Spinal Disorders

Cindi Weisenberger, FNP
Wisconsin Brain and Spine Center
Altoona, WI

Objectives

- Recall general spinal anatomy
- Understand differences in spinal diagnoses
- List several pharmacologic categories to use in treatment of spinal disorders
- Identify several non-pharmacologic options for treatment of spinal disorders
- Differentiate between urgent and non-urgent referrals

Conflict of Interest Disclosure
None

Spinal Anatomy

Cervical Spine

- Spinous Process
- Disk
- Vertebral Body
- Spinal Nerve Root

Lumbar Spine

- Facet Joint

Spinal Anatomy
Common Spinal Disorders
- Back or Neck Pain
- Disc herniation (bulge, extrusion)
- Spinal Stenosis
- Spinal Fracture
- Cyst

Back or Neck Pain
- Degenerative disc disease
- Arthritis/Degenerative joint disease
- Muscle strain

Disc Degeneration which can cause back pain
- Dark Discs
- Normal MRI

Joint disease can cause back pain
- Overgrown Ligaments and Facet Joints
- Normal MRI

Disc Herniation
- Can be caused by lifting injury, trauma, sports, sleeping wrong
Spinal Stenosis
Can be defined as normal aging process, overgrown ligaments, bone spurring, disc protrusion

Spinal Fracture
Can be caused by trauma, osteoporosis, lifting injury

Facet Cyst
Can be caused by arthritic or degenerative changes in facet joint

VOMIT
Victim of Medical Imaging Technology

Medical Terminology
- Stenosis
- Spondylolysis
- Spondylolisthesis (anterolisthesis, retrolisthesis)
- Pars defect (sometimes called a fracture)
- Annular tear
- Tarlov's cyst
- Schmorl's node/nodule
- Severe Modic changes

Stenosis
Narrowing in the spinal canal
Spondylosis

Degenerative osteoarthritis of the joints between the center of the spinal vertebrae and/or neural foramina.

Spondylolisthesis

A slip of the bones either forward or backward on each other

Pars Defect

A defect in the bone, sometimes called a fracture

Annular tear

Weakness or tear in the disc space

Tarlov’s cyst

Benign cyst filled with CSF, usually in sacral area. Rarely symptomatic.

Schmorl’s Node

Cartilage protrudes into the intervertebral disc through the vertebral body endplate and into the adjacent vertebra.
Modic changes
Edema in a vertebral body near a degenerative disc

Diagnosing
• History
• Examination
• Imaging

History
• What are symptoms
• How long have symptoms been present
• Causative factors
• Relieving factors
• Effects on daily activities/work
• Any effect on bowel and bladder function
• Pain scale
• Treatment thus far

Examination
• Cervical issues
  • Range of motion
  • Check muscle groups, sensory distribution, and reflexes in upper and lower extremities
  • Tinel’s, Phalen’s, Hoffman’s
  • Palpate posterior musculature, trapezius
  • Romberg testing
  • JPS

Examination
• Thoracic spine
  • Pain or sensory distribution (wraps around chest wall)
  • Check lower extremity muscle groups, sensory distribution, and reflexes
  • Romberg
  • JPS

Examination
• Lumbar spine
  • Range of motion
  • Muscle groups, sensory distribution, and reflexes of lower extremities
  • Straight leg raise
  • Palpation of musculature and sciatic notch
Treatment Options

- Medications
- Physical therapy
- Pain clinic injections
- CAM
- Imaging
- Surgery

Common Medication Options

- Tylenol/acetaminophen
- Anti-inflammatories
- Neurologic medications/anti-seizure medications
- Muscle relaxants
- Narcotics

Tylenol

- Analgesic
- Dosing as per bottle recommendations
- Generally safe as long as no significant liver or renal disease

Anti-inflammatories or Steroids

- Reduces pain and inflammation
- OTC (Advil, ibuprofen, Aleve, Naproxen) dosing as per bottle instruction
- Toradol 10 mg po Q6 hours prn—5 day maximum
- Medrol dose pack 24 mg decreasing by 4 mg daily over 6 days
- Caution with some with cardiac disease, renal disease, GI, or bleeding concerns
- With steroids educate on potential adverse effects on blood pressure and blood sugar, and osteoporosis and wound healing (with long-term use)

Neurologic Medications/Anti-seizure Medications

- Gabapentin/Neurontin 300-3600 mg/day in divided doses
- Lyrica 25-300 mg/day in divided doses
- Amitriptyline 25-100 mg QHS
- Cymbalta 30 mg/day initial starting dose
- Used with radicular type symptoms/atypical pain
- Start with low doses especially in elderly or those sensitive to medications or side effects
- Use as scheduled medication vs prn
- Caution in those with depressive disorders or anti-depressant/anti-psychotic medication use
- Wean when discontinuing
- Risk of hepatotoxicity with hepatic impairment (Cymbalta)

Muscle Relaxants

- Cyclobenzaprine (Flexeril) 10 mg up to TID
- Skelaxin 800 mg up to QID
- Tizanidine 2-4 mg QID
- Valium 5-10 mg up to TID-QID
- Used for muscle spasm
- Caution potential sedating side effects
Opioids/Combinations
- Norco/hydrocodone 5/325 1-2 Q4-6H
- Percocet/oxycodone 5/325 1-2 Q4-6H
- Dilaudid 2-4 mg Q4-6H
- Tramadol 50-100 mg QID
- Caution with sedating side effects
- Addiction/abuse potential
- Respiratory depression
- Constipation
- Caution in hepatic or renal disease
- Not recommended for long-term use
- Often deferred to a pain clinic for opinion (even if PCP will be the primary prescriber)

Physical Therapy
- Core strengthening exercises
- Massage, heat, cold, ultrasound
- Pool-therapy
- Traction
- Electrical muscle stimulation (TENS unit)

Pain Clinic Injections
- Epidural spinal injection
- Transforaminal injection
- Facet injection
- Radiofrequency ablation/facet rhizotomy

Epidural Spinal Injection
- Combined steroid and anesthetic injection
- Caution in hypertension, diabetes, cardiac disease (have to be off anticoagulants)

Transforaminal Injection
- Injection of anesthetic and steroid medication along the nerve root

Facet Injection/Ablation
- Anesthetic and steroid and if successful can burn the nerves around the joint
Complementary Alternative Medicine

- Acupuncture
- Chiropractic treatment

Treatment

Should imaging be done?
- X-ray AP/Lateral, Flexion/Extension
  - Shows alignment of spine
  - Shows if movement in the spine

Has it been 6 weeks with symptoms?
- CT shows bony anatomy better
  - Exposes one to radiation. Necessary with some implants, instrumentation etc.
- MRI shows spinal cord and nerves well
  - No radiation

RED FLAGS!
Consider: cauda equina, cancer, infection, fracture
(Any of which could warrant earlier imaging/specialist referral)

- Urinary or bowel incontinence
- Urinary hesitancy
- Constant numbness in a specific distribution
- Saddle anesthesia
- Weakness
- Fever
- Weight loss
- Osteoporosis
- Trauma

Referral Process

- Treat people not pictures:
- Do symptoms match imaging findings?
- Does VOMIT apply here?
- Any red flags?

Some Common Surgical Options

- ACDF
- Microdiscectomy
- Decompression
- Lumbar fusion- anterior and/or posterior

Case Study #1

- Pt presents with 12 week history of neck and left arm pain
  - History reveals “I woke up like this”
  - Exam reveals fair ROM, 4/5 strength in hand grip and wrist extension. Pain in distribution of forearm and into digit 1-3
  - Negative Tinel’s
Options

- Tylenol and/or anti-inflammatory and gabapentin/Lyrica
- PT
- PC injection
- CAM
- EMG/NCS
- Surgery

Case Study #2

- Pt presents with 2 week history of low back and right leg pain
- History includes back and leg pain that started with a lifting injury
- Exam includes painful ROM, tenderness over lumbar spine in the center and to paraspinal musculature.
  Full strength, normal sensation in the LE’s

Options

- Tylenol, anti-inflammatory, muscle relaxants
- PT-soft tissue modalities
- CAM
- PC for quicker relief of pain
- Time
  - Statistics show 80-90 percent of acute disc herniations will self resolve in 4-6 weeks without surgery

Microdiscectomy

Case Study #3

Pt presents with 6 month history of bilateral leg pain and weakness

- History includes gradual onset
- Pain worst in legs/worst with walking
- Pt not diabetic, non-alcoholic, no poor diet
- Exam reveals minimal back pain, fair ROM, full strength, decreased light touch throughout distal lower extremities.
  Good capillary refill (rule out vascular claudication)
Neurogenic claudication/spinal stenosis
• Narrowing of spine
• Tissues buckle in when one is up standing/walking
• Neurogenic vs vascular: neurogenic must sit or lie down to get relief/vascular can stop walking to get relief

Options
• Time/"put up with it"
• PT
• CAM
• PC
• Tylenol/Anti-inflammatories
• Gabapentin/Lyrica
• Surgery

Decompression

Case Study #4
• Pt presents with 5 year history of atraumatic severe back pain and intermittent bilateral leg pain
• Health history negative
• Painful ROM forward flexion
• Full LE strength/normal light touch sensation
• Taking ibuprofen and BID Vicodin
• PT/chiropractor limited benefit
• Imaging done: MRI/ CT/Flexion/Extension x-rays

Options
• Do nothing
• Lyrica, gabapentin for leg symptoms
• Ongoing therapy
• Surgery
Lumbar Fusion

Anterior

Posterior

References

- http://www.guideline.gov/content.aspx?id=39319&search=back+pain#Section420
- https://www.acponline.org/mobile/clinicalguidelines/guidelines/low_back_pain_1007.html
- Epocrates iPhone application

Questions?