

## Mild TBI and Posttraumatic Amnesia (PTA)

According to the Center for Disease Control, about 1.5 million brain injuries ranging in severity occur each year, with about 75% of those injuries consisting of mild traumatic brain injuries (MTBI) (1). An estimated \$17 billion dollars are spent yearly on the diagnosis and treatment of MTBI's (1). The majority of individuals with such an injury typically experience a near to full recovery, however, it is estimated that about 10-15% of individuals experience persistent disabling symptoms (1, 3, 8). The definition of a MTBI has been debated and unfortunately no universal classification system exists, nor is there a gold standard for the treatment and care of individuals with such a level of injury. The Glasgow Coma Scale (GCS), duration of loss of consciousness (LOC) and the duration of posttraumatic amnesia (PTA) are all important factors in identifying the level of injury; some classification systems use all three while others may use only one. The American Congress of Rehabilitation Medicine (ACRM) and the Diagnostic and Statistic Manual-Fourth Edition-Text Revised (DSM-IV-TR) both provide diagnostic criteria for MTBI's (DSM-IV uses the term postconcussional disorder), however, the DSM-IV criteria is identified as research criteria and is not included in the manual as a main diagnosis. However, this has the potential to change with the development and upcoming release of the DSM-V.

In earlier years, loss of consciousness (LOC) and posttraumatic amnesia (PTA) were considered the hallmark features of a mild brain injury. Loss of consciousness is the duration of time that an individual is unconscious following an injury and the Glasgow Coma Scale (GCS) is often used to assess this. Posttraumatic amnesia is defined as the period of time from the last memory before the trauma until the return of normal continuous memory when the individual is consistently oriented and can demonstrate consistent recall (4, 7). PTA includes any period of unconsciousness (LOC), confusion or disorientation, or any state of altered consciousness (7, 8). The Galveston Orientation and Amnesia Test (GOAT) is one test that is often used to assess PTA. Formerly it was believed that unless an individual lost consciousness, they had not sustained a true brain injury. However, research no longer supports this point of view. As it currently stands, duration of PTA is one of the best predictors of the severity of a brain injury (3, 4, 7).

Smits et al.'s 2007 study reported that the risk of neurocranial complications after a brain injury in which patients did not experience LOC or PTA is only a quarter of the risk of individuals that do experience LOC or PTA. This low level of risk often results in many patients being discharged from the hospital with no imaging procedures performed. In the Smits et al. study, it was found that some patients who did not experience LOC or PTA did in fact experience neurocranial complications following a brain injury with some of those individuals even requiring neurosurgery (2). As such, the authors of this study suggest that LOC and PTA should be considered risk factors and not defining features of a mild brain injury and that individuals that present without these risk factors should still be carefully assessed and the possibility of imaging should be considered (2). Others studies have also reported significant neurocognitive changes in individuals that sustained a head injury but did not lose consciousness or experience posttraumatic amnesia (5).

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