Concussion in the Athlete
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Disclosure Information
I have no disclosure or conflicts in this presentation.
Case Study #1

D.M. is a 6 yo female who was hit in the head with a soccer ball during a soccer game. She reports no loss of consciousness. She had complaints of a headache and difficulty answering basic questions.

PMH: D.M. had a presumed Concussion at age 14 yo, after an incident during basketball that didn’t stop her from practicing but she reported being dazed for a few minutes. D.M. didn’t seek medical care and she continued to play all sport but then developed headaches about one week after this incident. She was evaluated by neurology due to the headaches.

Case study #1 cont.

- Primary Survey
  - GCS 14
- Secondary Survey
  - C-Collar was removed
  - Memory: Anterograde and retrograde memory was slow to respond
Concussion Risk Factors

- Age/Level of competition
- Sex
- Type of sport
- Equipment
- Position
- Athletic related factors

Question #1

What are the most common presenting symptoms of a concussion?
A) History of LOC
B) Irritability, Headache
C) Amnesia
D) All of the above

Symptoms of a Concussion
Appropriate Work Up??

- Observation
  - D.M.'s cognition continued to improve during the 24hr period that she was observed in the hospital
- Appropriate pain management
  - Ibuprofen
  - Narcotics
- Consultation
  - Neurosurgery
  - Neurology

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Assessment and Treatment for D.M.

- Observation
  - D.M.'s cognition continued to improve during the 24hr period that she was observed in the hospital
- Appropriate pain management
  - Ibuprofen
  - Narcotics
- Consultation
  - Neurosurgery
  - Neurology

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Question #2

What is the biggest reason concussions are worse for the pediatric athlete?

A) Due to biomechanical and structural differences in the brain as well as physiologic weaknesses
B) Pediatric athletes are involved in more activities that put them at risk of sustaining a concussion
C) Adults have smaller size heads than the pediatric athlete
D) Adults brains have more cerebral blood flow and are able to tolerate the reduction of flow without causing damage
Neurodevelopmental Testing

A neuropsychological evaluation is a form of psychological testing that examines your child’s mental abilities as they relate to neurologic or other medical disorders, mental health difficulties or problems at school. The primary focus of a neuropsychological evaluation is your child’s cognitive functioning, considering abilities (e.g., intelligence, language, visual-motor skills, memory and attention) and organizational skills. Behavior and emotional factors are also considered as they affect your child’s performance, but they are not the main focus of evaluation.

- ImPACT testing
- Sports concussion assessment tool (SCAT 2)

Second Impact Syndrome

- An athlete sustain a second injury before symptoms from the original injury have resolved
- Many times the second injury is less severe than the original and doesn’t result in LOC, just a stunned appearance
- SIS leads to cerebral vascular congestion then cerebral swelling and can lead to death up to 50% of the time (10-15 pediatric patients die a year)
- Pediatric and adolescent patients are at higher risk

Post Concussive Syndrome

- Long term complication of a concussion
- Failure to return to baseline
- Lack of improvement with impact testing and treatment

- Symptoms
  - Headache
  - Fatigue
  - Dizziness
  - Cognitive impairment
  - Neuropsychiatric and Neurobehavioral impairment
Case Study Follow Up

November 2014: Initial concussion. No medical care sought at that time. Started having HA
sought care from a neurologist.

April 2015: Second concussion. Admitted for observation. Follow up established with Lurie concussion clinic. Received special accommodation at school and restricted from all physical activity.

June 2015: Some improvement of symptoms, evaluated with physical therapy due to continued dizziness. May participate in moderate aerobic activity as well as initiate simple drills. Recommend avoiding any symptom-provoking activities. Was recommended for Neuropsych and vestibular therapy at that time. Had a 10 on symptom-based assessment tool.

August 2015: Follow concussion clinic. Had a score of 6 on a symptom-based assessment tool.

September 2015: Neuropsychology evaluation

October 2015: Follow up concussion clinic. Continued to recommend delay contact sports return until she is at symptom baseline (pre-concussion baseline) for approximately 3 months

October 2015: Repeat ImPACT testing which was very close to her baseline which was done in September of 2014

Question #3

Neurocognitive testing such as Impact testing can be useful in?
A) Determines the severity of the concussion
B) Helps in determining a readiness to return to contact sports
C) Can determine the length of time an athlete should have symptoms
D) Measuring the intelligence of a concussed athlete

Return to Play

- Must be evaluated by a health care provider prior to being cleared for sports
- No athlete should return to play on the same day as a concussion or presumed concussion
- All academic accommodations should be lifted before an athlete is cleared to start sports
- Return to play occurs in a step wise protocol based on symptoms
Case Study Follow Up

December 2015: D.M. reports being symptom free with no Headaches. Once D.M. is back to a full academic load, she may begin with step 1.

1. Light aerobic activity (e.g., jogging, biking, light swimming). Activity should feel fairly easy and raise heart rate slightly.

2. Increased intensity aerobic activity (e.g., Fast running, moderate interval training). Activity should feel moderate difficulty and raise heart rate significantly.

3. Drills/direction change: Begin activities that involve movement, direction change. Can do non-contact drills for sports with a partner.

4. Advanced drills, all non-contact activities. For example, may attend a sports practice but avoid contact activities.

5. No restrictions

D.M. should advance activities every 1-2 days if asymptomatic but should stop progression and contact our office if symptoms arise.

Concussion Myths

- You have to be knocked out to have a concussion
- Helmets prevent concussions
- Concussions occur more in boys than girls
- Mouth guards prevent concussions
- Concussive symptoms are evident as soon as the concussion occurs

Questions?
References


www. Impacttest.org
www. cdc.gov/headsup