

Oh My Aching Back!

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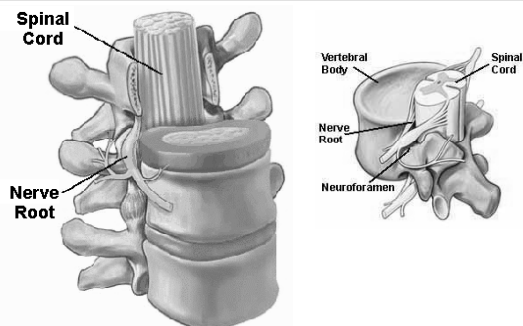
Epidemiology

- 90% of episodes of LBP resolves in 3 months.
- 75% of patients with radicular pain are pain free in 6 months.
- Pain becomes chronic in 40%
- Injured workers
 - Out of work 6 months, 50% chance RTW
 - Out of work 1 year, 25% chance RTW
 - Out of work 2 year, <5% chance RTW

Epidemiology

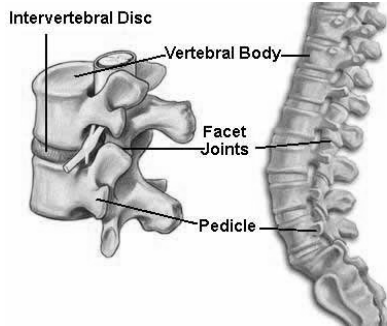
- Second most common cause for office visit
- Greatest risk factor for a future episode of LBP is a history of prior history of medically treated or untreated LBP, recurs in 70-90%
- Annual incidence in general population is 5%
- Lifetime prevalence 60-90%
- Cost to society is 30-50 billion/year

Anatomy



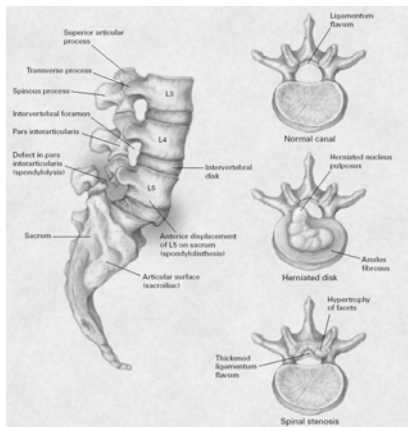
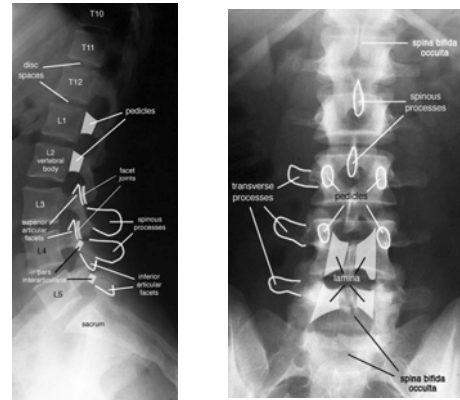
MedPix: <http://rad.usuhs.edu/medpix/>

Anatomy



MedPix: <http://rad.usuhs.edu/medpix/>

Case 1



MedPix: <http://rad.usuhs.edu/medpix/>

History

- **Quality:** sharp, dull, shooting, burning, etc
- **Location:** Axial vs. radicular vs. referred
- **Onset/Duration:** Gradual vs. Acute
- **Severity:** Pain scales
- **Frequency:** Constant vs. intermittent
- **Exacerbating and Alleviating Factors**
- **Time of Day:** If worse at night, consider malignancy

**Differential Diagnosis:
Predominately back pain**

- Sprain/strain
- Discogenic: DDD, annular tear
- OA/facet arthropathy/spondylosis
- Compression fracture
- Spondylolisthesis/Spondylolysis
- Sacroiliac joint

**Differential Diagnosis:
Predominately leg pain**

- Disc Herniation
- Central or foraminal stenosis
- Sciatic Neuropathy
- Hip pathology
- Tumor

**Differential Diagnosis:
Predominately back pain**

- Inflammatory spondylitis
- Tumor
- Visceral pathology

**History
Red Flags**

- History of trauma, minor if elderly
- Bowel or bladder dysfunction
- Progressive neurological deficits
- Constitutional symptoms: Fever/Chills, Wt. loss, lymphadenopathy
- Progressive low back pain without history of trauma lasting greater than 3-4 months

Evaluation

- Physical exam
 - Gait
 - Palpation
 - ROM
 - Strength
 - Sensation
 - Reflexes
 - Provocative maneuvers

Treatment

- Medications
- Physical Therapy
- Chiropractic
- Acupuncture
- Massage
- Interventional spinal procedures
- Surgery

Evaluation

- Imaging
 - Xray
 - CT scan
 - Myelogram
 - MRI
 - Bone Scan
- Electrodiagnostics

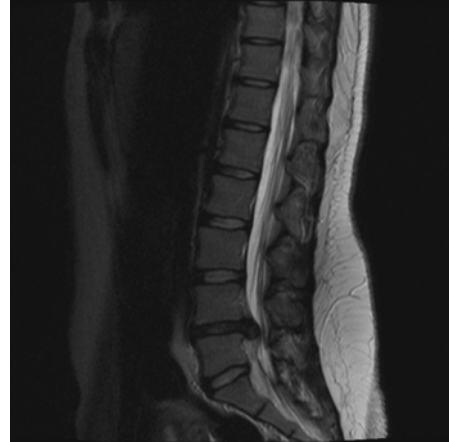
Case 1

- 43yo woman who presents with worsening low back pain over the past 3 days after doing lawn work and landscaping.
- She denies any lower limb symptoms.
- On exam, she appear uncomfortable and has painful limited ROM.
- Xray is normal with the exception of early degenerative changes

Case 1

Dx: Lumbar Strain

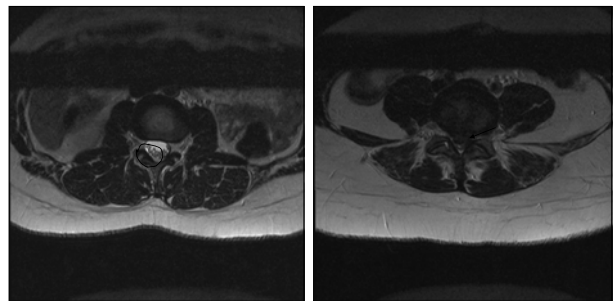
- Treatment
 - Relative rest
 - NSAIDS
 - Physical therapy
 - Modalities: Ice, electrical stimulation
 - Exercises: improve flexibility and strength
 - Instruction on home exercise program



Case 2

- 32yo woman complains of sudden onset of low back pain and leg pain, left>right after ballroom dancing the evening before.
- Leg pain and paresthesias refer to the posterior thigh, posterolateral calf, dorsum of the foot, greatest in great toe.
- Reflexes intact. ROM and strength testing limited by pain but 4/5 strength with left great toe extension.

Case 2



Case 2
Dx: Lumbar disc disruption

- >95% occur at L4-5 and L5-S1
- 75% of discs substantially improve with conservative treatment in 6 months.
- Sitting, bending, and twisting exacerbate pain.
- If no significant radicular symptoms, annular tear.
- Far lateral herniations may have leg pain without much LBP

Case 2
Dx: Lumbar disc disruption

- Diagnostics
 - Imaging:
 - MRI – provides the best soft tissue detail
 - CT myelogram – may be necessary if MRI contraindicated or history of prior fusion

Case 2
Dx: Lumbar disc disruption

- Exam:
 - Inflexibility due pain and muscle tightness
 - Pain with flexion>extension
 - Neurological signs and symptoms in distribution of nerve impingement
 - Dural tension signs

Case 2
Dx: Lumbar disc disruption

- Diagnostics
 - Electrodiagnostics:
 - Helps localize nerve involvement and degree of injury
 - May not see changes in paraspinals for 10-14 days and limb muscles for 3-4 weeks
 - Can assist in determining chronic vs. acute
 - Identify contributing sources of pathology

Case 2 Lumbar disc disruption

- **Anular fissure:** Focal disruption of anular fibers in concentric, radial or transverse distribution
- **Disc bulge:** *Circumferential*, diffuse, symmetric extension of anulus beyond the adjacent vertebral end plates by 3 or more mm, usually due to weakened or lax anular fibers
- **Disc protrusion:** Focal, asymmetric extension of disc segment beyond margin of vertebral end plates into the spinal canal with most of anular fibers intact

Case 2 Dx: Lumbar disc disruption

- **Boden study 1990 JBJS:**
 - 20 % of asymptomatic population less than 60 years with "HNP"
 - 36 % of asymptomatic population of 60 years
- **Jensen study 1995 NEJM:**
 - 52 % of asymptomatic patients with disc bulge at one or more levels
 - 27 % of asymptomatic patients with disc protrusion
 - 1 % of asymptomatic patients with disc extrusion

Case 2 Lumbar disc disruption

- **Disc extrusion:** Focal, asymmetric extension of disc segment and / or nucleus pulposis through the anular containment into the epidural space
- **Disc sequestration:** Extruded disc segment that is detached from original with migration into the canal
- **Disc degeneration:** Irreversible structural and histological changes in nucleus seen on MRI T2WI images (commonly associated with bulge)

Case 2 Dx: Lumbar disc disruption

- **Treatment**
 - **Medications:** NSAIDS, oral steroids, muscle relaxers, membrane stabilizers, narcotic analgesics
 - **Physical Therapy:** modalities, traction, exercises for flexibility and strengthening
 - **Epidural steroid injections**
 - **Surgery:** 5-10% of patients with persistent sciatica require surgery. Emergent in cauda equina

Case 3

- 59yo gentleman with complaints of chronic low back pain which has slowly worsened over the past 1 year.
 - referral to the buttocks and posterior thighs, right > left
 - denies numbness or tingling
 - Worse with standing and walking
 - Works as an electrician and has difficulty with overhead activities due to back pain



Case 3

- Exam:
 - Tenderness in the lower lumbar paraspinals
 - Pain with lumbar extension > flexion
 - Strength, sensation, and reflexes intact
 - Hip ROM minimally limited without pain

Case 3

Dx: Facet joint arthropathy

- Most often due to osteoarthritis
- May be related to segmental instability or acute injury
- Imaging not diagnostic for a painful or nonpainful joint
- Fluoroscopically guided injection can be helpful for diagnostic and therapeutic purposes

Case 3
Dx: Facet joint arthropathy

- Treatment
 - Medications: NSAIDs, acetaminophen, tramadol, narcotic analgesics
 - Physical therapy, activity modification, weight management
 - Fluoroscopically guided injections, if beneficial may be candidate for radiofrequency ablation
 - Surgery not indication unless associated with nerve impingement or instability



Case 4

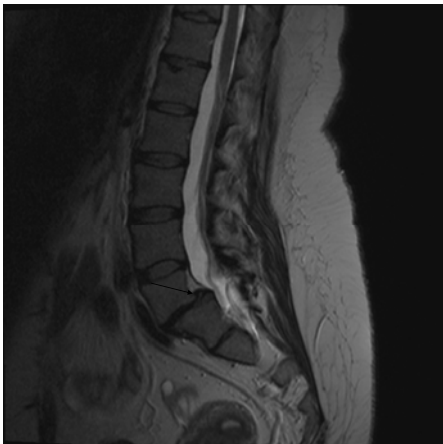
- 68yo gentleman with a 7 year history of DM and complaints of chronic low back pain with increasing bilateral leg pain over the past 2 years.
- Minimal pain with sitting.
- Standing and walking limited by leg pain
- Leg pain alleviated by bending or sitting
- Chronic numbness in his feet with intermittent numbness and tingling in his calves.

Case 4
Dx: Lumbar Stenosis

- History is the key to diagnosis
- Patients often describe their leg symptoms as feeling aching and tired
- Neurological exam is often non-localizing
- Treatment:
 - Medication: NSAIDs, acetaminophen, membrane stabilizers, tramadol, narcotic analgesics
 - Physical Therapy
 - Interventional Spinal Procedures and Surgery as symptoms become less tolerable or with progressive neurological deficits.

Case 5

- 36yo woman with history of motor vehicle collision 5 years prior and low back pain with referral to bilateral lower limbs, left > right
- Back pain worse with standing and transitioning from sitting to standing
- Leg pain worse with standing or walking for short distances.
- She is frustrated because it is affecting her quality of life due to activity restrictions



Case 5 Dx: Spondylolisthesis

- Congenital: often assoc with spina bifida or kyphosis
- Isthmic: due to lesion in pars interarticularis
- Degenerative: due to degeneration of the supporting structures and longstanding instability
- Traumatic

Dx: Spondylolisthesis

- Chronic, dull, aching low back pain
- Exacerbated by rotation and extension
- Underlying history of chronic repetitive motion.
- Imaging: Include flexion/extension xrays to evaluate for instability
- Bone Scan: Helpful if evaluating for an acute injury (ex. Pars defect)

Case 6

- 54yo woman with a history of a lumbar fusion from L4-S1 and a recent fall on the ice landing on her right buttock and hip.
- Complains of persistent right buttock pain with referral to the right posterior thigh and groin
- Sensation of numbness in the posterior thigh.
- Strength and reflexes are intact
- Xrays reveal no acute changes

Dx: Spondylolisthesis

- Management options
 - Bracing
 - Physical Therapy
 - Epidural injections if associated radicular component
 - Surgery

Case 6

Dx: Sacroiliac joint dysfunction

- Due to movement abnormality because of increase or decrease of joint mobility.
- No validated method for diagnosis
- Combination of more than one test more helpful
- Diagnostic and therapeutic steroid injection with flouroscopy.

Sacroiliac Joint Dysfunction

- **Treatment**
 - Physical therapy including manual techniques
 - SI belt
 - Injections

Scoliosis

