesic position, relax and apply heat. The patient is often supported by lying down in the right analgesic position, resting and using heat. Some patients take painkillers and non-steroidal anti-inflammatory drugs. If the patient is under the care of a specialist, some authors believe that medication should not be ordered until the diagnosis is established, as they may obscure the clinical picture. Diagnosis of non-specific low back pain is not complicated. Treatment should be comprehensive with the involvement of a physician, physiotherapist and psychologist. The basis of treatment is an adequately selected kinesiotherapy program, which is implemented in an outpatient department. This condition may be recurrent, so that some patients may experience several pain episodes throughout their lives. It is essential to educate the patient about performing life activities and adjusting workstation ergonomics [20].
Conclusions

Treatment of non-specific low back pain includes appropriate education and an exercise program individually tailored to the patient's condition. Patient education pays special attention to the need to maintain correct body posture during life and work activities. It is recommended to systematically perform a set of exercises for a patient with non-specific low back pain. During periods of severe symptoms, it is advisable to use physical therapy and massage.

References

13. The Ipswich Hospital NHS Trust: Non-Specific Low Back Pain Initial Advice Ipswich hospital; 2015