Assessment Skills of the Spine on the Field and in the Clinic

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Cervical Spine Injuries

Sprains and strains
Stingers
Transient quadriparesis
Cervical Spine Injuries
Result in critical loss of practice and playing time
Incidence of injury per 100,000 players:
greater in hockey and gymnastics > football
Catastrophic injuries are rare in high-school athletes
High index of suspicion
Cervical Spine Immobilization
General principles
Immobilize head and neck with gentle traction
Do not remove helmet unless there is an airway issue
If needed, remove face mask with bolt cutters
Remove cheek pads before removing helmet
Cervical Sprains and Strains
Strains are injuries to the muscle- tendon unit
Cervical Sprains and Strains
Sprains are ligamentous capsular injuries

Cervical Sprains and Strains

Typically see muscle soreness and tenderness that last a few days, normal neuro exam
Pain responds to NSAIDS, massage and therapy
Return to sport when pain resolves and full range of motion
Stingers (Burners)
Most common cervical neurological injury
Unilateral peripheral nerve injury, not a spinal cord injury
Mechanism of injury is controversial
C5 root is most at risk
Stingers: Anatomy
Stingers (Burners)
Symptoms
Burning pain and weakness from neck to shoulder to hand
Player grasps involved extremity with opposite hand
Symptoms last seconds or minutes
On Field Assessment
Evaluate neck ROM
Palpate for cervical tenderness
Motor exam (biceps, triceps, deltoid)
Repeat exam frequently
Clinical Assessment

Thorough neurologic exam
Plain films (stenosis)
MRI, Contrast CT (disc protrusion)
EMG

Return to Competition

1st stinger

- Return to same game if sx's resolve within 15 minutes
- Return to next game if sx's resolve within one week

Return to Competition

2nd Stinger

- General rule is hold from competition one week for each stinger in a given season (eg. 2 weeks for a 2nd stinger)

3rd stinger

- Consider ending season, referral

Referral for Evaluation
Multiple stingers
Worsening sx's
Weakness or sensory changes that last greater than 1-2 weeks
Conclusion
Persistent stingers can lead to permanent damage
High risk patients- disc herniation, EMG abnormalities, foraminal or canal stenosis
These patients may need to consider noncontact sports
Transient Quadriplegia (TQ)
Definition- "transient" loss of motor and/or sensory function in two – four limbs
sx's resolve in minutes to hours (< 24 hours)
Higher incidence in football, wrestling, and hockey
Hyperextension or axial loading
Mechanism of Injury

On Field Assessment
High index of suspicion for cervical injury
ATLS guidelines (secure airway first)
Full spine precautions with cervical immobilization

Helmet left in place and taped to backboard
On Field Assessment
Evaluate neurologic status
Sensory sx's – burning pain to numbness and/or tingling
Motor sx's – variable, from no deficit to mild or complete quadriplegia
    Greater the motor deficit, the less likely it will be transient (fracture)

On Field Assessment
Beware of the athlete with a single presenting complaint of burning sensation in the hands (central cord syndrome)
This may be a non-transient spinal cord injury
May not be recognized as a cervical cord injury
Clinical Assessment
Thorough neurologic exam
Plain films, CT, and MRI
Evaluate for factors that put athlete at risk for TQ (congenital stenosis, herniated disc, bone spur, etc.)
Return to Competition
Controversial
No set guidelines
Identify at risk athletes
Athlete, family, coach, and medical care team must make an informed decision
Return to Competition
Study: 110 athletes with TQ
    57% returned to competition
    56% that returned had a 2nd episode (no permanent injuries)
    Correlation between 2nd episode and spinal stenosis

Return to Competition
Return to play – 1st episode, complete resolution of sx's, and no risk factors
Relative contraindications to return:
    Spinal stenosis, abnormal cord shape, or disc pathology
Absolute contraindications:
    TQ with ligamentous instability, cord defect, or edema, sx's > 36 hours, or more than one episode

Lumbar Spine Injuries
Acute fractures are uncommon
Overuse injuries (repetitive microtrauma) are more common injuries
Increased risk with hyperextension and flexion sports

Spondylolysis/Spondylolisthesis
"Stress fracture" thru the pars interarticularis

Spondylolysis/Spondylolisthesis

Spondylolysis/Spondylolisthesis
Males > females
Hyperextension sports- wrestlers, gymnasts, down line men, weight lifters, etc.
Symptoms
Low back pain
Gradual onset
Worsened by activities, improved with rest
Rarely radicular pain (L5)
On Field Assessment
Tenderness localized to lower lumbar spine
More pain on extension than flexion
80% with tight hamstrings
"Stork test"
Clinical Assessment
Plain films, bone scan, CT, MRI
Younger patients are more likely to have a progressive slip (8-13 yo)
Early diagnosis important
Plain Films
Bone Scan
CT Scan
Treatment
Rest
Bracing
Physical therapy
Surgery

Treatment
Treatment
Surgery

Less Common Sources of LBP
in the Adolescent Athlete

Herniated disc
Apophyseal End Plate Fracture
Tumors
Herniated Disc
Herniated Disc
May have sudden onset of pain(weight lifting)
Radicular sx's
Pain worse with flexion
(+) straight leg raise and hamstring tightness
Apophyseal End Plate Fracture
Apophyseal End Plate Fracture
May feel a sudden "pop"
Acute on set
Sx's similar to herniated disc
Treatment – often surgical
Tumor: Painful Scoliosis

Tumor
Tumor
Tumors
Painful scoliosis
Night pain
Limited ROM
Conclusion
High index of suspicion needed for spine injuries
Spine injuries result in significant time lost from sports
Early diagnosis is critical to prevent further injury and to allow faster recovery
Maintaining, regaining, or developing core strength is key for recovery

The End