

Crossing in the Red Zone: mTBI/Concussion and PTSD in the Context of War

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The Defense and Veterans Brain Injury Center (DVBIC) is the traumatic brain injury (TBI) center of excellence for the Defense Health Agency, part of the U.S. Military Health System (<http://dvbic.dcoe.mil/>). The organization has a trifold mission to provide international clinical care and standards, clinical research and education in the field of TBI for both military and veteran communities. Indeed, TBI is a significant health issue, which affects service members during times of both peace and war. Soldiers returning home from operations theaters in Iraq and Afghanistan are experiencing an increased number of head injuries related to blasts and explosions compared to soldiers of previous conflicts [1]. According to Swanson and colleagues [2], exposure to explosive armaments during Operation Iraqi Freedom and Operation Enduring Freedom contributed to approximately 14% of the 352.612 traumatic brain injury (TBI) diagnoses in the US military between 2000 and 2016. Importantly, the high rate of blast-related concussion events and mild TBI resulting from current combat operations (mTBI/concussion) directly affects the health and safety of individual service members and consequently unit readiness and troop retention. For this reason, the US Department of Defense issued guidelines in 2009 to (1) standardize TBI diagnostic criteria; (2) classify TBI according to mechanism and severity; (3) categorize TBI symptoms as somatic, psychological, or cognitive; and (4) systematize types of care given during the acute and rehabilitation stages of TBI treatment [3].

It's important to focus on mTBI/concussion as a combat injury that can get worse because of combat stress reactions and that it can involve the onset of chronic neuropsychological sequelae. Combat stress reaction is a condition that results from psychological breakdown on the battlefield, and it is characterized by a polymorphous and labile symptom profile, which may include emotional and physical numbness, withdrawal, depression, and a paralyzing fear of death [4]. It was hypothesized that the co-occurrence of combat stress would have a significant effect on the severity of post-concussive complaints, specifically on emotional and cognitive symptoms. Indeed, not only mTBI/concussion sustained during the stress of battle is believed to predispose to or accentuate post-traumatic stress disorder (PTSD) [5,6], but behavioral and cognitive symptoms of PTSD overlap with those of mTBI/concussion.

Considering the above, caution is needed in making the diagnosis of mTBI/concussion in service members with co-occurring combat-stress disorders. As reported by Bryant [5], "accurate identification of the true nature and cause of the symptoms experienced after TBI is important because if stress-related disturbances are mistakenly attributed to neurological factors, patients may be deprived of effective treatments that can, in most cases, alleviate the symptoms". What has been previously stated has important implications for the treatment. Traumatized soldiers who received frontline treatment had lower rates of posttraumatic and psychiatric symptoms, experienced less loneliness, and reported better social functioning than similarly traumatized soldiers who did not receive frontline treatment [7]. Moreover, a cumulative effect of application of frontline treatment principles (proximity, immediacy, expectancy) was documented [7].

Coining the words of Bryant [5], "Understanding the interaction between neurological insult, neuropsychological abnormalities and psychological response has the potential to shed light on the key mechanisms underpinning trauma response and improve our ability to take charge of traumatized soldiers".

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