Case #1
Low Back Pain

History:
A 38-year-old healthy and fit male patient gentleman presented with an acute onset of severe lower back pain that was started 8 weeks ago. The pain was described as constant and unremitting lower back pain irradiated into his left leg from buttock to heel. This pain was aggravated after walking short distance and in a static position if sustained for over 10-15 minutes. He also reported the presence of pins and needles in his heel. The patient was unable to maintain any position for longer than 1-2 minutes active movements. Restricted and painful in all planes, especially flexion, which reproduced both back and leg symptoms.

Physical examination:
Back palpation reveals: Local tenderness at the distal two joints of the Lumbar spine (L4/5 or L5/S1), with widespread muscular spasm. Palpation of L4/5 exacerbated the left leg pain symptoms.

Neurological Tests:
There was evidence of significant sciatic nerve irritation when stretched.

Pathological Analysis:
His symptoms led to believe that he had inter-vertebral disc prolapse at (L4/5 or L5/S1), causing compression to the sciatic nerve root. It was likely that his condition would become more serious if it was not managed quickly.

Risk Factors:
Smoking
Obesity
Old age
Gender
Strenuous
Psychological factors (anxiety, depression, etc)

Differential Diagnosis of Low Back Pain

1. Mechanical - 97%
The various types of mechanical low back pain, including muscle strain, spondylolisthesis (slippage of one vertebral body on the next), herniated disc, osteoarthritis and spinal stenosis.

Patho-physiological symptomatic cascade

Disc herniation ► interruption of circulation ► axon die ► nerve fire spontaneously ► neurological symptoms

Low back pain that gets worse with sitting may indicate herniated lumbar disc
Acute onset suggests herniated disc or acute muscle strain,
Insidious (chronic) onset indicate with osteoarthritis, spinal stenosis or spondylolisthesis.
An important point regarding factors that aggravate mechanical low back pain is the role of lumbar extension. Extension causes discomfort in particularly in patients with spinal stenosis.
In spinal stenosis, recall that three processes are generally working together to lead to cord and/or root compromise. Posterior disc herniation, facet joint hypertrophy with spurring, and finally ligamentum flavum thickening, all play their role.

2. Inflammatory

**Inflammatory low back pain** represents only a small percentage of patients presenting with low back pain, but it is important because the onset is early and the problem is lifelong and often of great functional significance.

Inflammatory low back pain includes the group of diseases that are called the sero-negative spondyloarthropathies, which begin at a young age, with gradual onset. Spondyloarthropathies are a family of long-term (chronic) diseases of joints. These diseases occur in children (juvenile spondyloarthropathies) and adults. They include ankylosing spondylitis, reactive arthritis, psoriatic arthritis, and joint problems linked to inflammatory bowel disease (enteropathic arthritis). There is a tendency to develop lumbar and cervical fusion with associated severe postural abnormalities.

3. Infection

**Infections of the spine** are not common, but important not to miss.

- History: fever, rigors; source of infection: IV drug use, trauma, surgery, dialysis, GU or skin infection
- Physical Examination: Focal tenderness with muscle spasm; often cannot bear weight; needle tracks
- Laboratory findings: mild anemia, elevated ESR/CRP

4. Fracture

**Fractures of the spine** are often very difficult pain problems and also give clues to the possible presence of osteoporosis.

a. Patients with spinal compression fractures generally have marked spasm and very high pain levels.

b. Patients with only low back pain where the causes can be unidentified and difficult to determine, especially when patients are elderly with differential diagnosis that can be made with osteoporosis, and sacral fracture.

5. Neoplastic

**Spine Malignancy Clues**

- Consider malignancy: Night pain, Percussion tenderness
- Findings: CBC, sedimentation rate, protein electrophoresis abnormalities
- You might consider metastasis malignancy elsewhere (such as Osteoid osteoma benign tumor of the spine)

6. Referred pain

**Referred pain** to the lumbar spine can be critical to diagnose. Abdominal aneurysm, endometriosis, tubal pregnancy, kidney stones, pancreatitis, penetrating ulcers, colon cancer -- all of these may present with back pain.

7. Functional Low Back Pain

Functional low back pain is a consideration in patients who have compensation issues or patients who have psychiatric issues.
Treatment:

1. Flexeril (10) (cyclobenzaprine) is a muscle relaxant. It works by blocking nerve impulses (or pain sensations)
2. Celebrex (200)
3. Celebrex (celecoxib) is a COX-2 selective nonsteroidal anti-inflammatory drug (NSAID)
4. Physical Therapy
5. Electrical Mio-Stimulation
6. Hot pack therapies

X-ray of different types of fracture of lower vertebrae
Neurological signs

<table>
<thead>
<tr>
<th>Nerve root</th>
<th>L4</th>
<th>L5</th>
<th>S1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td><img src="image1.png" alt="Diagram of leg pain" /></td>
<td><img src="image2.png" alt="Diagram of leg pain" /></td>
<td><img src="image3.png" alt="Diagram of leg pain" /></td>
</tr>
<tr>
<td>Numbness</td>
<td><img src="image4.png" alt="Diagram of leg numbness" /></td>
<td><img src="image5.png" alt="Diagram of leg numbness" /></td>
<td><img src="image6.png" alt="Diagram of leg numbness" /></td>
</tr>
<tr>
<td>Motor weakness</td>
<td><img src="image7.png" alt="Diagram of leg weakness" /></td>
<td><img src="image8.png" alt="Diagram of leg weakness" /></td>
<td><img src="image9.png" alt="Diagram of leg weakness" /></td>
</tr>
<tr>
<td>Screening exam</td>
<td><img src="image10.png" alt="Diagram of leg pain" /></td>
<td><img src="image11.png" alt="Diagram of leg pain" /></td>
<td><img src="image12.png" alt="Diagram of leg pain" /></td>
</tr>
<tr>
<td>Reflexes</td>
<td>Knee jerk diminished</td>
<td>Plantar flexion of toe and foot</td>
<td>Plantar flexion of toe and foot</td>
</tr>
</tbody>
</table>

L5-S1 Disc prolapse

![Diagram of lumbar spine](image13.png)

- Back pain only
- Back pain + leg pain
- LBP + LP + hard neuro findings
- Mostly leg pain
- Disc degeneration
- Prolapse
- Extrusion
- Sequestration
- Sequestrated disk
Exercise Treatment to reduce back pain