

## Diagnosis, Evaluation and Treatment Approaches in Patients with Low Back Pain

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### Abstract

Low back pain is a complex health problem affected by biological-psychological and sociocultural factors, which causes limitations in the functions of the person and leads to loss of workforce. Since it is affected by many factors, it requires a multidisciplinary approach in terms of diagnosis, evaluation methods and treatment. After a comprehensive evaluation and physical examination, it is important to find the source of pain by utilising necessary laboratory tests and medical imaging. It is very difficult to find the source of pain in low back pain. It is necessary to utilize different approaches to identify the cause of low back pain, which is affected by psychological, social and physical factors, and to make a treatment plan appropriate to the cause. In this study, the general approach to the evaluation and conservative treatment methods in low back pain, which causes economic and labour force losses almost all over the world, is examined.

**Key words:** low back pain, low back pain treatment, low back pain assessment, pain, lomber disability



## INTRODUCTION

Low back pain is a musculoskeletal system problem that negatively affects the quality of life worldwide and adversely affects those with low back pain in terms of labour capacity, economic status and emotional status. Personal and environmental factors determine the prognosis in low back pain (1). Although the etiology is not clear, it can be affected by many factors. Low back pain lasting up to 6 weeks is classified as acute low back pain, low back pain lasting between 6-12 weeks is classified as subacute low back pain, and low back pain lasting more than 12 weeks is classified as chronic low back pain. Acute low back pain usually improves in a few days (2). Since functional inadequacy and psychosocial problems occur with pain in chronic low back pain, the daily life of patients may be affected and they may have difficulty in working and may become depressed(4). It is important to determine the type of pain and formulate a treatment plan because of the negative conditions that may occur.

97% of low back pain is mechanical low back pain. Mechanical low back pain is low back pain originating from the anatomical structures forming the spine. In order to determine the type of pain as mechanical, other factors such as inflammatory, infectious, metabolic causes, rheumatic causes, fractures and pain reflected from internal organs should be excluded (3).

## LOW BACK PAIN CLASSIFICATION

Although the pathophysiology of low back pain is not fully known, it is known that various factors come together to cause low back pain. The origin of low back pain can be associated with various anatomical structures and can be clinically divided into different subtypes.

**1)Mechanical Low Back Pain:** It refers to pain arising from the anatomical structures that make up the spine and usually increases with physical activity. This type of pain is usually caused by degenerative disorders of the spine such as disc degeneration, disc herniation, spinal stenosis. In mechanical low back pain, complaints increase with movement and decrease with rest or appropriate positioning (11).

**2)Inflammatory Low Back Pain: It occurs as a** result of inflammation or degenerative inflammatory problems in the joints of the spine. Spondyloarthropathies such as ankylosing spondylitis are the leading causes of inflammatory low back pain. Inflammatory low back pain is usually characterised by morning stiffness and pain that increases at night and with rest.

**3) Neuropathic Low Back Pain:** It is the pain that occurs due to nerve damage or nerve compression on the roots of the spinal cord or spinal nerves. Conditions such as disc herniation and spinal stenosis can cause neuropathic low back pain by compressing the nerve roots. In neuropathic low back pain, numbness, tingling, burning sensation and pain spreading according to the dermatome regions occur (13).

**4) Psychogenic Low Back Pain:** It can be defined as psychological factors affecting the perception of low back pain and producing a somatic symptom. In this type of low back pain, the time and frequency of pain changes in relation with the emotional state, stress level and mental health of the person (9).

## RISK FACTORS

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**Age:** The first attacks occur around 25-30 years of age (5).

**Gender:** Low back pain is more common in women (2).

**Genetic predispositions:** People with a family history of low back pain are more likely to have low back pain.

**Body weight:** Since the load on the structural elements of the spine and degeneration increase with obesity, it is more likely to be seen in people with overweight problems (7).

**Tobacco use:** Since the blood supply and circulation of the structures in the lumbar region will be impaired in people who use tobacco, the structures become open to degeneration. For this reason, tobacco use is thought to be a risk factor in low back pain (1).

**Postural factors:** In postural disorders, since the loads on the spine cannot be carried equally, degeneration of the discs may occur and the possibility of causing low back pain may increase.

**Occupation:** It has been determined that the likelihood of low back pain is high in those who stand for a long time, lift heavy loads and work in jobs that cause repetitive back movements (5).

**Psychosocial status:** The incidence of low back pain is increased in people with psychosocial problems such as depression, anxiety and stress (1).

#### **EVALUATION METHODS**

Since the causes of low back pain are multidimensional, the evaluation of low back pain should be performed with a multidisciplinary approach. A bio-psychosocial approach model should be adopted in the evaluation of these patients. Evaluations should be comprehensive and it is important to determine the cause of pain by using tests such as physical examination, laboratory tests, imaging methods. After the biological cause of pain is determined, it is very important to use psychosocial assessment tools for treatment planning in low back pain (6).

**1)History:** Detailed history taking is important to determine the possible causes of pain and conditions such as red flags and yellow flags leading to long-term loss of labour force or disability (6).

Red flags for low back pain identified for conditions requiring urgent diagnosis and treatment;

- Trauma,
- Fire,
- Weight loss of unknown cause,
- History of cancer,
- Saddle-shaped anaesthesia,
- Reduced mobility,
- Night pains
- Don't be over 50,
- Intravenous drug use,
- Progressive neurological deficit,
- Difficulty urinating,
- History of systemic corticosteroid use, presence of non-specific vague symptoms in the lower extremities,



- Strip-like trunk pain  
(10).

Yellow flags for low back pain in psychosocial-based disability assessments;

- Negative moods such as anxiety and depression,
- Beliefs that pain is harmful or uncontrollable,
- Inability to cope with pain, passive behaviour in treatment,
- History of abuse or substance abuse,
- Professional dissatisfaction or lack of support in the work environment  
(10).

**2) Pain Assessment:** Clues about the source of pain are obtained by evaluating the mode of onset, location, intensity, where it spreads, its relation with movement and posture, factors that increase or decrease pain, morning stiffness, and treatments applied (6).

**3) Physical examination:** Physical examination in low back pain includes postural evaluation, evaluation of muscle spasm or muscle shortness, evaluation of muscle strength, and evaluation of range of motion (12).

**4) Neurological Examination:** Neurological examination in the lumbar region is performed by segmental evaluation of muscle strength, sensation and reflexes in the lower extremities. Increased Achilles and patella reflexes increase the possibility of upper motor lesions, whereas decreased reflexes together suggest the presence of diabetic neuropathy (11).

**5) Diagnostic Imaging Methods:** Plain radiographs, magnetic resonance imaging or computed tomography, electrodiagnostic tests and blood tests are tests that can be used to make a diagnosis. The findings obtained from the tests should be evaluated together with the patient's history and physical examination (6).

## TREATMENT APPROACHES

The aim in the treatment of low back pain should be to control and reduce pain, improve mobility, provide improvement in psychosocial conditions, increase efficiency in activities of daily living and provide patient education (7).

It is important to provide a multidisciplinary approach in the treatment of low back pain. Treatment approaches can be grouped as conservative treatment, surgical treatments and physiotherapy and rehabilitation approaches.

### Conservative Treatment:

Except for the criteria requiring emergency surgery, the primary aim in the treatment of patients presenting with pain in the lumbar region is to reduce pain and increase function. Non-steroidal anti-inflammatory drugs, paracetamol, tramadol, morphine, muscle relaxants and antidepressants can be used as pharmacological treatment to reduce pain (7). In addition to pharmacological treatment, applications such as rest or lumbar corset may be preferred in treatment. Cognitive-behavioural therapy

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can also be applied in the treatment of low back pain considering that it is also caused by psychosocial factors (7).

#### **Surgical Treatment and Invasive Interventions:**

Conservative treatment is important in the treatment of low back pain, but surgical treatment may become necessary in some cases. Conditions requiring surgical treatment in low back pain can be listed as diagnostic block, progressive motor deficit and failure to respond to conservative treatment (2).

Surgical techniques and invasive interventions used in the treatment of low back pain can be listed as follows (10);

- Total disc arthroplasty,
- Microdystectomy,
- Facet joint denervation
- Epiduroscopic laser distectomy and neural decompression
- Radiofrequency thermocoagulation applications
- Epidural steroid injections
- Sympathetic nerve blockades

#### **Physiotherapy and Rehabilitation**

Physiotherapy methods in low back pain are recommended for patients who do not require surgery or who do not want to undergo surgical intervention or as postoperative treatment. The aim of physiotherapy is to increase circulation in the region, relieve pain, increase range of motion, and provide functionality and endurance.

Electrotherapy, traction, mobilisation, manipulation, massage techniques, kinesiological taping, exercise, patient education and waist school are examples of physiotherapy applications in low back pain.

**-Hot application:** Hot application, which is applied to relieve muscle spasms, reduce pain and increase circulation, provides benefit with vasodilatation effect. Methods such as hotpack and infrared lamps are used in hot application (8).

**-Electrotherapy applications:** Electrotherapy agents such as galvanic current, transcutaneous electrical stimulation, diadynamic current, interferential current, ultrasound, short wave diathermy, laser are used in pain treatment. The general aim of electrotherapy applications is to reduce pain and increase functional and physical activities. Electrotherapy agents are helpful in accelerating tissue repair by helping to reduce inflammation, acting as temporary painkillers by increasing neural conduction velocity, increasing the elasticity of muscle and collagen tissue, closing the pain gates with the gate control mechanism and reducing the sensation of pain (11).

**-Patient education and lumbar school:** It includes daily living activities and specific exercises recommended by physiotherapists specifically for people with low back pain. It is an important practice in minimising functional disability. It includes methods of coping with pain, prevention of recurrence of pain and exercise programmes (3).



**-Traction:** These are applications aimed at reducing the load on the nerve root and intervertebral discs. It includes special techniques aimed at reducing pain, reducing the load on intervertebral discs and facet joints, and increasing circulation( 12).

**-Mobilisation** The main objectives of mobilisation applications are to restore the connective tissue changes that develop as a result of limitation, to restore subluxations, to open adhesions and to provide painless function. It is applied by planning the appropriate angle, force, direction, speed and duration in a way specially planned for the patient and the functional status of the patient (12).

**-Manipulation:** It is a method applied on the joints with special techniques at high speed and low amplitude. The main objectives are to eliminate the limitations in the joint, to increase the flexibility of the joint structures, to reduce pain and to eliminate muscle spasm (12).

**-Massage techniques:** It is one of the most common methods used in the treatment of pain originating from the musculoskeletal system. Although there are many different types of massage, the most commonly used massage by physiotherapists is classical massage. The main purpose of classical massage is to increase the circulation of blood in the surface muscles towards the heart. In massage application, a general relaxation occurs in the tissue, circulation increases and muscle spasms decrease (11).

**-Exercise** The main aim of exercise applications is to reach normal range of motion of the anatomical structures in the lumbar region, to provide stabilisation, to increase the circulation of tissues and to provide endurance. Stretching and strengthening exercises, range of motion exercises, aerobic exercises, pilates, yoga, etc. exercises can be given as examples(8).

## **CONCLUSION**

Low back pain is a health condition that originates from many factors, whose etiology is not fully known, and causes individuals to be affected in terms of labour and performance. Since there are many factors in the etiology, it is important to have a multidisciplinary approach in diagnosis and treatment. The aim of treatment is to reduce pain, increase functional capacity, and ensure that patients are independent and pain-free in their activities of daily living. Treatment approaches in low back pain can be grouped as drug therapies, conservative treatment methods, alternative treatment methods and surgical treatment methods. After appropriate evaluation and diagnosis, the treatment plan is tailored individually.

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