

# **Reflex Vertebrogenic Syndromes: Pathophysiology, Clinical Manifestations, Diagnosis and Management of Cervicalgia, Cervicobrachialgia, Thoracalgia, Lumbalgia and Lumboischialgia**

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## **Abstract**

Reflex vertebrogenic syndromes are a group of pain disorders caused by degenerative-dystrophic changes in the spine and surrounding structures, without direct nerve root compression. These syndromes manifest as reflex muscle-tonic and pain reactions in various spinal regions — cervical, thoracic, and lumbar — leading to conditions such as cervicalgia, cervicobrachialgia, thoracalgia, lumbalgia, and lumboischialgia.

**Keywords:** Polyarthritis, inflammatory and non-inflammatory, joint, deformity, acute, subacute, chronic.

## **Introduction**

### **Etiology (Causes)**

Degenerative-dystrophic diseases of the spine (osteochondrosis, spondyloarthrosis)

Muscle overload, postural disorders, hypothermia

Prolonged static posture, trauma, or vibration exposure

Age-related or metabolic changes affecting intervertebral discs and joints

### **Pathogenesis**

Degenerative lesions of intervertebral discs, ligaments, and facet joints lead to irritation of nociceptors, causing the formation of a persistent pain focus. Reflex mechanisms induce tonic muscle spasm in paravertebral muscles, resulting in secondary circulatory disorders, edema, and local tissue hypoxia.

This process underlies the development of reflex muscle-tonic, vascular, and neurodystrophic syndromes without direct compression of the spinal roots.

### **Clinical Presentation**

At the onset of the disease, non-radicular (reflex) syndromes are most frequently observed:

**Cervicalgia** – pain localized in the neck region.

**Cervicobrachialgia** – pain in the neck radiating to one or both arms.

**Thoracalgia** – pain in the thoracic spine.

**Lumbago** – acute, shooting pain in the lower back.

**Lumbalgia** – subacute or chronic low back pain.

**Lumboischialgia** – low back pain radiating to one or both legs.

These conditions are accompanied by **painful muscle-tonic reactions, autonomic-vascular and neurodystrophic disturbances, tenderness of paravertebral points, forced posture of the head or lumbar region, and tension symptoms.**

Reflex syndromes usually appear after **physical exertion, prolonged uncomfortable posture, or exposure to cold.**

### **Diagnosis**

Diagnosis is based on a comprehensive clinical and instrumental evaluation, including:

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**Neurological examination:** detection of paravertebral muscle tension, trigger points, and limitation of motion.

**Imaging methods:** X-ray, CT, or MRI of the spine to identify degenerative changes and exclude disc herniation or other structural pathology.

**Electromyography (EMG) and electroneurography** in cases of suspected nerve involvement.

**Differential diagnosis** to rule out visceral causes (cardiac, renal, or pulmonary pain).

**Lasegue's Sign**

The patient lies on their back. The examiner lifts the patient's extended leg while holding it by the heel. During this maneuver, pain appears or intensifies along the course of the **sciatic nerve**. If the leg is then flexed at the knee joint, the pain **disappears or markedly decreases**.

**Neri's Sign**

When the patient, lying on their back with extended legs, is asked to **passively flex the head toward the chest**, pain occurs in the lumbar region.

**Dejerine's Sign**

**Pain in the lumbosacral region increases during coughing or sneezing.**

**Sitting-Up (Tripod) Sign**

The patient is **unable to sit up in bed** from a supine position **without flexing the legs** at the hip and knee joints.

**Radiological and Imaging Findings**

**X-ray Examination**

Typical findings include **flattening of the lumbar lordosis**, **narrowing of the intervertebral disc space**, and other signs consistent with **spinal osteochondrosis**.

**Computed Tomography (CT)**

CT provides a detailed evaluation of **bony structures** and allows for the **detection of intervertebral disc herniation or spinal canal stenosis**.

**Magnetic Resonance Imaging (MRI)**

MRI is more sensitive for **soft tissue abnormalities**, clearly revealing **changes in disc structure** (by alterations in signal intensity), as well as the **localization and size of a herniated disc**. MRI also enables the assessment of the **spinal cord, cauda equina, and intervertebral foramina**.

**Course of the Disease**

The acute pain stage typically lasts 2–3 weeks, with recovery occurring after 1–1.5 months.

In more severe cases, pain may persist for several months.

A recurrent course is common, with periodic exacerbations over many years.

**Treatment**

Management is primarily **conservative** and includes:

**Medication therapy:** nonsteroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, neurotropic vitamins (B1, B6, B12), and vascular or neuroprotective agents.

**Physiotherapy:** electrophoresis, ultrasound therapy, magnetotherapy, and thermal applications to relieve muscle spasm and improve circulation.

**Manual therapy and massage:** to correct biomechanical dysfunctions and reduce pain.

**Therapeutic exercise:** aimed at restoring mobility, strengthening the muscular corset, and correcting posture.

**Lifestyle modification:** ergonomic workplace organization, avoidance of hypothermia, and regular physical activity.

In severe or persistent cases, **paravertebral or epidural blockades** may be applied, and **surgical intervention** is considered only when conservative measures fail or neurological deficits progress.

### Conclusion

Reflex vertebrogenic syndromes are among the most common causes of musculoskeletal pain and disability. Understanding their multifactorial pathogenesis allows for targeted therapy aimed at relieving pain, normalizing muscle tone, and preventing chronicity. A comprehensive rehabilitation program combining pharmacological, physical, and manual methods remains the most effective strategy for long-term recovery and prevention of recurrence.

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