Pearls & Pitfalls in Sports-Related Concussion

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Disclosures

None
Objectives

1. Discuss the initial evaluation of the student athlete with a suspected sports-related concussion (SRC) in the primary care setting

2. Describe techniques for supporting student athletes during Return-to-Learn (RTL) phase of recovery

3. Recognize indications for Return-to-Play (RTP) by weighing risks against benefits of continued participation
Background

“The Gridiron Crisis”

“President threatens to shut down football”

“Football carries nearly the same risk that a soldier [assumes] on the battlefield”

- New York Times
“The Gridiron Crisis of 1905”

“President Roosevelt threatens to shut down football”

“Football carries nearly the same risk that a soldier [assumes] on the battlefield”

- New York Times, 1894
Definition
Concussion is a **traumatic brain injury** and is induced by biomechanical forces

- Rapid onset, transient neurological impairment that resolves spontaneously
- Symptoms evolve over minutes to hours
- Resolution follows a sequential course (but not always)
- May result in neuropathologic changes, but **functional > structural** disturbance
Pathophysiology
(wait don’t leave...)
Pathophysiology

Mechanism of injury

- Rotational
- Acceleration-deceleration

→ Neurometabolic cascade
Pathophysiology

Mechanism of injury

- Rotation
- Acceleration - deceleration

➔ Neurometabolic cascade

LOSS OF CONSCIOUSNESS:
ONLY 10% OF CASES

Diagnosis
Can’t we just order a bunch of tests and skip the H&P?
What Tools Do You Need?
What Tools Do You Need?

➔ Symptom Scale
➔ Something to assess:
  ◆ Vestibular-ocular function
  ◆ Balance
  ◆ Cognitive function
History
Description of the incident

➔ Do they remember what happened?

Symptom onset

➔ Immediate v delayed

◆ If delayed, activity in the meantime

Any on-field documentation
Tool #1: The Symptom Scale
Tool #1: Symptom Scale

Graded checklist of symptoms
→ Used to monitor course & recovery

Several iterations; ever-evolving
→ Post Concussion Symptom Scale
→ Graded Symptom Checklist
→ Rivermead Post Concussion Scale

Examination

- Balance difficulties/gait abnormalities
- Impaired coordination
  - Finger-to-nose, Romberg, tandem gait
- Confusion
- Positive vestibular-ocular motor (VOMS) screen

Do Not Ignore the Cervical Spine Examination!
Red Flags
Red Flags

- Loss of consciousness
- Multiple episodes of vomiting
- Neck pain with motor dysfunction or radiculopathy
- Neurologic deficits (weakness, anisocoria, GCS<13)
To scan or not to scan?

Brain Trauma Indicator

“FDA authorizes marketing of first blood test to aid in the evaluation of concussion in adults”

News Release from FDA.gov
February 14, 2018
Other Diagnostic Tools

Neurocognitive Assessment
→ ImPACT, C3 Logix

Vestibular-Ocular Function
→ King-Devick, VOMS

Balance
→ SWAY, BESS
Management
‘Relative’ rest

Mushroom theory of strict rest

When can an athlete return to competition?

What exactly is ‘relative’ rest?

Management

Return to...
MOST important part of recovery process

Stages

Step 1: ‘Relative’ rest
Step 2: Modified school schedule
Step 3: Full day of school, no testing
Step 4: Full days, limited testing
  → Mastery Learning Materials
Step 5: Return to full academic load

Can start anywhere on the list, and advance or step back as tolerated.
Supporting a Student During Return-to-Learn
Be aware of symptom triggers

➔ Lights
➔ Noise
➔ Activity

Threshold?
Support During Return-to-Learn

Photophobia:
- Classrooms
- Sporting events
- Electronics
Phonophobia

- Band/music class
- Loud classrooms
- Sporting events

Support During Return-to-Learn
Support During Return-to-Learn

Tinted lenses

- Red or orange: media/screens
  - “Night Mode”
- Gray: sunlight

Encourage art & creativity
→ Avoid inactivity (aka boredom)!
Return-To-Play

Indications

Contraindications

Return-To-Play

Supervised progression of activity
- Both intensity and duration
- Should be sport-specific

Goal: safely return to pre-injury activity levels

Look for ANY symptom recurrence

Protocol

Day 1: **Light** aerobic conditioning
Day 2: **Moderate** aerobic conditioning
Day 3: **Full aerobic conditioning**, drills requiring physical and mental dexterity
Day 4: Non-contact practice
Day 5: Resume normal activity

For extra liability protection: have a form letter sent to school with athlete
- Athlete signs
- Parent signs

THEN you provide a letter of clearance

Return-To-Play

Considerations for Retirement
Considerations for Retirement

**Traumatic structural lesion, especially if craniotomy is required**

**Prolonged inability to complete RTL or RTP without symptoms returning**

**Psychiatric outcomes**

How many concussions is too many?

Recovery gets ‘harder’ → increasing:

- Frequency of mTBI
- Time to symptomatic recovery
- Severity/number of symptoms

References


Thank You

Contact Me

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https://ModernMedEd.com/conference