Anatomy for Workers Compensation Attorneys

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Imaging studies

neck
SHOULDER - Rotator cuff

supraspinatus

slap
Neck and back arthritis

Neck and back Arthritis
Knee chondromalacia

It Takes A Village To Raise A Child.
~African Proverb
Village v. General Motors

• "An injury which develops gradually over time as the result of performance of the injured worker's job related duties is compensable"
  • Quasi-claim of "wear and tear"

• Fassig test the duties subjected him to greater risks or dangers than the public in general

Lateral Epicondylitis (tennis elbow)

• Pathology
  • 30 – 50 years old
  • Repetitive micro-trauma
  • Chronic tear in the origin of the extensor carpi radialis brevis
Medial Epicondylitis (golfer’s elbow)

- Pathology
  - 30 - 50 years old
  - Repetitive micro trauma to common flexor tendon

Ulnar Neuritis

- Mechanism of injury
  - Compression of the ulnar nerve: cubital tunnel (epicondyle, olecranon, MCL, arch of arcuate ligament and of 2 heads of FCU
  - Elbow flexion tightens arch
  - Repeated rapid activities such as throwing and prolonged flexion may traction or compress nerve
  - Nerve can sublux out of tunnel
Anterior Interosseus Nerve Syndrome

- Mechanism for Injury
  - Repetitive elbow flexion with forearm pronated
  - Tendinitis of deep head of pronator secondary to heavy lifting
  - Fractures or D/C of ulna or radius

- Clinical Signs and Symptoms
  - Pain
  - No sensory complaints or losses
  - Significant muscular weakness: loss of tip to tip pinch
Radial Tunnel syndrome/Posterior Interosseous Syndrome

• Pathology
  • Radial nerve compressed:
    • In the proximal radial tunnel anterior to the head of the radius where nerve supplies brachioradialis and ECRL, between the ulnar half of the ECRB and its fascia, and at the distal border of supinator.
    • Often mimics tennis elbow
TOS

- Combination of anatomic anomalies, physical activities, and life events
- Constellation of upper extremity symptoms
- Compression of neurovascular bundle at thoracic outlet
  - Brachial plexus (C5-T1)
  - Subclavian vein
  - Subclavian artery

Anatomy

- Scalene triangle
- Costoclavicular space
- Pectoralis minor space

Anatomic Variations

- Scalene Muscles
  - Wide vs narrow triangle
  - Congenital bands/ligaments
- Cervical ribs
  - Incidence 0.74%
  - Female: male ratio 7:1
  - Complete vs incomplete
  - More common on left
- Anomalous 1st ribs
  - Incidence 0.76%
  - Equal occurrence in men and women
Types of TOS

- nTOS – 95%
- vTOS – 2-3%
- aTOS - <1%

Neurogenic TOS

- Etiology
  - Hyperextension neck injury (whiplash)
  - Repetitive stress injuries (typing, assembly lines)
  - Falls on slippery floors/ice

Neurogenic TOS

- Predisposing Factors
  - Scalene muscle anomalies
  - Narrow scalene triangles
  - Congenital ligaments/bands
  - High plexus roots
  - Cervical ribs
Neurogenic TOS

• Pathophysiology
  • Neck trauma stretches and tears scalene muscle fibers
  • Swelling of muscle belly → pain, paresthesias, numbness, weakness
  • Scarring/fibrosis of muscle belly → occipital headaches, muscle spasms

• Symptoms
  • Occipital headaches
  • Perceived muscle weakness
    • Actual weakness and atrophy are rare
  • Vasomotor symptoms
    • Vasospasm, edema, hyperesthesia (CRPS)

Neurogenic TOS

• Pectoralis minor syndrome
  • Compression of neurovascular bundle under the pec minor
  • Pain over anterior chest and axilla
  • Fewer head/neck symptoms
  • Considerpec minor tenotomy with thoracic outlet decompression
Diagnosis

• “the most accurate diagnosis of TOS...must rely on a careful history and thorough, appropriate physical examination”
  
  * David B Roos, MD
  
• No single diagnostic test has sufficient specificity to prove or exclude the diagnosis

Differential Diagnosis nTOS

• Carpal tunnel syndrome
• Ulnar nerve compression
• Rotator cuff tendinitis
• Cervical spine strain/sprain
• Fibromyositis
• Cervical disk disease
• Cervical arthritis
• Brachial plexus injury

Differential Diagnosis aTOS

• Other sources of emboli
  * Cardiac, aortic arch, hypothenar hammer syndrome, coagulopathies
• Vasculitis
• Radiation-induced arteritis
• Connective tissue disorders
• Arterial dissection
• Atherosclerotic disease
• Traumatic
Physical Exam

- Pulse exam
- Listen for bruits
- Edema/cyanosis/collateral veins
- Tenderness over scalene muscles (trigger points) or pectoralis minor
- Reduced sensation to very light touch in fingers
- Provocative maneuvers

Adson Test

EAST

Imaging

- Xrays
  - Cervical rib
  - Elongated C7 transverse process
  - Hypoplastic 1st rib
  - Callous formation from clavicle or 1st rib fracture
  - Pseudoarthrosis of 1st rib
- Unable to image soft tissue anomalies and fibromuscular bands – seen only at time of surgery

Conclusion

- “A surgeon recognizing nTOS should not be dissuaded by the impression that these problems are frequently associated with psychiatric overtones, dependency on pain medications, and ongoing litigation”

  - Rutherford’s Vascular Surgery 7th Edition