



Psychiatry & Behavioral Science Section – 2010

I10 Update on the Neuroscience of Traumatic Brain Injury

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By attending this presentation, attendees will be educated about the advances in the neuroanatomy and neuropathology of Traumatic Brain Injury (TBI).

This presentation will impact the forensic science community by assisting physicians, nurses, and lawyers, both military and civilian, who treat or conduct disability evaluations on those suspected to have a traumatic brain injury.

Disorders related to traumatic brain injury are the second-most common neurological disorder (behind only headaches). There are roughly 1.4 million cases of traumatic brain injury in the United States, 75% of which are deemed "mild TBI." Every year, about 90,000 individuals are left with some level of chronic disability as a result of TBI. About 300,000 American servicemen and women may be suffering from TBI; sports-related injuries result in another 300,000 cases of TBI. Between 2.5 and 6.5 million Americans live with the long-term sequelae of TBI.

The understanding of the neuroanatomy and pathophysiology of these injuries is continuing to evolve. Significant mechanical forces on the brain initiate a cascade of events, the clinical impact of which may not be obvious in the short term. Diffuse axonal injury, which can occur even in the absence of loss of consciousness, may be a factor in the persistent emotional, behavioral, and cognitive problems experienced by victims of mild TBI. High-pressure shock waves, such as those experienced by individuals exposed to IEDs (Improvised Explosive Devices) at close range, can result in cerebral bruising, bleeding, torn nerve fibers, and destroyed neurons, even in the absence of skull-related injury. These injuries may be unreported by the victim but result in emotional, behavioral, cognitive, interpersonal, and occupational dysfunction, which may be noted weeks or months after the event.

The goal of this presentation is to educate the audience on the advances in the neuroanatomy and neuropathology of TBI.

TBI, Neuroanatomy, Diffuse Axonal Injury