Workshop on Sport-Related Concussions in Youth

Diagnosis and Management of Sports-Related Concussion in Youth: The Roles of Pediatric Neurologists and Family and Rehabilitation Medicine Physicians

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Disclosures

National Football League Head, Neck and Spine Committee
Football and Wellness Committee USA Football
Medical Advisory Board Pop Warner Football
Medical Advisory Board X2IMPACT
Who Owns Sports Concussions?

• Not degree or sub-specialty driven
  – Knowledge
  – Training
  – Experience
  – Interest

• Team Physician
Physical Medicine and Rehabilitation
Physical Medicine and **Rehabilitation**

- Comprehensive training and experience in the spectrum of traumatic brain injury
  - Severe → Moderate → Mild TBI
- Bio-psychosocial model focusing on functional restoration utilizing multidisciplinary and interdisciplinary care including
  - Physicians
  - Psychologists, neuropsychologists, psychiatrists
  - PT, OT, speech pathologists, school teachers, counselors and coaches
Rehabilitation

- Traumatic brain injury will surpass many diseases as the major cause of death and disability by the year 2020. (estimated 10 million people affected annually)

- Direct and indirect medical costs of TBI totaled an estimated $76.5 billion in the United States in 2000.

- Mild brain injury is a leading cause of long-term disability in individuals < 45 y/o.
Physical Medicine and Rehabilitation

- Comprehensive training and experience in the spectrum of musculoskeletal injury and illness
- Bio-psychosocial model focusing on functional restoration utilizing multidisciplinary and interdisciplinary care including
  - Physicians
  - PT, ATC, OT, CSCS
  - Coaches, teachers
  - Psychologists, psychiatrists
Physical Medicine

• More than 1 in 4 Americans has a musculoskeletal condition requiring medical attention.

• Annual direct and indirect costs for bone and joint health are 849 billion – 7.7% of the gross domestic product.
  
Concussion Care Potential Pitfalls

• Care at the time of injury particularly for youth athletes
• Care for athletes with persistent symptoms
Symptom Duration

Multicenter, prospective, 5 year study
16,624 college and high school athletes
637 concussions

Musculoskeletal Confounders

• In concussed athletes, 20-35% report cervical pain

• Post-traumatic headache is the most common symptom after a concussion (>90%)
Physiological/Psychological Confounders

• Post concussive syndrome
  – Attribution of all remaining cognitive, somatic, emotional and sleep symptoms to the concussive event itself
  – Interpretation of neuropsychological data
Influences on PCS

• Pre-morbid anxiety
  – Strong predictor of continued PCS
    • Ponsford J et al. *Neuropsychology* 2012;26:304-13

• Comorbid Major Depressive Disorder
  – Ranges from 26-42% in hospitalized TBI patients
  – 21.4% in mTBI
  – Can persist despite cognitive recovery
    • McCauley SR et al. *Journal of Clinical and Experimental Neuropsychology* 2001;23:792-808

• Negative illness perceptions
  • Hou R et al. *J Neurol Neurosurg Psychiatry* 2012;83:217-223

• Motivational factors
  • Miller L et al. *Brain Injury* 2001;15:297-304
Confounders

- Overlooking or misinterpreting persisting musculoskeletal, cognitive, somatic, emotional and sleep symptoms can result in spurious and expensive treatment, unnecessary restrictions from academic, sporting and social activities, and skewed data regarding sports concussions.
Confounders

• Agreed upon by the writing group: athletes with > 10 days of symptoms should be referred to health care providers experienced in concussion management and managed in a multidisciplinary fashion.
Conclusions

• Role of all youth sports concussion care providers:
  – Knowledge, experience and training to recognize and provide treatment for acute concussions
  – For athletes with persisting symptoms, provide access to a healthcare team with expertise in TBI
Thank You