Neuropsychological Assessment of Patients with Traumatic Brain Injury

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Why are Brain Injuries so Misunderstood?



What is a TBI?

- Impact to head or other mechanism of rapid movement or displacement of brain within the skull, such as sudden acceleration/deceleration
- Symptoms:
 - Loss of consciousness
 - Memory Loss (retrograde and/or anterograde amnesia)
 - Disorientation and confusion (Glasgow Coma Scale)
 - Neurological Findings:
 - positive findings on brain imaging
 - new onset seizures
 - visual field cuts
 - hemiparesis

TBI Severity

Severity Ratings for Traumatic Brain Injury (from ACRM and DSM-5)				
Injury Characteristic	Mild	Moderate	Severe	
Loss of consciousness	<30 min	30 min to 24 hours	>24 hours	
Post-traumatic amnesia	<24 hours	24 hours to 7 days	>7 days	
Glasgow Coma Scale	13-15	9-12	3-8	

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Score between o & 15 (15 = fully intact)

- -Eye opening (o-4)
- -Verbal responses (o-5)
- -Motor responses (o-6)

Recovery from Mild TBI

- Minimal evidence of long-term cognitive dysfunction after mild TBI (Cottingham & Boone, 2014)
 - Back to baseline in 3 months (maximum)
- What about persistent complaints? Consideration must be given to deficits due to *other* factors:
 - Compensation seeking
 - Pre-existing psychiatric problems
 - PTSD and/or Depression

When controlled for, or successfully treated, persistent "postconcussive" symptoms are no longer present

Neuropsychological Assessment

- Comprehensive evaluation aimed at characterizing cognitive/psychological status, clarifying diagnosis, and providing treatment recommendations
- Integrates information from patient, informant, records
 - Presenting problem (onset, frequency, severity, impact)
 - Life history (medical, psychiatric, developmental)
 - Behavioral observations during assessment
 - Neuropsychological test data

Domains of Cognition

- Executive Function
 - Including attention and concentration
- Learning & Memory
- Language
- Visuospatial Ability
- Sensorimotor Function
- Psychological & Emotional Status
- Effort... particularly important in TBI, forensics

Assessing Effort

• Validity of neuropsychological test data hinges on the extent to which patient puts forth adequate effort

• Performance Validity Tests (PVTs)

- Very easy, low base rate of failure (even in patients with severe TBI)
- Stand-alone tests = sole purpose to assess effort (patient not aware)
- Embedded tests = derived from other measures
- Behavioral Observations
 - Consistency of performance across tests
 - Tests scores compared with daily functioning
 - Presence of implausible errors
 - Patterns of responses

Malingering

Intentional production of false or grossly exaggerated physical or psychological symptoms, motivated by external incentives, such as avoiding work, obtaining financial compensation, evading criminal prosecution

Malingered Cognitive Dysfunction

- (A) Evidence of external incentive
 - Litigation, disability-seeking, evasion of prosecution
- (B) Evidence from neuropsychological assessment
 - Unambiguous PVT failure (≥2 failed PVTs)
 - Test data discrepant with known patterns of brain function, observed behavior, collateral reports, or documented history
- (C) Evidence from self-report
 - Discrepant with known patterns of brain function, observed behavior, collateral reports, or documented history
 - Evidence of exaggerated or fabricated symptoms (e.g., MMPI, SIMS)
- (D) Evidence from (B) and (C) not due to another psych/med condition

Case Example – Claimed TBI

- 39 year-old attorney, MVA 12 months prior
- Per ER note: No loss of consciousness, no obvious head trauma (e.g., laceration, contusion), fully alert/oriented, no neurologic signs or symptoms
- Normal head CT and MRI
- Returned to work soon after, sometimes billing 15h days
- Now claims TBI, cognitive symptoms interfere with work, seeking disability benefits
- On exam, failed 3/5 stand-alone, 6/6 embedded PVTs
- Borderline to Impaired scores in visuospatial ability, memory, motor skills, attention/processing speed

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Utility of Neuropsych Testing



"I'd like a second opinion from a personal injury lawyer!"