Brachioplexus and Nerve Problems in Athletes

Mark R. Bagg, MD
Hand Center of San Antonio
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Brachioplexus Injuries

• Stinger Injuries
  – Sudden onset of paresthesia/dysesthesia
  – Usually due to a stretch injury of the C5/C6 root or superior trunk
  – Most are self limited

Stinger Injury

• Mechanism
  A. Traction injury
  B. Direct blow
  C. Nerve compression
Stinger Injury

• Epidemiology
  – Underreported
  – Primarily Football (65%) and Rugby (72%)
  – Wrestling, hockey, gymnastics, basketball, boxing

• History
  – Trauma to neck and shoulder
  – Burning pain in supraclavicular area radiating down the arm
  – Frequently resolves in 1-2 min
  – Prior history?

• Physical Exam
  – Acute- will hold arm against side
  – Chronic- muscle atrophy / shoulder depression
  – Access for cervical tenderness!
  – Sensation
  – Muscle weakness C5-6
  – Spurling test
  – Tinel’s sign
Stinger Injuries

• **Evaluation**
  – Electrodiagnostic studies
  – Imaging studies
    • C-spine
    • MRI
    • CT

Stinger Injuries

• **Differential Diagnosis**
  – **KEY POINT**: Bilateral symptoms, cervical spine tenderness, lower extremity findings
    • C-spine fracture
    • Cervical dislocation
    • Spinal cord contusion

Stinger Injuries

• **Differential Diagnosis**
  – Clavicle Fracture
  – Shoulder Dislocation
  – AC separation/ sprain
Stinger Injuries

**Management**
- Improve flexibility, strength and posture
- Chest-out posturing
- Restore pain free mobility
- Concentric and eccentric strengthening program
- Sports specific therapy

**Protective Equipment**
- Modification of Shoulder Pads
- Neck Roll
- Cowboy Collar
- Custom Orthosis

**Return to Sport**
- Exam and Re-exam
- Resolution of symptoms
- Full, painless motion of neck and shoulder
- Normal strength
- Must remain asymptomatic in practice
Peripheral Nerve ......

• Median
• Ulnar
• Radial

Peripheral Nerve......

• Acute injuries
• Compression neuropathy
• Chronic repetitive injury
• “Double crush” syndrome

Peripheral Nerve ..... 

• Neuropraxia
• Axonotemesis
• Neurotmesis
Peripheral Nerve.....

- Pain
- Numbness and tingling
- Weakness

Peripheral Nerve.....

- Weakness
- Sensory loss
- Atrophy

Peripheral Nerve.....

- History
- Physical
- Radiograph, EMG, and MRI
Median Nerve

- Pronator muscle.
- Flexor digitorum profundus.
- Carpal tunnel.

- An eighteen year old lad develops weakness and mild pain following a direct blow to his forearm. He has no sensory deficit.

Diagnosis: Anterior Interosseous Nerve Palsy
A forty year old golfer has numbness and tingling in the hand following a distal radius fracture six years ago.

Diagnosis: Carpal Tunnel Syndrome
- Phalen’s
- Tinnels
- Dirkens compression test

Ulnar Nerve
- Cervical rib.
- Thoracic outlet.
- Cubital tunnel.
- Guyons canal.
• A forty year old recreational cyclist has a fall and develops numbness in the ring and little finger. He also has generalized weakness in the hand.

• Numbness and tingling in the little and ring finger, weakness in grip strength and pinch.
Diagnosis:
Hook of Hamate fracture with secondary ulnar nerve compression in Guyon’s Canal

• A fourteen year old baseball pitcher falls and injures his elbow, he has pain along the inner border of his arm and weakness in his grip.

Diagnosis:
Fracture dislocation of the elbow with entrapment of the ulnar nerve
Radial Nerve

- Posterior interosseous nerve at the supinator muscle.
- Superficially at the wrist.

- An eighteen year old boxer develops pain and weakness in his arm and an inability to extend his metacarpophalangeal joints.
Diagnosis:
Posterior Interosseous Nerve Palsy Secondary to Compression by soft tissue tumor

Peripheral Nerve ..... 

- Pitfalls in the diagnosis of peripheral nerve injuries include cervical disk disease, brachial plexus lesions, central cord or brainstem lesions.

Thank you