

Acute Back Pain — Clinical Features and Differential Diagnosis

[See online here](#)

Acute back pain is a common symptom in primary care practice. The acute back pain is usually benign in nature in 90 % of cases. The patient experiences acute back pain with functional limitations and recurrences. Laboratory tests and radiographs are not necessary in most of the cases except in those cases, serious etiology such as infection, malignancy, neurological diseases, and rheumatic diseases are suspected. Surgical intervention is recommended in worse neurological disorders and intractable pain where conservative treatment by medicines and physical therapy failed.



Introduction

The upright posture in humans has a downside. Indeed, back pain is a very frequent phenomenon among humans because of posture. According to one study, more than 80% of people have experienced some form of back pain in their lifetime.

Acute back pain lasts from a few days to 3 months. When back pain lasts more than 3 months, it is referred to as **chronic back pain**. Most cases of acute back pain are due to musculoligamentous injury and subside without intervention in 2–4 weeks. In approximately one-half of the cases, acute back pain may recur.

Epidemiology of Acute Back Pain

Age

Acute back pain is common in adults. The first episode of acute back pain often occurs between 20 and 40 years of age. Acute back pain is **most often related to trauma or abnormal posture**. Acute back pain is rare in children unless there is an associated congenital defect. In the elderly population, back pain is often chronic and due to degenerative or metabolic causes.

Gender

Acute back pain is common in women. Several factors (e.g., multiple pregnancies, hormonal changes after menopause, poor nutrition, and obesity) increase the risk for back pain in women. Ovarian torsion may also present with lower back pain.

Occupation

People in some occupations, such as heavy lifters, miners, and truck drivers, have an increased prevalence of back pain due to repetitive mechanical strain to the back.

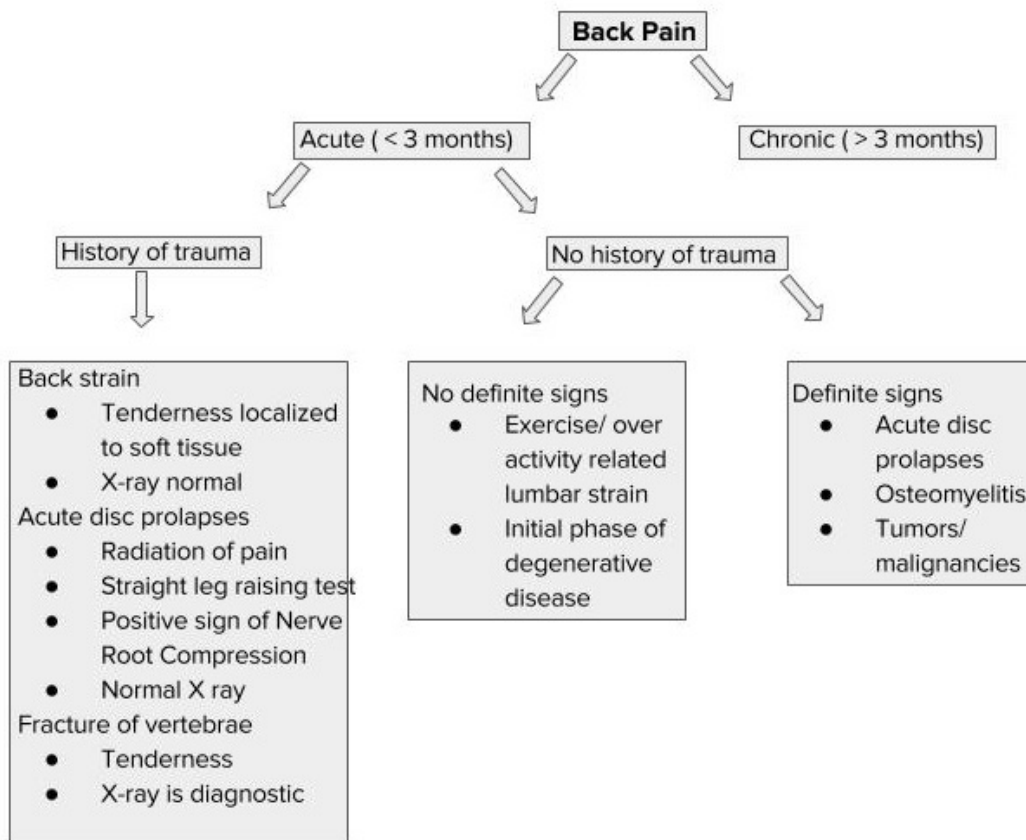
Differential Diagnosis of Acute Back Pain

Acute back pain has a wide range of differential diagnoses, from benign, self-limiting conditions to life-threatening conditions. The pain can be of any type (dull, severe, throbbing, or pricking). It can be mild, moderate to severe, or debilitating. Depending on the origin, back pain can be classified into different types, as shown in the following table:

Congenital causes	Traumatic causes	Inflammatory causes
Spina bifida Lumbar scoliosis Spondylolysis Spondylolisthesis Transitional vertebra	Sprain, strain Vertebral fractures Prolapsed disc	Tuberculosis Rheumatoid arthritis Ankylosing spondylitis Seronegative spondyloarthritis (SSA)
Neoplastic	Metabolic/ degenerative causes	Miscellaneous causes
Benign • Osteoid osteoma • Eosinophilic granuloma Malignant • Primary: multiple myelomas and lymphomas • Secondaries from other sites (metastatic)	Osteoporosis Osteomalacia Osteoarthritis	Functional back pain Postural back pain: • Protuberant abdomen • Occupational bad posture Habitual bad posture

Approach to a Patient with Acute Back Pain

The following image describes how to approach different kinds of back pain in patients.



Clinical Features of Acute Back Pain

A detailed history and a physical examination are essential for evaluating the cause of acute back pain. A history of recent trauma or heavy weight lifting is significant.

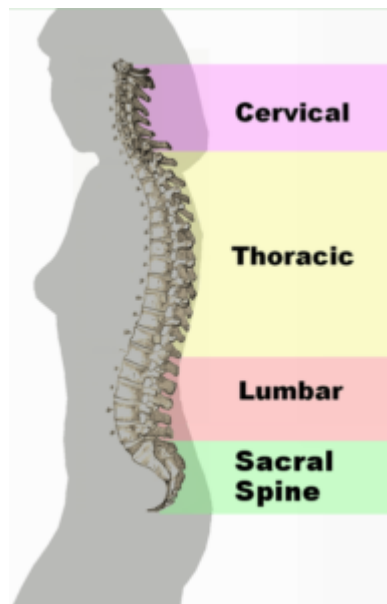


Image: "Spinal column curvature" by <http://en.wikipedia.org/wiki/user:Vsion> - Originally Vsion's work. License: [CC0](https://creativecommons.org/licenses/by/4.0/)

The site of pain varies according to the cause or location of the lesion (see image). The pain may be anywhere from the upper to the lower back. For example, cervical disc

prolapse causes pain in the upper back and neck, whereas lumbar disc prolapse causes pain in the lower back. Sometimes, pain is referred to the arms and legs, which is mostly due to nerve root compression.

Acute back pain is of short duration. Sometimes, chronic back pain is superimposed by an acute aggravation of the pain. For example, degenerative conditions, osteoporosis, and osteomyelitis pain are insidious in onset but aggravated by sudden movements or overuse.

Knowledge of aggravating and relieving factors is important. Musculoligamentous pain typically increases with activity and is relieved by rest. Some conditions, such as seronegative spondyloarthritis and ankylosing spondylitis, cause pain that characteristically gets worse after rest and is relieved by activity. Severe back pain at night that responds to aspirin may indicate a benign tumor. Back pain related to menstruation may be of gynecologic etiology.

Associated symptoms

Stiffness

Stiffness is a prominent feature of inflammatory arthritis, such as [rheumatoid arthritis](#) and [ankylosing spondylitis](#).

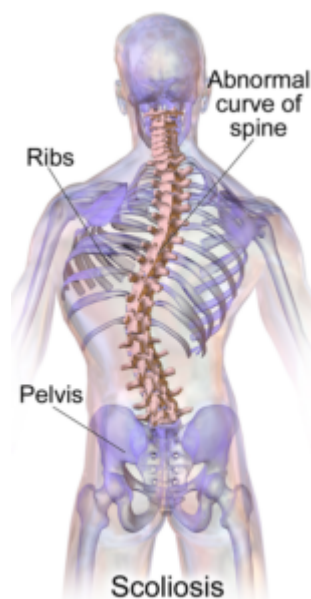
Pain in other joints

The rheumatic diseases present with pain in multiple joints, in addition to back pain. [Rheumatoid arthritis](#) affects the small joints of the hands bilaterally.

Neurological symptoms

Paresthesias, numbness, a tingling sensation, and/or weakness are associated with nerve root compression, often by disc prolapse.

Physical examination



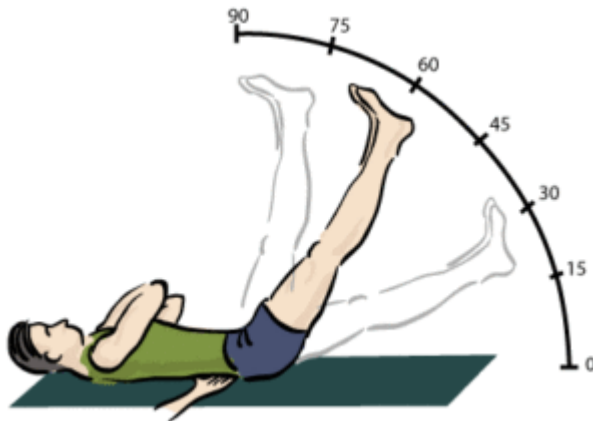
[Image:](#) "Scoliosis" by Blausen.com staff (2014). "Medical gallery of

Abnormal postures (see image) include **scoliosis** (sidewise bending of the vertebral column), kyphosis (forward bending of the vertebral column), lordosis (backward bending of the vertebral column), forward flexion of the torso on the lower limbs, and pelvic tilt. Any of these postures is a significant finding on physical examination in patients with back pain.

Tenderness, swelling, and decreased range of motion may be noted in patients with back pain. Tenderness is present in [fractures](#) and in inflammatory and infectious conditions. Vertebral tuberculosis (Pott’s disease) can present as a cold abscess or swelling.

Abdominal, rectal, or vaginal examination may be performed, as indicated, to exclude gynecologic or abdominal conditions presenting as back pain.

The **straight leg raising test** (see image) **is performed to detect nerve root compression**. Peripheral pulses should be palpated to exclude vascular causes of back pain. Vascular claudication may present as acute back pain.



[Image](#): “The picture shown is a straight leg test that is sometimes used to help diagnose a herniated lumbar disc” by Davidjr74. License: [CC0](#)

Investigations for Acute Back Pain

Most cases of acute back pain are self-limiting and **do not require a lengthy evaluation unless certain red-flag signs are present**. The red-flag signs are given in the following list:

Red flags for back pain

- Age > 50 years
- No improvement after 4 weeks of treatment
- Unexplained weight loss
- Pain that is worse at night
- Previous history of cancer
- Progressive neurologic deficits
- Bladder or bowel dysfunction
- Prolonged use of corticosteroids
- Fever

- **Anemia**
- Elevated erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP)

Laboratory investigations

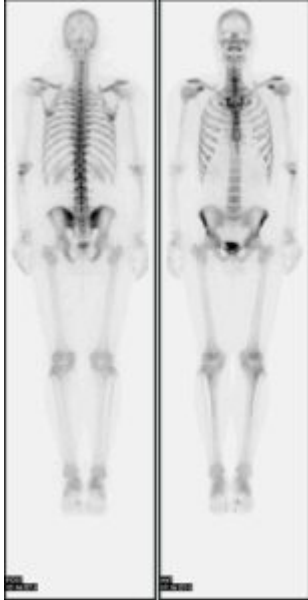
Taking complete blood count, ESR, and CRP levels is beneficial if an infection or neoplasm is suspected.

Vitamin D, serum calcium, and parathyroid hormone levels are recommended in elderly patients with degenerative and metabolic conditions. Rheumatoid factor and anti-cyclic citrullinated peptide (CCP) are indicated in patients with rheumatoid arthritis.

Radiologic examination

Radiologic examination for acute back pain includes several types of scans, as described in the following table:

Modality	Description
<p>X-ray</p>	<p>Routine X-rays with anteroposterior and lateral views of the lumbosacral spine are required for most patients with chronic back pain.</p> <p>X-rays can differentiate between various diseases, such as metabolic disorders, inflammatory conditions, and tumors/neoplasms.</p> <p>Although routine X-rays can show nonspecific signs, baseline X-rays can prove important during follow-up evaluations. X-rays should be performed after preparation of the bowel with laxatives and charcoal tablets.</p>
<p>CT scan</p>	<p>CT scans show soft tissues and bony abnormalities around the vertebrae and spinal canal. CT scans are less invasive and have replaced the more invasive procedures, such as myelography.</p> <div data-bbox="571 1211 1015 1485" data-label="Image"> </div> <p><small>Image: "CT scan of the spine, showing calcification of the longitudinal posterior ligament" by Hellerhoff. License: CC BY-SA 3.0</small></p>
<p>MRI scan</p>	<p>MRI is the imaging modality of choice if red flags are present. MRI is superior to a CT scan in delineation of soft tissues and bone-related abnormalities.</p>

<p>Bone scan</p>	<p>Bone scan may be helpful if a benign or malignant bone tumor is suspected on clinical examination but is not visualized on plain X-rays.</p>  <p><small>Image: "NI bone scan2" by Myohan. License: CC BY 3.0</small></p>
<p>Electromyography</p>	<p>Nerve root compression due to disc prolapse can be diagnosed by electromyography (EMG).</p>

Treatment of Acute Back Pain

- If there are no red flags, the patient should be reassured and the salient features of back pain should be discussed.
- Most of the cases of nonspecific acute back pain resolve within 2–4 weeks.
- Mild analgesics and muscle relaxants should be prescribed.
- Spinal exercises, rest, traction, hot packs, and a corset are also helpful in the management of acute back pain.
- The patient should resume normal activities as soon as possible.
- If red flags are present, the patient should be thoroughly evaluated and referred to a specialist.
- If a specific disease is diagnosed using different diagnostic modalities, back pain should be managed accordingly.

References

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