

Traumatic Brain Injury and Posttraumatic Stress Disorder

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KEYWORDS

- Brain injury • Posttraumatic stress • Imaging • Pathophysiology • Evaluation
- Treatment

KEY POINTS

- Individually, traumatic brain injury and posttraumatic stress disorder are complex conditions, and symptoms may be more difficult to address when the two co-occur.
- Evidence-based interventions aimed at treating both conditions simultaneously are limited; however, symptoms, regardless of cause, can be addressed by implementing treatment strategies aimed at ameliorating specific complaints (eg, headaches).
- Future research regarding the natural history of the co-occurring disorders can best be ascertained using longitudinal methodologies:
 - Cohorts with one, both, or neither of the conditions should be included;
 - Outcomes of interest should be measured via multiple modalities (eg, structured clinical interview, neuroimaging).

Disclaimer: this article is based on work supported, in part, by the Department of Veterans Affairs, but does not necessarily represent the views of the Department of Veterans Affairs or the United States government.

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Psychiatr Clin N Am 37 (2014) 55–75

<http://dx.doi.org/10.1016/j.psc.2013.11.002>

0193-953X/14/\$ – see front matter Published by Elsevier Inc.

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Abbreviations	
PTSD	Posttraumatic stress disorder
TBI	Traumatic brain injury
mTBI	Mild traumatic brain injury
OEF/OIF/OND	Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn
LOC	Loss of consciousness
SCID	Structured Clinical Interview for DSM Disorders
CAPS	Clinician Administered PTSD Scale
PCL	PTSD Checklist
VHA	Veterans Health Administration
vmPFC	Ventromedial prefrontal cortex
PTSS	Posttraumatic stress symptoms
SFG	Superior frontal gyrus
DTI	Diffusion tensor imaging
MDD	Major depressive disorder
FA	Fractional anisotropy
fMRI	Functional magnetic resonance imaging
OSU TBI-ID	Ohio State University TBI Identification
TSI	Trauma Symptom Inventory
VA	Departments of Veterans Affairs
DoD	Department of defense
CPG	Clinical practice guidelines
CT	Computed tomography
MOCA	Montreal Cognitive Assessment
SNRI	Serotonin norepinephrine reuptake inhibitor
CPT	Cognitive processing therapy
PE	Prolonged exposure

INTRODUCTION

It has been well established that traumatic brain injury (TBI) results in an increased risk for psychiatric illness, including mood and anxiety disorders, substance abuse, sleep disorders, and psychosis.^{1–5} This situation is true even among individuals without a preexisting psychiatric history.^{1–5} Although depression is the most prevalent psychiatric disorder observed in those with TBI,^{4,6} anxiety disorders are also common and frequently coexist with depression. Studies have shown that individuals with TBI experience all variants of anxiety disorders, including generalized anxiety disorder, panic disorder, obsessive compulsive disorder, and posttraumatic stress disorder (PTSD).^{1,3} However, in recent years, PTSD has been the most widely studied anxiety disorder in the context of TBI, particularly among those with mild TBI (mTBI).

The increased focus on PTSD and TBI has largely been motivated by the high rates of these conditions among Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF)/Operation New Dawn (OND) service members. Notwithstanding the greater historical context that has brought on heightened interest in this area, there are several reasons why the relationship between TBI and PTSD warrants special consideration. First, unlike other psychiatric disorders, PTSD is unique, in that its onset is tied to a discrete event, namely a psychologically traumatic stressor. Second, brain injuries resulting from biomechanical trauma are frequently sustained in the midst of psychologically traumatic experiences.⁷ Similarities in the neuroanatomies of PTSD and TBI further suggest that the overlap in symptoms associated with both conditions may be the result of shared underlying mechanisms.⁸

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