Clinical Reasoning as a Foundation in Management of Patients Post-Concussion
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DISCLOSURES

The authors have nothing to disclose.

SESSION DESCRIPTION

- This educational presentation will incorporate the best available evidence in the management of patients following a concussion. Lecture and case presentation will provide participants with an evidence-based approach in the evaluation and treatment of patients post-concussion.
- Please note: This is NOT a comprehensive course in concussion management.
- Pre-requisite knowledge: Assumes basic knowledge of concussion signs and symptoms.
- The presenters recommend that participants familiarize themselves with basic knowledge of concussion using the following:

SESSION OBJECTIVES

- Objectives:
  1. Briefly discuss the classification, epidemiology and background of concussion and post-concussion syndrome.
  2. Discuss and distinguish the signs and symptoms of post-concussion syndrome with a focus on cervicogenic headache, dizziness, vestibular impairment, and autonomic dysfunction.
  3. Using the best available evidence and clinical reasoning discuss the evaluation and management of patients who present to physical therapy following a concussion.
  4. Discuss manual therapy techniques used to treat impairments commonly seen in patients post-concussion.
  5. Discuss balance, vestibular, and oculomotor retraining and a graded exercise approach in patients post-concussion.

WHAT IS A “CONCUSSION?”

- A concussion is a subcategory of traumatic brain injury (TBI)
- Consensus Statement on Concussion in Sport, 2012 (McCrory, Meeuwisse, Aubry et al, 2013)
- Direct blow→“impulsive” force to head
- Resultant short-lived neurological impairments that resolve
- Acute clinical symptoms are reflective of a ‘functional disturbance’ of the brain, not a structural abnormality
- May involve loss of consciousness (LOC).
  - Resolution of symptoms may be sequential.
  - Some patients may have prolonged recovery
SIGNS/SYMPTOMS

- Headache
- Nausea
- Vomiting
- Balance Problems
- Dizziness
- Fatigue
- Trouble falling asleep
- Excessive sleep
- Loss of sleep
- Drowsiness
- Light Sensitivity
- Noise Sensitivity
- Irritability
- Sadness
- Nervousness
- More emotional
- Numbness
- Feeling "slow"
- Feeling "foggy"
- Difficulty concentrating
- Difficulty remembering
- Visual problems

ACUTE PHASE

0-3 months in non-athletes
3-6 weeks for adult athletes
4-6 weeks for child and adolescent athletes

SUBACUTE PHASE

CONCUSSION: EPIDEMIOLOGY

- CDC reports that 1.7 million individuals in the U.S. sustain a TBI annually.
- 75% of TBIs are concussions or mTBI
- Leading Causes of TBI
  - Falls: 35.2%
  - MVA or Traffic accident: 17.3%
  - Struck by or against: 16.3%
  - Assaults: 10%

CHRONIC PHASE

1-6 weeks in athletes
1-3 months in non-athletes

TBI-RELATED HOSPITALIZATION BY MECHANISMS OF INJURY AND AGE

Modified from National Hospital Discharge Survey presented http://www.cdc.gov/traumaticbraininjury/data/dist_hosp.html

SUBACUTE CONCUSSION MANAGEMENT

- Headache/Neck Pain
- MSK
- Migraine
- Visual
- Physiological
- Dizziness/Unsteadiness
- MSK
- Migraine
- Vestibular
- Psychological
- Deconditioning/Fatigue
- Cardiovascular
- Psychological
HEADACHE / NECK PAIN

Musculoskeletal
- Impaired ROM and strength
- Impaired Joint Mobility
- Impaired CJPE

Migraine
- History of migraine
- Associated with dizziness
- Non MSK triggers

Visual
- Impaired Oculomotor function

Autonomic/ Autoregulatory
- Related to activity intensity

DIZZINESS / UNSTEADINESS

Musculoskeletal
- Impaired CJPS

Migraine
- Related to headache intensity

Visual
- Impaired gaze stability
- Impaired convergence

Autonomic/Autoregulatory
- Increases with exercise intensity
- Orthostatic hypotension
- Increases with changes in head position

Psychological
- #1 cause of dizziness in adults

FATIGUE / DECONDITIONING

Cardiovascular
- Increased HR at rest, linear response to exercise

Autonomic/Autoregulatory
- Increased HR at rest, non-linear response to exercise
- Increased symptoms with exertion

Psychological
- Concomitant depression

RETURN TO ACTIVITY

Modified from Leddy et al 2012

CLINICAL REASONING

Patient
- Patient preferences
- Patient support network

Clinician
- Knowledge & Judgment

Context & Goals
- Strategies

CLINICAL REASONING

Patient Management
- Knowledge base
- Reasoning strategies
- Application of procedures
- H2 Testing
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Clinical Reasoning Using a Case Based Approach

- Format:
  - Case Background provided
  - Pertinent findings addressed in the case summary
  - Presenters will address the following during each case
    - Evidence informed practice strategies
    - Clinical reasoning process

Case Study 1

Case Study 1: Description

- A 16 year-old female presented to physical therapy under direct access. She reported having recent onset of headaches and neck pain following an injury while playing soccer. She had an unremarkable past medical history except for intermittent headaches attributed to dietary factors.

Clinical Reasoning Strategies

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<th>CLINICAL REASONING STRATEGIES</th>
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Case Study 2
**CASE STUDY 2: DESCRIPTION**

- A 46 year-old gentleman, former combat veteran presented to physical therapy under direct access. He reports a remarkable past medical history for multiple concussions. He reports that he concurrently is experiencing headaches, difficulty with concentration and memory task. He reports that his symptoms became more severe over the past year when you re-enrolled in college.

**CLINICAL REASONING STRATEGIES**

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**CASE STUDY 3: DESCRIPTION**

- 28 year old male, slipped on ice while stepping out of a HumV limousine hitting his head first on the runner, then on the ground. +LOC, + findings on imaging.

**CLINICAL REASONING STRATEGIES**

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Concussion results in metabolic and physiologic changes to other organ systems due to disturbances in the Autonomic Nervous System and Autoregulatory Control.

PCS represents a condition whereby the regulatory and autoregulatory mechanisms of the brain do not naturally return to normal.

Concluding Remarks

- Appreciate the acceleration of knowledge and the subsequent scientific literature
- Utilize a biopsychosocial model and sound clinical reasoning when managing individuals post-concussion
- Peel off the layers of the “onion” to get to the multiple issues involved.
- If you have seen one patient with a concussion… YOU HAVE SEEN ONE PATIENT WITH A CONCUSSION
  - No two patients with a concussion are the same
- Manual therapy interventions can benefit a sub-set of patients who have had a concussion

Resources


References