Mild traumatic brain injury clinical features

see also Post-concussional syndrome

Possible findings

vacant stare or befuddled expression

delayed verbal & motor responses: slow to answer questions or follow instructions

easy distractibility, difficulty focusing attention, inability to perform normal activities

disorientation: walking in the wrong direction, unaware of date, time or place.

speech alterations: slurred or incoherent, disjoined or incomprehensible statements

incoordination: stumbling, inability to tandem walk

exaggerated emotionality: inappropriate crying, distraught appearance

memory deficits: repeatedly asking same question that has been answered cannot name 3 out of 3 objects after 5 minutes

any period of LOC: paralytic coma, unresponsiveness to stimuli.

Posttraumatic headache

Posttraumatic headache is one of the most common symptoms following mild traumatic brain injury in children.

From the available evidence, slowed reaction time, impaired verbal learning and memory, impaired balance, and disorientation or confusion were found to be significantly prevalent in early samples of exposed individuals. There is insufficient evidence to assess the relationships among these measures. At a minimum, future studies should include comparison groups; take measures at fixed and relevant time points; report distinct signs, symptoms, and deficits in terms of frequencies and correlations; and follow standards for minimizing bias and confounding [1)].

Symptoms are typically short-lived and may correlate to physiologic changes in the acute period after injury. There are many available tools that can be utilized on the sideline as well as in the clinical setting for assessment and diagnosis of concussion. It is important to use validated tests in conjunction with a thorough history and physical examination. Neurocognitive testing may be helpful in the subacute period.

Confusion

May be evident immediately following the blow, or may take several minutes to develop.

Loss of consciousness (LOC)

Loss of consciousness is not a requirement.

Patients themselves may be unaware whether or not they experienced LOC.

When there is LOC, the fact that it is often virtually instantaneous (there may be a latency of a few seconds), and the usually rapid return of function with no evidence of microscopic changes suggests that the LOC is due to a transient disturbance in neuronal function. Levels of glutamate (an excitatory neurotransmitter) rise after concussion and the brain enters a hyperglycolytic and hypermetabolic state which may persist up to 7-10 days after the injury.

During this period the brain may be more susceptible to a second impact syndrome.

Dizziness is commonly reported after concussion. With the forces experienced at the time of the injury, several anatomical locations may have been altered, causing dizziness [2].

1)
Carney N, Ghajar J, Jagoda A, Bedrick S, Davis-O'Reilly C, du Coudray H, Hack D, Helfand N, Huddleston A, Nettleton T, Riggio S. Concussion guidelines step 1: systematic review of prevalent indicators. Neurosurgery. 2014 Sep;75 Suppl 1:S3-S15. doi: 10.1227/NEU.0000000000000433. PubMed PMID: 25006974.
2)
Reneker JC, Cheruvu VK, Yang J, James MA, Cook CE. Physical examination of dizziness in athletes after a concussion: A descriptive study. Musculoskelet Sci Pract. 2017 Nov 26;34:8-13. doi: 10.1016/j.msksp.2017.11.012. [Epub ahead of print] PubMed PMID: 29197811.