EVALUATION AND MANAGEMENT OF CERVICAL SPINE DISORDERS

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CERVICAL SPINE
- Supports the skull
- Allows movement of the head
- Houses the spinal cord

CERVICAL SPINE
- Unique anatomy
- Upper C spine
  - C1, C2
- Lower C spine
  - C3-C7

UPPER C SPINE
- C1 – Atlas
- C2 – Axis
- Very specialized
- Dens is the embryological body of C1
- No discs
UPPER C SPINE
- 50% of flexion/extension occurs @ occiput-C1
- 50% of rotation occurs @ C1-2

LOWER C SPINE
- Five similar structures
- Equally divide the remaining ROM
- Most degenerative disorders occur in this region

PEARL

CERVICAL SPINE PAIN - RED FLAGS
- Balance/equilibrium issues
- Gait disturbance
- Fevers/chills
- Weakness/numbness in extremities
- Bowel/bladder incontinence or retention
- Left arm pain
PATIENT EVALUATION

- History
- PMH
- PE
- Diagnostic tests

HISTORY

- “OLD CARTS”

ONSET

- Sudden vs gradual
- Mechanism
- Head position
  - Flexion
  - Rotation
- Direction of force

LOCATION

- Midline
- Paraspinous
- Upper trapezius
- Parascapular
- Sub-occipital
- Anterior
PEARL

LOCATION

• Subacromial
• Anterior joint
• Bicipital tendon
• AC joint

DURATION

• Total duration
• Time of each episode

CHARACTERISTICS

• Open-ended question
• Sharp, dull, stabbing, throbbing, aching, electrical, burning, etc.
• Get a “feel” of the pt's pain
AGGRAVATING AND ALLEVIATING FACTORS

- Position
  - Flexion/extension
  - Lateral flexion
- Activity
- Lifting
- Valsalva
- Medications

RADIATION

- Dermatomal
- Sclerotomal
- Down the arms
  - Left arm

TEMPORAL RELATIONS

- AM vs PM
- Time after aggravating or alleviating factor
- Night pain

ASSOCIATED Sx

- Weight loss
- Fever/chills
- Numbness/weakness
- Gait/balance issues
- Bowel/bladder problems
**PAST MEDICAL Hx**

- Previous neck surgery
- Malignancy
- Foreign travel

**PHYSICAL EXAM**

- Confirm your hypothesis

**INSPECTION**

- Pt posture and attitude
- Torticollis
- Pt's behavior during interview

**GAIT ANALYSIS**

- Ataxia
  - Wide based
  - Short stride length
  - Spasticity
  - “Drunken gait”
PHYSICAL EXAM

• Palpation
  ▫ Midline
  ▫ Paraspinal
  ▫ Trapezius
  ▫ Scapula
  ▫ Sternocleidomastoid

• ROM
  ▫ Flexion/extension
  ▫ Rotation
  ▫ Lateral bend
• Fluidity
• Reversal of lordosis

SPURLING’S TEST

• Foraminal compression
• Extend the patient’s neck
• Lateral flexion
• Gentle compression
• Recreate radicular pain
• SLR equivalent

NEUROLOGIC EXAM

MOTOR

• Manual muscle test (MMT)
  ▫ 0 – nothing
  ▫ 1 – fasciculation
  ▫ 2 – full ROM, no gravity
  ▫ 3 – full ROM, against gravity
  ▫ 4 – between 3 and 5
  ▫ 5 – normal

SENSORY

• Test pin prick and light touch
  ▫ 0 – absent
  ▫ 1 – impaired
  ▫ 2 – normal
**NEUROLOGIC EXAM**

<table>
<thead>
<tr>
<th>MOTOR</th>
<th>SENSORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• C5 – deltid, biceps</td>
<td></td>
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<tr>
<td>• C6 – wrist extensors</td>
<td></td>
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<tr>
<td>• C7 – triceps, wrist flexors</td>
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<tr>
<td>• C8 – finger flexion @ DIP</td>
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<tr>
<td>• T1 – hand intrinsics</td>
<td></td>
</tr>
<tr>
<td>• Lateral antecubital</td>
<td></td>
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<tr>
<td>• Thumb and index finger</td>
<td></td>
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<tr>
<td>• Long finger</td>
<td></td>
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<tr>
<td>• Ring and small fingers</td>
<td></td>
</tr>
<tr>
<td>• Medial antecubital</td>
<td></td>
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</tbody>
</table>

**PEARL**

- **FREE THROW**

- Free throw
FREE THROW

PEARL

SENSORY C6
• Six shooter

NEUROLOGIC EXAM
• Reflexes
  • Biceps
  • Brachioradialis
    • C5, C6
  • Triceps
    • C7, C8

• Look for asymmetry
PE

- Always check shoulder abduction and internal rotation

DIAGNOSTIC TESTS

- Patient dependent
- Diagnosis dependent

NECK PAIN

- Cervical sprain/strain
- Cervicalgia
- Whiplash
- Mechanical neck pain
- Most common Dx
C STRAIN

- Antecedent event
  - MVA, lifting, slip and fall, etc.
- Isolated neck pain
- No red flags

PEARL

- Shoulder pathology can be mistaken for neck pain
  - Impingement
  - Rotator cuff tear
- Pain aggravated with overhead activities
- Brief shoulder exam

TREATMENT

- Initial
  - Medrol dose pack
  - X-rays
- One week F/U
  - NSAID
  - PT
  - +/- antispasmodics
- One month F/U
  - 40% improved
  - Not improved
  - PT
  - Meds
TREATMENT

• Three month F/U
  ▫ 75% improved
• Not improved
  ▫ MRI
  ▫ Refer

HERNIATED DISC (HNP)

• Pain radiating down UE in a dermatomal distribution
• Flexion and rotation
• Flexion more comfortable
• Increased pain with valsalva

HNP

• PE
  ▫ Pain with extension and lateral bend
  ▫ + Spurling test
  ▫ Pain relieved with arm abduction
  ▫ +/- neuro deficits

HNP

• Affects the exiting nerve root
  ▫ C5-6 gets C6
  ▫ C4-5 gets C5
PEARL

• 76% will resolve on their own within 3-4 mo

HNP

TREATMENT

• Without a deficit
  ▫ Medrol
  ▫ Soft collar
• If improved
  ▫ Rx like a strain
  ▫ PT
• If not improved
  ▫ ESI

• With a deficit
  ▫ Medrol
  ▫ Soft collar
  ▫ MRI
  ▫ Follow previous algorithm

SURGICAL REFERAL

• Patients failing conservative treatment
• Increasing neurological deficit
• Myelopathy
PEARL

- Carpal tunnel syndrome can mimic a C6,7 sensory deficit
- Cubital tunnel syndrome can mimic a C8 sensory deficit
- Motor findings will differentiate between cervical and peripheral compression

STENOSIS

- Narrowing of the spinal canal from degeneration

RADICULOPATHY

- Myelopathy
  - Ataxia
  - Hyperreflexia
  - Quadraparesis
  - Painless
- +/- radiculopathy
- Extension worse
STENOSIS

- Differentiate from central disorder
  - Cranial nerve function
- MRI
- Refer

TORTICOLLIS

- Contraction of the SCM
- Intrauterine compartment syndrome of the sternal head
- Head tipped up and away from affected side

TORTICOLLIS

- Treatment
  - Gentle stretching
  - Reverse deformity
- If unresponsive refer

PEARL
TORTICOLLIS
• In older children torticollis can be the presentation of a retropharyngeal abscess

INSTABILITY
• C1-2 instability
• Atlanto-axial instability
• Rheumatoid arthritis
• Down’s syndrome
• Incompetence of the transverse ligament

C1-2 INSTABILITY
• High suspicion
• Sub-occipital pain
• L’hermitte’s sign
  ▫ Tingling of fingers and toes with downward gaze

C1-2 INSTABILITY
• PE
  ▫ Limited flexion
  ▫ +/- myelopathy
• X-rays
  ▫ Lateral flexion and extension views
  ▫ Patient controls motion
• Atlanto-dens interval > 2.5 mm
C1-2 INSTABILITY

• Surgical referral

DEGENERATIVE DISC DISEASE

• Dx of exclusion
• Spondylosis
• Discogenic pain
• Facet syndrome

DEGENERATIVE DISC DISEASE

• Conservative care
• PT
• NSAIDs
• Pain management
• Surgery is 65% successful at best

THE FUTURE

• Disc regeneration therapy
• Improve minimally invasive surgery
• Robotics
CONCLUSION

• Neck pain is common
• The majority of pts can be treated successfully conservatively
• Differentiate from extremity problems
• Some pts require early referral

THANK YOU