Back Pain: Why it hurts so much

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Overview of today’s talk

• How common is Back Pain
• What causes Back Pain
• How do we diagnose Back Pain
• What are the treatments for Back Pain
• Is there any thing that I can do to prevent back pain?
Economics of Low Back Pain

• Second to HA for pain complaints
• Most common reason for disability in the working years
• 75% of US population will have low back pain
• 10-15% of work absences
• 2-8% of the workforce is disabled by LBP
Causes of Low Back Pain: Aging of the Lumbar Spine

• First visible sign of aging

• Holt – Discograms
  – 34% of subjects showed elements of aging by age 23 in one of the two lower L-spine discs
  – Necroscopy studies – aging changes 75% by age 28

Anatomy

- Vertebral body
- Pedicle
- Transverse process
- Spinous process
- Facet
- Disc
Muscle Strain and Spasm

• Usually respond to conservative measures
• Muscle injury leads to spasm
• Diagnosed by History and exam
• Acupuncture
• Massage
• Trigger point injections
Musculoskeletal back pain

Facet

- Capsule can be stretched/damaged with axial loads – esp. extension
- Richly innervated by branches from dorsal ramus (posterior nerves)
- Limits axial rotational movements
DISC

- Central portion
- Peripheral portion
- Degeneration of the outer portion and loss of water from the inner portion
- Disc bulges and herniation
Disc Herniation

- History of sciatica/radiculopathy
- Classically low back pain precedes leg pain
- May be asymptomatic (21-28%)
- Most common at L4/L5
- Webers study of conservative versus surgical mgmt.
  - No statistical difference at 4 and 10 year intervals.
Disc Herniation

• L5/S1 Herniation
Spinal Stenosis

- Osteoarthritis of the spine resulting in narrowing of spinal canal
- Intermittent back pain – radiating to one or both legs especially with walking upright
- Calf pain/tightness
- Worse with standing/walking
- Better with leaning forward
Spondylolisthesis

- 3.5% of population have slippage of either L4 or L5
- Due to bony disruption between the facets
- Limb findings can be vague
- Often asymptomatic until superimposed on spinal stenosis
Sacroiliac Joint Dysfunction

- Pain in the low back and thigh
- Pain in the buttocks that is worse by crossing the legs
- Also worse with pressure from hip pocket wallet.
- May sometimes mimic sciatica
- Usually from arthritis
- TB/Tumor/Ank.Spon./Reiters.
Vertebral Compression Fractures

- Associated with osteoporosis and bone weakening, trauma, tumor, infection
- Localized pain on deep palpation
- May affect patients breathing abilities and daily life activities, increase risk of lung infections
Fibromyalgia

- Musculoskeletal pain of unknown etiology
- Widespread pain
- Decreased pain thresholds
- Elevated Substance P in CSF
- Characteristic Tender Points (18)
- Suggestion of involvement of nerves and sensitization of nerves as well deconditioning
Fibromyalgia II

- Low dose tricyclic
- Sedative/ hypnotic
- Analgesic doses of NSAIDS
- Controversial role of narcotics
Other Causes of Low Back Pain

• Infection
• Tumor
• Failed back surgery syndrome
Diagnosis of LBP

- History and Physical Examination
- Imaging studies
- Laboratory tests
- Diagnostic injections
Diagnosis of LBP:

**X-ray**

- X-Ray – good for detail of the bone structures in the spine
- Used to check for instability (spondylolisthesis), tumor and fractures
Diagnosis of LBP: CT Scan

- Superior bony detail c/w MRI
- Good for soft tissues (discs, nerve)
- Also used for s/p discography
Diagnosis of LBP: MRI

- Excellent for soft tissues such as nervous tissue, discs
- Best tissue contrast resolution
- Inability for some patients with implantables
- Limitations include bony detail/cost and time
Diagnosis of LBP

Bone Scan

- Usually Technetium 99
- Extremely sensitive but non-specific
- Inexpensive
- Accumulate in metabolically active areas
Treatment of Low Back Pain

• Medical Management
• Injection therapy
• Physical Therapy and modalities
• Biofeedback and relaxation therapies
• Surgery
Treatment Modalities
Conservative Management

- Apply cold then heat
  Ice 20 min periods several times
  Then apply heat for 20 min periods
- Meds (NSAIDS for inflammation and tylenol for pain, muscle relaxant)
- Physical Therapy
Treatment Modalities

- Less aggressive to more aggressive
- Epidural injections
- Nerve root block
- Facet Injections
- Radiofrequency ablation of nerves
Treatment Modalities
Moderate

- Laser endoscopic spinal endoscopy
- For contained disc herniations
- Laser/illumination/imagining/irrigation and aspiration on handheld catheter
- YAG laser – energy absorbed in 0.5 mm of tissue
Treatment Modalities Moderate

- Nucleoplasty
- “Coblation”
- Combines ablation of disc tissue and coagulation of surrounding tissue for disc decompression
- Percutaneous diskectomy
Treatment Modalities
Moderate

- IDET
- Alternative for spinal fusion in a group of young patients
Treatment Modalities
Moderate

- Vertebroplasty and Kyphoplasty
- Painful vertebral body fracture secondary to osteoporosis
- Reduces pain, stabilizes fracture and helps in return to previous level of functioning
Treatment Modalities
Surgical Options

- Spinal decompression
- Laminectomy
- Discectomy
- Spinal fusion
- Artificial disks
Prevention of LBP

- Proper lifting techniques
- Regular exercise
- Maintaining proper body weight
- Avoidance of smoking
- Maintaining proper posture when standing and sitting
- Abdominal musculature