

Low back
Musculoligamentous Injury (sprain/strain)

I. Introduction

Low back injuries including muscular strains and/or ligament sprains are exceedingly common in the general population. These injuries may be the result of mechanical stresses and/or functional demands placed on the low back by everyday activities, or may be related to an acute injury. Symptoms are believed to be caused by a partial stretching or tearing of the soft tissues (muscles, fascia, ligaments, facet joint capsule, etc.) For the vast majority of patients, these conditions are of short duration with a complete recovery as the general rule. Most individuals with a musculoligamentous injury of the lower back recover rapidly, with 50 to 60% of patients recovering within one week and 90% of patients recovering within six weeks.

II. Diagnostic criteria

A. Historical and physical examination findings

Low back pain, with or without paraspinal muscle spasm, may begin suddenly or develop gradually over the first 24 hours following an injury. Pain is usually relieved by rest and exacerbated by motion. Pain due to a musculoligamentous injury does not radiate below the knee, and a lumbar strain is not accompanied by paresthesias or weakness in the legs or feet. Physical findings may include tenderness to palpation in the lower back, loss of a normal lumbar lordosis, and/or spasm of the paraspinal muscles. Straight leg raising and other tests that cause spinal motion may increase low back pain. The subject may stand in a flexed position or tilted to one side. Neurologic examination and nerve root stress tests are commonly negative.

B. Diagnostic testing and examination
Laboratory studies

Laboratory studies including *white blood cell count*, *ESR* and *C-reactive protein* can be increased with spinal infection or cancer, but do not have sufficient sensitivity or specificity to direct further testing in most cases. Serologic testing including rheumatoid factor, antinuclear antibody and/or Lyme titer are rarely necessary or appropriate in the case of a work-related injury.

Imaging studies

Conventional radiographs of the lumbar spine are often obtained, but are of limited value in detecting a lumbar disc herniation, infection or neoplasm. The diagnosis of a musculoligamentous injury is not based on radiographic criteria, but x-rays may be indicated in certain cases. Criteria developed by the Agency for Healthcare Research and Quality (AHRQ) suggests that lumbar spine x-rays may be appropriate in a patient with any of the following risk factors:

- * age over 50 years
- * high velocity trauma
- * history of cancer
- * history of osteoporosis or fracture

Magnetic resonance imaging is a non-invasive means of evaluating the status of the lumbar spine and its components. MRI is appropriate in the presence of objective and/or progressive neurologic deficits. Indications for early MRI examination include:

1. Symptoms or signs of acute neurologic bowel or bladder dysfunction or saddle anesthesia
2. Diagnostic suspicion of tumor, hemorrhage or infection
3. Presence of progressive weakness (neurologic motor deficit)

For most of patients, it is appropriate to limit the use of MRI to those individuals who remain symptomatic after 30 days of non-surgical management. Gadolinium contrast may be used in cases where previous surgery was performed in order to differentiate between epidural fibrosis and a recurrent disc herniation.

Computed tomography (CT) can be useful in assessing the extent of bone spurs, canal encroachment and/or ossification of the posterior longitudinal ligament.

Myelography has largely been supplanted by MRI, but in combination with CT (i.e. CT- myelography) may be useful in selected cases.

Electrodiagnostic studies

Needle electromyography and nerve conduction studies can help distinguish between lumbar radiculopathy and other causes of back pain. Involvement of muscles within the affected myotome may occur as soon as three weeks post-injury, but EMG testing is of limited value in the absence of neurologic findings and is generally reserved until after 30 days post-injury.

C. Inappropriate diagnostic tests and examinations

1. Myeloscopy
2. Thermomography
3. Spinoscopy

III. Management

A. Appropriate treatment strategies

Almost all patients with low back musculoligamentous injuries can be treated satisfactorily. No indications exist for the use of surgery in the treatment of low back musculoligamentous injuries. The main objectives of treatment are to relieve pain, improve function and prevent recurrence. Few of the commonly recommended non-surgical therapies have been tested via a randomized, controlled trial, and treatment recommendations derive largely from case series and/or anecdotal experience. The AHRQ has established guidelines for treatment based upon the recommendations of a consensus panel formed from specialists in many disciplines including orthopedics, neurology, neurosurgery, physiatry, rheumatology, chiropractic, physical therapy, etc.

Appropriate treatment recommendations include:

1. Limited period of bed rest, generally not to exceed 48 hours after injury
2. Physical modalities and procedures including therapeutic cold or heat, instruction in proper body mechanics, and exercise. A physical therapy program may be initiated as

early as the day of injury, but can often be reserved until >4 days post-injury.

3. Spinal manipulation therapy.
4. Medications
 - muscle relaxants
 - NSAIDs
 - analgesics (narcotic and/or non-narcotic)
 - steroids
5. Epidural steroid injections in selected cases
6. Psychological evaluation and treatment, functional capacity evaluation and/or work conditioning or work hardening programs may be indicated for individuals with prolonged symptoms and/or disability status.

Consultation with an appropriate specialist (neurologist, orthopedic surgeon, physiatrist or neurosurgeon) should be obtained if conservative treatment has not led to significant clinical improvement within four weeks of the reported injury.

B. Inappropriate treatment strategies

1. Operative treatment is inappropriate for a lumbar musculoligamentous injury.
2. Prolonged bed rest > 5 days.
3. Narcotic medications for a prolonged period.
4. Prolonged home traction.

PROTOCOL HISTORY:

Passed: 9/01/1992
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