Cervical Conditions: Diagnosis and Treatments

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Cervical Conditions: Diagnosis and Treatment

- Cervical conditions
  - Neck Pain
  - Radiculopathy
  - Myelopathy
Cervical Conditions: Diagnosis and Treatment

- **Purpose**
  - Brief review of cervical anatomy and radiology
  - Highlight primary disease conditions
    - Neck Pain
    - Radiculopathy
    - Myelopathy
  - Highlight common treatments including surgical

**Anatomy**

- Cervical Spine has 7 vertebral bodies
- C1-Atlas-"Ring"
- C2- Axis- with odontoid or Dens
C1- Atlas
- No vertebral body
- Wide lateral masses support the skull
C2- Axis
- Odontoid process (dens) pivot point for the C1 ring
Upper cervical spine (occiput to C2): highly mobile
- 60% rotation (50% C1-2)
- 40% flex/ext

Normal Anatomy
Neck Pain

- Cervical Strain
  - #1 cause for neck pain
  - Paraspinal muscle strain or stretch
  - Whiplash
  - 90% will improve w/i 4-6 wks w/ conserv tx
    - NSAIDs, MR, exercises, PT

Cervical Spondylosis

“Neck Arthritis”

- Clinical Presentation
  - Axial neck pain
    - Achy and recurrent
  - Usually neuro intact
  - Most common at C5-6 and C6-7
  - Can have Cervical Radiculopathy
  - Can have Cervical Myelopathy
Cervical Radiculopathy

- Arm pain +/- neck pain
- Usually due to a HNP
  - r/o shoulder pathology - clinical exam
  - If associated w/ chest pain - ER or PCP eval
  - Peripheral nerve compression
    - Cubital tunnel, carpal tunnel
    - + Tinnels sign
    - Double crush syndrome
    - Nerve conduction test

Radiculopathy Tests

- Spurling’s (Head Compression) test – compression w/ neck extension & rotation to affected side
- Shoulder abduction test – reduces nerve root tension and relieves arm pain in 70% of pts w/ cervical radiculopathy
Cervical Radiculopathy

- Soft disc herniation
  - Typically acute pain
  - MRI needed
- Foraminal stenosis
  - Oblique cervical radiograph
  - Facet hypertrophy

C5 Radiculopathy (C4-5)

- Deltoid Weakness
- Sensory Loss
- Biceps Reflex

Can mimic shoulder pathology
C6 Radiculopathy (C5-6)

- Bicep Weakness
- WE Weakness
- Sensory Loss
- Biceps Reflex
- Can mimic Carpal Tunnel Syndrome

C7 Radiculopathy (C6-7)

- Triceps Reflex
- Triceps Weakness
- Sensory Loss
C8 Radiculopathy (C7-T1)

- Horner’s Syndrome
  - Interossei Weak
  - Sensory Loss
  - Ptosis, miosis, ↓ Sweat

- Can mimic Cubital Tunnel Syndrome

Cervical Myelopathy

- Clumsiness of Gait
  - Loss of balance
  - May be presenting complaint
- Upper Extremity
  - Weakness/clumsiness
  - Hand Intrinsics
    - Buttoning, writing
  - Dropping items
  - Tricep weakness
  - Diffuse parasthesias
- Lower Extremity
  - Mild weakness and N/T
Myelopathy tests

- **Hoffman’s** – thumb/index flexion produced by sudden middle DIP extension
- **Lhermitte’s sign** – electric shock down arms w/ passive flexion/compression of neck
- **Babinski’s** – nml response = downgoing toes
- Clonus and Hyperreflexia
- May have signs of spondylosis only on xray

Imaging Diagnosis

- **Lateral Cervical X-Ray**
  - Disc height
  - Cervical lordosis
  - Spondylotic subluxation
  - Evidence of trauma
  - Bone destruction
  - Osteophyte formation
**Imaging Diagnosis**

- **MRI**
  - Rapidly performed
  - Non-invasive
  - Accurate diagnosis of disc herniations
  - Allows direct imaging of spinal cord
  - Signal change aids in localization

- **Myelomalacia**

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**Imaging Diagnosis**

- **CT/Myelography**
  - Invasive
  - Needle stick
    - Possible spinal headache
  - Cannot directly image spinal cord
  - Better for osteophyte and spurs
  - Pt's w/ pacemaker or defibrillator
Treatments

- Nonoperative
  - Medications
  - Physical Therapy
    - Traction
    - Chiropractic manipulation
    - Steroid Injections
- Operative
  - Anterior approach
    - Discectomy and fusion
    - Disc replacement
  - Posterior approach
    - Discectomy / Laminectomy +/- fusion

Treatment of Neck Pain

- Pharmacologic
  - NSAIDS
  - Muscle Relaxants
  - Steroids
    - Radiculopathy
  - Opioids
    - limit
Treatment of Neck Pain

- Physical Therapy
  - Exercise
  - Education
- Passive Modalities
  - Heat/Cold
  - Soft Cervical Collar
    - Not for >1-2 wks
      - Muscle weakness/dependence

*No wonder your arm aches. Shackles should be placed at eye level. Man, it's an ergonomic nightmare down here.*

Treatment of Neck Pain

- Physical Therapy
  - Mechanical Traction
  - Massage
  - ROM exercises
  - Trigger Point Treatment
  - Ergonomics
Treatment of Neck Pain

- Spinal Manipulation
  - Chiropractor
  - No signs of instability, severe stenosis or myelopathy

- Steroid injections
  - Epidural injections
    - No severe stenosis
  - Facet injections

Surgical Intervention
- Surgical intervention for neck pain alone is discouraged

Surgical Indications
- Progressive neuro deficit
- Disabling motor deficit
- Persistent/recurrent radicular sx w/ 6 wks of conv tx
- Failed nonoperative tx w/ continued Neck pain plus arm pain or weakness
Anterior Surgery

#1- Anterior cervical discectomy and fusion
- Can treat radiculopathy/ myelopathy w/ neck pain

Pros
- Muscle-sparing approach
- Direct removal of anterior pathology without neural retraction
- Restore disc height and lordosis
- Predictable results

Cons
- Hoarseness/ Difficulty swallowing
- Nonunion
- Loss of motion with >3 levels fused?/ accelerate ASD (3%/yr)

Anterior cervical discectomy and fusion
- Gold standard
- Allograft/Cage
- Plate and screws- decrease bracing
- 1 night in hospital
- Back to light duty w/i 2-4 weeks
- Excellent results for 1 and 2 level disease
  - 85-90% pain relief
- Better tolerated than L spine surgery
**Total disc replacement**
- Indications for cervical disc disease with radiculopathy
- One level only
- No facet joint arthritis or posterior disease
- Recently FDA approved
- Limited insurance coverage
- Theoretically decrease incidence of ASD

**Posterior Surgery**

**Laminotomy/ foraminotomy**
- Discectomy
  - Treats radiculopathy with a unilateral HNP
  - **No neck pain**
  - **No kyphosis**

**Pros**
- Avoid fusion
- Minimally invasive techniques
- Easier for large short neck pt

**Cons**
- Symptoms may recur
- **Increased risk of axial neck pain >30%, Herkowitz**
- Can not safely remove ant path
- Loss of lordosis
Summary

- 2 main surgical pathologies in the C spine
  - Herniated Discs
    - Radiculopathy – unilateral arm pain and weakness
  - Spinal stenosis
    - Myelopathy - bilateral arm +/- leg weakness
- Axial neck pain
  - Almost always should be treated nonoperatively
  - Poor outcomes w/ surgical intervention

Summary

- Surgical intervention
  - After extensive conservative tx
  - Gold standard for 1-2 level disease
    - ACDF
  - >3 level disease – dealer’s choice
    - Multilevel ACDF/ corpectomy
    - Posterior Laminectomy +/- fusion
  - Total disc replacement
    - May be option for 1 level disease
    - US experience early but promising
Thank You