The Evaluation of Peripheral Nerve Injuries in Athletes

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Peripheral Nerve Injuries in Sports

• Estimates indicate that peripheral nerve injuries account for <0.5% of sports-related injuries

• Mechanisms of injury include:
  o Acute compression
  o Repetitive compression
  o Ischemia
  o Laceration

• Evaluation
  o History
  o Neurologic exam
  o Dynamic assessment
  o Video
  o Electrodiagnostics
  o Imaging
  o Untrasound
Long Thoracic Nerve

- Originates with C5, C6, C7 anterior rami and travels between the scalenus medius and anticus muscles
- Athletic risk factors:
  - Weight lifting
  - Heavy backpacks
  - Back-stroke
  - Wrestling
  - Shoulder impact with downward traction
  - Idiopathic entrapment
- Symptoms
  - Scapular winging
  - Shoulder pain
  - Weakness with overhead activities
19 y/o female military cadet, butterfly swimmer and volleyball player presenting with a chief complaint of “left arm weakness and numbness”

4 weeks prior to evaluation she suffered the acute onset of symptoms while having to stand reading from the manual for an extended period of time with her arms outstretched

She was unable to complete the exercise and subsequently had difficulty raising her left arm
ML

- She has been unable to do push ups since the onset of injury.
- Neurologic exam was normal with the exception of limited left arm extension
- Nerve conduction studies were normal
- Needle EMG of the left serratus anterior muscle revealed increased insertional activity with 1+ fibrillations and diminished motor unit recruitment with polyphasic units.
Suprascapular Nerve

- Originates at C5 and C6 nerve roots, upper trunk of brachial plexus, scapular notch, supraspinatus and infraspinatus muscles

- Compression points:
  - Scapular notch
  - Spinoglenoid notch
  - Fascia between scapular and spinoglenoid notches

- Athletic risk factors:
  - Overhead loading
  - Volleyball
  - Weight lifting
  - Baseball
  - Basketball
  - Ganglion cysts of scapular notch
  - Superior glenoid labrum, spinoglenoid notch cysts
WM

- 31y/o male presenting with complaints of right shoulder pain and weakness
- Athletic activities include weight lifting
- Patient reports progressive weakness over the past year
- Neurologic exam revealed prominent atrophy and weakness of the right infraspinatus muscle.
Ulnar nerve

• Originates from C7, C8, T1, inferior trunk of the medial cord of plexus. At the elbow passes posterior to the medial epicondyle of the humerus and enters the cubital tunnel and pierces the flexor carpi ulnaris.

• Athletic risk factors:
  ○ Repetitive motion

• Symptoms
  ○ Pain/paresthesia/numbness
  ○ Weakness and atrophy
DH

• 19 y/o female softball player presenting with a cc of “right hand numbness and weakness.”
• Playing softball for 15 years, plays third base, throws overhand and known for throwing hard
• Symptoms of progressive numbness and weakness affecting the 4th and 5th digits of the right hand over the past four years.
• Elbow pain and intermittent clawing of the 5th digit has been noted
• Exam revealed weakness of right FDIH and ADQ muscles rated at 4+/5, diminished sensation in the 4th and 5th digits with appropriate splitting of the 4th digit, positive Tinel’s sign over the right elbow
Ulnar Nerve
DH
DH

- Underwent ulnar nerve transposition
- Full recovery and return to playing softball at 6 weeks
Summary

• Peripheral nerve injuries in athletes are relatively rare
• Video evaluation can be an intricate part of the work up
• Biomechanical changes can often result in successful treatment in a throwing athlete
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