Low Back Pain in the ED - What to Do, When to Worry

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While about 90% of low back pain presentations represent benign conditions, there are several life and limb threatening causes of low back pain that the astute emergency physician must diagnose early and manage appropriately in order to prevent serious morbidity and mortality. Similar to when a patient presents to the ED with headache, we think 'subarachnoid hemorrhage' first and foremost, when a patient presents with low back pain, we should think 'cauda equina syndrome' first and foremost.

4 Most Important Causes of Low Back Pain

1. Massive Central Disc Herniation
2. Spinal Infection
3. Spinal/Vertebral Malignancy
4. Bleed

4 Most Important Questions to Ask on History

1. Massive Central Disc: Bowel & Bladder symptoms?
2. Spinal Infection: Immunocompromised?
3. Spinal/Vertebral Malignancy: History or symptoms of?
4. Bleed: Risk Factors?

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Back pain that is aggravated by lying down is a red flag for malignancy or infection

4 Most Important Physical Exam Points

1. Spinal process percussion tenderness
2. Saddle anesthesia
3. Fever
4. Bilateral neurologic deficit

4 Most Important Initial Tests

1. **Post-void residual:** >100-200 cc has sensitivity of 90% for cauda equina syndrome
2. **ESR:** ESR >30 has sensitivity of 81% and >20 sensitivity is 98% for spinal epidural abscess
3. **X-Ray L-spine**
4. **ED Ultrasound:** AAA

Clinical Pearl

A post-void residual of >100-200cc has a sensitivity of 90% for cauda equina syndrome

4 Indications for X-ray for Non-traumatic Low Back Pain

1. Age<18 or >50
2. Persistent pain >6wks
3. Risk Factors for vertebral malignancy (see below)
4. Findings of cauda equina syndrome

Low Back Pain Bleeds: 4 Most Important Causes

1. AAA
2. Aortic Dissection
3. Perforated PUD
4. Spinal Epidural Hematoma

Low Back Pain Infection: 4 Most Important Causes

1. Spinal Epidural Abscess
2. Osteomyelitis
3. Pyelonephritis
4. Psoas Muscle Abscess

Spinal Epidural Abscess

Often missed on initial visit because the classic triad of back pain, fever, and neurological deficit is found in only 15% of patients

Clinical Pearl
An ESR>20 has a sensitivity of 98% for spinal epidural abscess

***Risk factors**: immunocompromised status (IVDU, DM, EtOH, HIV, chronic renal failure, chronic corticosteroid use), iatrogenic epidural anesthesia, indwelling catheter, recent bacterial infection
***Physical Exam:** Fever in only 50% of patients, neurologic exam highly variable
Lab: ESR >30 has sensitivity of 80% and >20 sensitivity is 98%
***X-ray:** usually normal
***Imaging Modality of Choice:** MRI (may not show at all on CT!)
***Treatment:** Wide spectrum IV Antibiotics (depending on Risk Factors) ASAP, Early Neurosurgery consult for emergency decompressive laminectomy or drainage
***Pitfall**: ascribing findings to osteomyelitis and not getting early neurosurg consult

Spinal/Vertebral Malignancy

A patient with known cancer and new onset back pain has verterbral mets until proven otherwise
**patients with motor dysfunction inevitably progress to complete paralysis in the absence of intervention*

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A patient with known cancer and new onset back pain has vertebral metastatic disease until proven otherwise

*Metastatic disease 25x more likely than primary malignancy (Lung, Breast, Prostate most common)
***Risk factors for vertebral malignancy**: Known cancer, unexplained weight loss, persistent pain despite bed rest, pain for >1 month
***X-ray**: Blastic or lytic lesions in vertebral body or pedicle (“winking owl” sign), sparing the intervertebral disc; the finding of a non-traumatic vertebral # is consistent with mets
***Lab**: ESR can help risk stratify a patient suspected of malignancy, especially if very high (>100 mm/hr); order a corrected serum Calcium to rule out hypercalcemia
***Image *entire* spine**: MRI is the imaging modality of choice (CT will cannot assess the spinal cord adequately); easy to miss lesions if image only one area of the spine
***Treatment**: IV Dexamethasone if cord compression, Neurosurgery & Oncology consult

4 Most Important Causes of Cauda Equina Syndrome

1. Massive central disc herniation
2. Spinal epidural abscess
3. Hematoma
4. Malignancy

4 Most Important Indications for Emergent MRI in Low Back Pain

1. Suspect cauda equina syndrome
2. Suspect spinal epidural abscess
3. Suspect spinal epidural hematoma
4. Suspect vertebral malignancy with new neurologic deficit

Other Causes of Low Back Pain to Consider

1. Ankylosing Spondylitis: Do you have morning back stiffness that improves with exercise?
2. Spinal Stenosis: Is the pain worse with walking and better with bending forward and sitting?
3. Spondylolithsesis: Does not usually cause pain if the slippage is < 25% of the vertebral body depth
4. Simple Disc Herniation: *Crossed*-straight leg raise test is the most specific P/E maneuver

MANAGEMENT OF LUMBOSACRAL STRAIN

Lumbosacral strain is *a diagnosis of exclusion!*

The most important aspect of the management of lumbosacral strain is good discharge instructions:

4 Evidenced-based Treatments for Acute Lumbosacral Strain (Cochrane Collaboration)

1. Exercise therapy
2. Warm compresses
3. Massage therapy
4. Patient education

*My quick version: "Low back strain is a *mechanical* problem that requires and *mechanical* solution": "Heat, Stretch, Massage" + script for PT

4 Points for Patient Education

1. Staying active and returning to normal activities as soon as possible
2. Avoiding worry
3. Coping with having a sore back
4. Ways to avoid strain and avoid future back injuries

*There is little evidence that NSAIDs are any better than acetominophen for lumbosacral strain