Screening, Education, and Intervention for Traumatic Head Injury in a Basic Clinic Setting

Webinar Session 2: Basic Concepts and Principles in the Care of Torture Survivors with Traumatic Head Injury

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Webinar Session 2 Outline

I. THI/TBI Definitions and characteristics
II. Identification and screening for TBI/Mild TBI
III. Therapy principles and referral options
I. Traumatic Brain Injury (TBI): Definition

- an insult to the brain, not degenerative or congenital in nature, but caused by an external, mechanical force, which may cause a diminished or altered state of consciousness, and results in impairments of cognitive, physical and emotional functioning.

biausa.org
TBI: Epidemiology

- Incidence of 100 in 100,000.
- 52,000 deaths annually.
- 1.4 million sustain TBI annually.
- 1 million treated and released from ER.
- 80,000 annually lifelong disabilities.
- Brain injury occurs every 23 seconds.


TBI: Epidemiology

- Highest incidence 15-24yrs; (75+, <5).
- Males 2-3x females.
- Alcohol in 50% of all TBIs.
- 50% MVAs*; falls leading cause in 65+yrs.
- Blasts are a leading cause of TBI for active duty military personnel in war zones.
- Prevalence 5.3 million; 2.5-6.5 million.

*discuss recent CDC data
Figure 2.4
Areas of Cortical Contusion

1. Acceleration

2. Deceleration

3. Coup

4. Countrecoup
Figure 2.3
Intracranial Hemorrhages

- Bridging vein (torn)
- Skull
- Scalp
- Dura
- Arachnoid
- CSF
- Pia

- Subdural hematoma
- Epidural hematoma
Figure 2.5
Diffuse Axonal Injury

- Cell body (Gray matter)
- Sheared axon (White matter)
- Corpus callosum
- White matter of cerebral hemispheres
- Cerebellar peduncle
- Brain stem
Neuropathology of TBI

- Blood and oxygen deprivation / anoxia
  - Low BP—bleeding, cardiac failure
  - Disrupted respiration—suffocation
  - Affects hippocampus, memory for new learning

- Generator and regulator function
  - Brainstem controls heartbeat, breathing, arousal, emotions
    - Subdural / epidural hemorrhage create pressure on brainstem
    - Monitor ICP to evacuate hematoma

- Diffuse Axonal Injury (DAI)
  - Subcortical, white matter tracts

- Lobe functions
  - All cortical functioning, hemispheric specializations, cerebral dominance
Neuropathology of TBI

- Cerebral Contusion
  - Orbitofrontal
    - Disinhibited, impulsive, distractible, irritable
  - Dorsolateral
    - Lack of affect, lethargic, pseudo-depressed
  - Anterior temporal
    - Understanding and memory for auditory information
  - Base of forebrain
    - CN I Olfactory—sense of smell
Neuropathology of TBI Later Consequences

- **Chronic Subdural hematoma**
  - HA
  - Subtle hemiparesis
  - Regression in function, tx
  - Variation in arousal

- **Hydrocephalus**
  - Shunt obstruction
  - Changes in function: gait, behavior, dementia

- **Depression**

- **Medical Management**
TBI: Chronic Symptomatology

- **PHYSICAL:**
  - Headache
  - Dizziness/Balance
  - Nausea
  - Blurred vision
  - Sleep disturbance
  - Fatigue
  - Weakness
TBI: Chronic Symptomatology

- **SENSORY:**
  - Vision
    - diplopia, homonymous hemianopsia, cortical blindness,
    - agnosia, neglect
  - Hearing
    - auditory nerve deafness, partial hearing loss, hyperacusis,
    - tinnitus, deficits in processing pitch, rhythm, tone
  - Smell and Taste
    - olfactory nerve damage impairs sense of taste
  - Touch
    - Proprioception, kinesthesia, sensation of pain
CN I. Olfactory Nerve
TBI: Chronic Symptomatology

- **COGNITIVE:**
  - Attention
  - Concentration
  - Perception
  - Memory
  - Processing speed
  - Executive functioning
  - Insight
  - Judgment
TBI: Chronic Symptomatology

- **COMMUNICATION:**
  - Verbose and tangential
  - Decreased organization of discourse
  - Dysnomia/Anomia
  - Dysarthria, articulation deficits
  - Decreased auditory processing
  - Decreased social awareness
TBI: Chronic Symptomatology

- **EMOTIONAL**:  
  Irritability  
  Quickness to anger  
  Egocentricity  
  Childishness  
  Impulsivity  
  Lability  
  Stages of grieving: denial, anger, depression…  
  Apathy  
  Dependency
TBI: Chronic Symptomatology

- **FAMILY:**
  - Impacts family relationships:
    - Marital, parental, sibling, extended family
  - Impacts family functions:
    - Financial, daily care, recreation, affection, socialization,
      self-definition, education, vocation
  - Impacts family life cycle:
    - Couple, birth and early childhood, school age, adolescence,
      young adult, post-parental, aging/senior
II. TBI: Identification and Screening

- History and interview
  - Include family, significant others
  - Note mechanism of injury, LOC, HA, vomiting

- Pay attention to the “universal” triad of cognitive deficits
  - Attention
  - Memory
  - Speed of processing

- Screening Tools
  - Post Concussion Symptom Scale
  - Rivermead Post Concussion Symptoms Questionnaire
  - NeuroRehab Survey

- Observation in functional settings
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<td>Visual changes (blurring/double vision)</td>
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Attention (concentration)

- **Attention**: multidimensional matrix of states, processes and abilities supporting cognition.
  - **Sustained**
    - Mental stamina; maintaining focus over time
  - **Selective**
    - Focus on the target while screening out background noise or images
  - **Divided**
    - Multi-tasking; keeping track of several things at a time
Memory

Memory: an information processing system necessary for new learning.
- Attention
- Memory for new information
  - Encoding/Storage/Retrieval
- Working memory
  - Mental clipboard
TBI/PTSD: organic vs. emotional causes

- **Lack of consensus**
  - Recent articles on U.S. soldiers returning from Iraq
  - Earlier articles on persistent post concussive symptoms with negative MRI
  - Eitinger Norway study 1964
  - Training and experience of physicians vs. therapists

- **Response to treatment**
  - If treating solely for PTSD, ask if cognitive symptoms still present
TBI/PTSD: organic vs. emotional causes

Case study
- 52 y.o. female
  - trauma therapist, doctoral student
- Hx of abuse by father and by husband, followed by PTSD symptoms
- MVA 1983 resulting in paraplegia, PTSD, no TBI
- Second MVA 2007 resulting in TBI
TBI/PTSD: organic vs. emotional causes

- Many overlapping symptoms
  - concentration
  - sleep disturbance

- TBI symptoms:
  - slower thinking, diminished speed of processing
  - poor working memory
  - poor memory for new information

- PTSD symptoms:
  - flashbacks, re-experiencing events
  - nightmares
  - hypervigilance
III. THI/TBI: Therapy principles

- Education
- Environmental modification
  - Decrease ambient noise
  - Decrease bright light
  - Decrease multiple task demands
- Organization and planning strategies
  - Daily planner
    - Inexpensive options
  - Audio reminders
  - Visual reminders
THI/TBI: Therapy principles

- Attention and memory strategies
  - Note-taking templates
  - Verbalize
  - Pocket digital recorders
- Mental stamina
  - Pacing, pacing, pacing
  - Avoid cognitive hangover / fatigue
- Insight (anosognosia)
  - Functional tasks
  - Group therapy and feedback
  - Standardized assessment
- Pain management
THI/TBI: Referrals

- M.D. Psychiatry
- Neuropsychology
- Speech-language pathology
- Occupational therapy
- Physical therapy / vestibular therapy
- Psychiatry
- Psychology
- Social Work
- Neuro-ophthalmology
- Otolaryngology / Audiology
Community Resources

- Brain Injury Association of America
  - [http://biausa.org/](http://biausa.org/)

- State chapters--Brain Injury Association of Massachusetts
  - [http://www.biama.org/](http://www.biama.org/)

- Support groups

- Conferences (survivor and caregiver)
Governmental Agencies

- Massachusetts Rehabilitation Commission (MRC)
  - [http://www.mass.gov/mrc](http://www.mass.gov/mrc)
  - Vocational rehabilitation program (VR)
    - Diagnostic Evaluations
    - Interest and Aptitude Testing
    - College or Vocational Training
    - Job Placement Assistance
    - Counseling and Guidance
    - Supported Work
    - Skills Training
    - Job Coaches and Tutors
    - Vehicle Modifications
    - Housing Modifications
    - Injured Worker's Program
    - Assistive and/or Rehabilitation Technology
    - Programs for Individuals Turning 22 (Ch. 688)
    - Consultation to Employers
Governmental Agencies

- **Office of Community Services (CS)**
  - Brain Injury and Specialized Community Services for individuals with an acquired/traumatic head injury
  - Protective Services for persons with physical disabilities who may be abused by their caregiver
  - Supported Living Services for persons with disabilities needing assistance to live independently at home
  - Independent Living Center Services providing information, referral, and peer counseling for persons with disabilities to live independently in the community
  - Independent Living Programs for individuals turning 22
  - Assistive Technology Program to enable individuals with severe disabilities equal access to employment and community life through the use of assistive technology and training.
  - Home Care assistance for persons with disabilities ages 18-59.
  - Consumer Involvement to improve the Commission's services by working cooperatively with members of the disability community on projects of mutual interest.
The End

Thank you for attending.

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