PTSD and Mild Traumatic Brain Injury: Issues, Controversies and Psychiatric Management

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Agenda

- Issues
- Definitions
- Research
- Clinical Presentation
- Psychiatric Management
- Conclusions
Continuing Medical Education
Commercial Disclosure Requirement

I have no commercial relationships to disclose.
Section 1

THE ISSUES
ISSUES

- Traditional argument is that impaired consciousness and amnesia you have no memory therefore no memory consolidation therefore expect lower PTSD

- Symptom overlap between mTBI & PTSD

- Military context:
  - mTBI usually occurs in high stressful environment
  - Accurate history difficult as presentation months to years after injury
  - Mental illness stigma
Meaning of “TRAUMA”

Mental Health professionals

- Event associated with threat of harm or loss of life associated with extreme fear, helplessness or horror.

Neurologists and physiatrists

- Result of destructive biomechanical forces acting on the brain or other parts of the body.
Why the increase attention to mTBI

1. Increase protection of the body relative to the brain
   - Military body armor & survival from injury that was previously lethal

2. Vulnerability of the brain to “blast exposure”
Section 2

CASE VIGNETTE
Case study

A 27-year-old veteran released from the Canadian Forces after serving 8 years. He first noticed having problems after returning home from Afghanistan. He was the driver when his vehicle hit a roadside bomb. He thinks he might have “passed out” for a few seconds but managed to escape. He tried to rescue his comrade from the burning vehicle, but they were ambushed by the Taliban. During the firefight he was shot in his right leg and he was evacuated first to the field hospital. Days later he was repatriated back to Canada.

Six months after returning to Canada, he started having recurrent nightmares of his deployment. He became preoccupied with the safety of his family, especially his children. He started to fear going to bed and was drinking more alcohol to help him sleep and smoking marijuana to relax. He started to become nervous in crowds and avoided going out. He was irritable, getting into fights at work. He refused to talk about his deployment and spent more time alone in his basement. His moods were low; he lost interest in sports, complained of fatigue, poor concentration & memory & no sex drive. Finally, after losing his job and reporting thoughts of suicide, his wife convinced him to get help.

Adapted from Richardson, J. D., McIntosh, D., Stein, M. B., Sareen, J. (2010)
Section 3

DEFINITIONS
Mild Traumatic Brain Injury:

- History of head trauma [MVA, aircraft accident, training exercise, blast exposure]

- PLUS:
  - Alteration in Consciousness: “a moment” up to 24 hrs
  - Loss of Consciousness: 0-30 min
  - Post Traumatic Amnesia: 0-1 day
  - Brain Imaging: Normal
Post Concussion Syndrome

- Symptoms experienced weeks, months, or occasionally years after a concussion or mTBI.
- 38–80% of mild head injuries.
- Symptoms:
  - Physical: Headache, dizziness, fatigue, noise/light intolerance, insomnia
  - Cognitive: Memory complaints, poor concentration
  - Emotional: Depression, anxiety, irritability, mood lability
PTSD DSM-IV criteria

Defined Traumatic Stressor:

- **Event**: Leading to actual or threatened death or injury or threat to physical integrity of self or others
  
  ...military—generally expected to be exposed

- **Emotional Response**: Fear, helplessness or horror*
  
  ...military-cultural bias against displaying a motion other than anger
Core symptoms of PTSD

- Flashbacks
- Intrusive memories
- Nightmares
- Distress at reminders
- Physiological reactivity
- Thoughts/feelings
- Activities/places/people
- Amnesia
- Loss of interest
- Detachment - restricted affect
- Insomnia
- Hypervigilance
- Irritability and anger
- Poor concentration
- Startle response

Reexperiencing
Avoidance
Hyperarousal
Section 4

RESEARCH
Prevalence

- 50,000 Canadians sustain brain injuries each year [torontorehab.com, 2011]
- 500,000 people in Ontario living with ABI [Ontario Neurotrauma Foundation]
- Rates of TBI in Military (US): 5-23% [Tanielian & Jaycox, 2008; Terrio et al., 2009]
- Military-related PTSD: 9-30% [Hoge et al., 2007; Lapierre et al., 2007; Fikretoglu et al., 2008]
PTSD and mTBI

Rate of PTSD %

- Loss of Con: 43.9%
- Alt Mental Status: 27.3%
- Other Injuries: 16.2%
- No Injuries: 9.1%

Hoge et al., 2008
Rates of PTSD

- ↑ incidence of PTSD associated with:
  - TBI Severity (Hoge, 2008)
  - Impaired consciousness (Gilet et al., 2007)

- Controlling for TBI severity:
  - increase risk PTSD- (OR 1.57)
  - increase risk MDD- (OR 1.38)

- TBI with PTSD 10x risk of significant impairment

- Predictors of Post concussion symptoms:
  - Pain or PTSD (OR 3.6)

_Iverson, Kenardy, Hoge, Bryant, ISTSS Annual Meeting, 2008_
Mechanism

The TBI may:

- Compromised cognitive function:
  
  *Cognitive model argues that mTBI could impair cognitive resources, leaving the patient less able to “engage in appropriate cognitive strategies, which results in a greater incidence of PTSD”*

- Neural networks regulating anxiety might impair capacity to regulate the fear reaction

- Impair Ventral Medial Prefrontal Context (implicated in PTSD)
Symptom overlap

TBI

- Irritability
- Sleep problems
- Forgetfulness
- Fatigue

PTSD

- Irritability & Anger
- Insomnia
- Poor concentration
- Fatigue or decrease energy (depression)

Iverson, Kenardy, Hoge, Bryant, ISTSS ISTSS Annual Meeting, 2008
Impairment

- Combat PTSD was associated with post-concussive symptoms and psychosocial dysfunction \[Polusny et al., Archives of General Psychiatry, 2011\]

- Controlling for the effects of PTSD, little evidence of a long-term negative impact of a concussion/TBI on
  - Alcohol use
  - Social adjustment
  - and Quality of life \[Polusny et al., Archives of General Psychiatry, 2011\].
Section 5

CLINICAL PRESENTATION
What is a common clinical presentation?

- mTBI
- PTSD
- Major depression
- Substance abuse
- Other anxiety disorder
- Psychotic symptoms
- Physical injury
- Chronic pain
- Personality disorder/traits
- Other social dysfunctions
Section 6

PRINCIPLES OF MANAGEMENT
NO APPROVED MEDICATION FOR THE OF PSYCHIATRIC SEQUELAE OF M-TBI

...IMPORTANT TO SCREEN FOR MH CONDITIONS & TBI
SCREENING

- Were you wounded? Did you lose consciousness or get knocked out? Were you dazed, confused, or seeing stars?

- **Primary Care PTSD Screen**
  - In your life, have you ever had any experience so frightening, horrible, or upsetting that, in the past month, you:
    1) Have had nightmares about it or thought about it when you did not want to?
    2) Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
    3) Were constantly on guard, watchful, or easily startled?
    4) Felt numb or detached from others, activities, or your surroundings?

*Screen is positive if patient answers “yes” to any three items.*
Treatment Approach

Psychotherapy
- Cognitive Behavior Therapy (exposure)
- Anxiety management
- Psycho education
- EMDR

Medication
- SSRIs
- SNRI
- Antipsychotics (atypical)
- Anticonvulsants

Psychosocial Rehabilitation
Basic principles of treatment

1. Stabilization

2. Trauma focused psychotherapy

3. Rehabilitation Reintegration
Stabilization

**Goal**

Improve current functioning
Establish a trusting relationship

Psychoeducation

Assess and treat co-morbidities

Teach problem solving strategies
Psychiatric management

- **Comorbidities** should be managed simultaneously with PTSD & mTBI.
  - Stabilization prior to PTSD treatment. [DoDVA Guidelines, 2004]
  - symptom relief from meds allows patients to participate more effectively in psychotherapy. [DoDVA Guidelines, 2004]

- Choose treatment based on comorbidity.
  - depression, PTSD and other anxiety disorders

- Patient preference Imp.: Outcomes better when preference is taken into account [Feeny et al, 2010]

- Assess treatment response. (PCL-M, HAMD-7 or PHQ-9)

- Refer to Neurology/neuropsychology
Section 6-A

PHARMACOTHERAPY
STABILIZATION: Pharmacological management

**Antidepressants**
- SSRI (paroxetine, sertraline, citalopram, fluoxetine)*
- Dual acting antidepressants (venlafaxine, mirtazapine, bupropion & duloxetine)**

**Atypical antipsychotic**
- Risperidone, quetiapine, aripiprazole or olanzapine)
- Manage hyperarousal - hypervigilance & irritability

**Anticonvulsant**
- Carbamazapine, valproate, topiramate, lamotrigine)
- Treat mood instability and impulsivity observed in PTSD

*1st line but no demonstrated efficacy in combat-related PTSD
**B/C of high rate of co-morbidity, also considered as 1st line.
Pharmacotherapy: Antidepressants

- **Selective Serotonin Reuptake Inhibitors (SSRI)**
  - Not demonstrated efficacy in combat-related PTSD \[\text{Schoenfeld et al., 2004; Friedman et al., 2007; APA Guideline Watch, 2009}\]
  - Effective co-morbid mood and anxiety disorders

- **Dual acting antidepressants such as venlafaxine, mirtazapine, bupropion & duloxetine:**
  - To treat MDD & anxiety disorders, but less data demonstrating efficacy for PTSD \[\text{Hopwood et al., 2000; Smajkic et al., 2001; Davidson et al., 2003; Chung et al., 2004; Davidson et al., 2006, Benedek et al., 2009}\].
  - B/C of high rate of comorbid MD & anxiety disorders, should also be considered as 1st line.
Psychotherapy & Pharmacotherapy

- Many receive psychotherapy & pharmacotherapy either concurrently (at the same time) or sequentially (one modality after another).

- Limited research with combination treatment [Cochrane systematic review 4 trials - All used a SSRI with PE/CBT. Concluded “not enough evidence available to support or refute the effectiveness of combined psychological & pharmacotherapy”. [Hetrick et al., 2010]]

- Evidence to augment with psychotherapy in patients with PTSD with partial response to pharmacotherapy. [Rothbaum et al., 2006]
Treatment resistant PTSD

- Reassess to ensure that the diagnosis is correct
  (ie. comorbid bipolar, other anxiety disorders, personality disorders, substance use, physical health problems)
  - Neuropsych evaluation

- Optimization of monotherapy - a critical 1st step

- Assessing treatment response (using validated scales) with each change

- Switched to dual acting antidepressants (if after dose optimization ≤50% improvement)
Combination: **Antidepressant with**…

- **Anticonvulsant** (carbamazapine, valproate, topiramate*, lamotrigine)
  - to treat symptoms of depression, mood instability and impulsivity observed in PTSD [Lipper et al., 1986; Keck et al., 1992; Fesler, 1991; Berlant et al., 2002; Hertzberg et al., 1999; Hammer et al., 2001].
  - **failed** to confirm the utility for only PTSD [Ravindran et al., 2009].
  - *Cognitive Side effect*

- **Hypnotics**
  - Non-benzodiazepine hypnotics zopiclone.
  - Prazosin to reduce nightmares [Raskind et al., 2002; Raskind et al., 2003].
  - Trazodone (50-100 mg) or low dose mirtazapine (15 mg) but morning sedation can be problematic
Combination: Antidepressant with...

- **Stimulants** *(Ritalin, dexadrine, etc.)* [Capehart & Bass, 2011].
  - Stimulants may help.
  - Start “low” and “go slow” approach and monitor “drug-drug” interaction.
  - Modafinil if cannot tolerate stimulant.
  - ... may increase hyperarousal symptoms in PTSD.
Section 6-B

PSYCHOTHERAPY
Cognitive Dysfunction

- Psychotherapy requires intact cognitive abilities
  - PTSD is associated with impaired working memory.
  - TBI can impair cognitive resources.

- Neuropsychological testing may demonstrate specific strengths and deficits to help guide psychotherapy
Trauma focused psychotherapy

**Goal**

Accepting the trauma as part of life experience

Moving away from being haunted by the past and becoming fully engaged in the present

Talk about the trauma including its meaning

Client readiness

Agreement to pursue trauma focused psychotherapy
Rehabilitation and reintegration

Re-establishing personal relationships
  • Use therapy to practice and develop interpersonal relationships
  • Participate in peer support (OSISS)

Vocational rehabilitation
  • Work with insurance, VAC and organizations to re-integrate the workforce or return to school

Issues of relapse prevention
  • Know the signs and symptoms of relapse and develop a secure plan
Section 7

CONCLUSION
Conclusions:

- Direct relationship between MTBI and PTSD
- Increased rates related to:
  - Injury severity
  - Type of trauma
- IMP to consider TBI when evaluating veterans
  …especially those with combat exposure
- Treatment requires interdisciplinary approach
- Focus treatment on what is treatable!
Thanks You?