TBI Fact vs Fiction: Tackling Common Myths

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Disclosures

- No financial disclosures.
- Employed at MBKU
 - Ketchum Health- University Eye Center
 - Acquired Brain Injury Department

Introduction

- Traumatic brain injury (TBI) is a growing topic of public concern in the US
- Tackling common misconceptions about TBI and concussion

Objectives

- Identify effects of concussion and traumatic brain injury.
- Identify appropriate diagnostic testing and assessment tools for TBI.
- Reference available updated resources and practice guidelines to aid in appropriate counseling of patients with TBI.
- Apply practice guidelines to appropriately refer patients with TBI.

Myth: Sports-related concussions are a leading cause of TBI



dc.gov/traumaticbraininjury/pdf/TB rveillance-Report-FINAL_508.pdf

















TBI- Military and Veteran Populations

- Typically blast-related
- ~13% of OEF/OIF/OND veterans are in the TBI health registry
- Can have comorbid PTSD or depression

"VA TBI Veterans Health Registry Report" http://www.publichealth.va.gov/epidemiology/reports/oefoifond/hea lth-care-utilization/tbi-registry.asp



Mechanisms of TBI

- There can be direct or indirect impact; TBI can occur <u>without</u> direct head injury
- Coup and contrecoup injury
- Linear vs angular injury
- Diffuse axonal injury
- Blast vs non-blast

Recent Research

- Questionable effectiveness of helmets for preventing concussions
- New helmet designs?



• ...but you should still wear helmets

MYTH: LOSS OF CONSCIOUSNESS (LOC) AND POST-TRAUMATIC AMNESIA ARE NECESSARY FEATURES OF TBI

TBI can occur without LOC and post-traumatic amnesia

Concussion definition

- "a complex pathophysiological process affecting the brain, induced by biomechanical forces." - International Conference on Concussion in Sport (ICCS)
- Functional disturbance rather than a structural injury

Criteria	Concussion/ Mild	Moderate	Severe	Penetrating / Open Head Injury
Loss of Consciousness (LOC)	0-30 minutes	> 30 min and < 24 hrs	> 24hrs	Penetrated scalp, skull, and dura
Alteration of Consciousness (AOC)	Up to 24 hours	> 24 hours. Severity based on other criteria		mater
Post Traumatic Amnesia (PTA)	0-1 day	> 1 and < 7 days	> 7 days	
Glasgow Coma Score	13-15	9-12	< 9	

TBI Severity





















Vestibular Deficits

- Test Dynamic VA
 - Assessment of vestibulo-ocular reflex (VOR) function
 - +/- 20 degrees
 - ~1.5 Hertz
 - Test for decrease in VA

MYTH: ROUTINE NEUROIMAGING IS KEY TO DIAGNOSIS

- CT & MRI is often not diagnostic because the results are often normal
- Recent Research & Recommendations

 Use concussion recognition tools and best practices

Determine Need for Neuroimaging

- Routine imagine is not recommended
- Risk factors that indicate neuroimaging include:
 - Age <2 years old</p>
 - Signs and symptoms- vomiting, LOC,
 - severe/worsening headache, amnesia

CDC Pediatric mTBI Guideline

- Severe mechanism of Injury
- Hematoma
- Skull fracture

Use Validated Scales and Assessment Tools

- Acute Concussion Evaluation (ACE)
- Concussion Recognition Tool 5 (CRT5)
- Sport Concussion Assessment Tool 5th Edition (SCAT5)
- ...

Use Cognitive and Balance Testing

- Standardized Assessment of Concussion (SAC)
- Balance Error Scoring System (BESS)
- ...

MYTH: CHILDREN WILL BOUNCE BACK AND RECOVER QUICKLY

- Children may need prolonged recovery and can be particularly impacted by the effects of TBI
- Consider cognitive and developmental impact

Second Impact Syndrome

- Occurs when sustains 2nd concussion before the 1st has healed
- →Increase in intracranial pressure
- Often fatal!
- Affects <u>young</u> athletes
 - Therefore, should **not return to play** until all the symptoms of the initial concussion are gone









When to Refer

CDC Pediatric mTBI Guidelini

 Refer when symptoms do not resolve as expected after 4-6 weeks



CDC Pediatric mTBI Guideline

Where to Refer

- Worsening sleep problem→ sleep hygiene, sleep specialist
- Cognitive impairment → treatment directed at etiology, **neuropsychological evaluation**
- Emotional dysfunction → psychotherapeutic evaluation and treatment

CDC Pediatric mTBI Guidel



Neuro-optometric rehabilitation

CDC Pediatric mTBI Guideline







Additional Resources

• www.cdc.gov/headsup/

• Lumba-Brown A, Yeates KO, Sarmiento K, et al. Centers for Disease Control and Prevention Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children. *JAMA Pediatr*.2018;172(11):e182853. doi:10.1001/jamapediatrics.2018.2853

Prevention

• Wear a seatbelt

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- Wear a helmet and make sure it fits
- Stair safety gates for children
- Ensure playgrounds have shock-absorbing material

https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research

Prevention

- Improve lighting
- Remove trip hazards in the hallway
- Nonslip mats and grab bars for older adults
- Handrails on stairways
- Balance and strength with regular physical activity

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Thank you!

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