

Cerebral blood flow as a possible marker for concussion outcomes

March 2 2015

A new imaging study suggests that cerebral blood flow recovery in the brain could be a biomarker of outcomes in patients following concussion, according to a study published online by *JAMA Neurology*.

Most of the 3.8 million sports-related traumatic [brain](#) injuries (TBIs) that occur annually are concussions. Developing methods to diagnose the presence and severity of concussions is imperative. Reduced [cerebral blood flow](#) (CBF) is a marker of concussion severity in animal models, according to the study background.

Timothy B. Meier, Ph.D., of the Mind Research Network/Lovelace Biomedical and Environmental Research Institute, Albuquerque, N.M., and coauthors looked at the recovery of CBF in a group of 44 [college football players](#) and compared the course of CBF recovery with that of cognitive and behavioral symptoms. The study was done between March 2012 and December 2013.

Of the 44 players, 17 were concussed and had imaging performed one day, one week and one month postconcussion. The study also included 27 healthy football players as the control group.

The study results indicate that both cognitive (simple reaction time) and neuropsychiatric symptoms at one day postinjury resolved at either one week postinjury or one month postinjury. The imaging data suggested CBF recovery in parts of the brain. The authors also found that CBF in the dorsal midinsular cortex part of the brain was decreased at one

month postconcussion in slower-to-recover athletes and in athletes with the most severe initial psychiatric symptoms.

"To our knowledge, this study provides the first prospective evidence of reduced CBF and subsequent recovery following concussion in a homogenous sample of collegiate football athletes and also demonstrates the potential of quantified CBF as an objective biomarker for [concussion](#)," the study concludes.

More information: *JAMA Neurol.* Published online March 2, 2015.
[DOI: 10.1001/jamaneurol.2014.4778](https://doi.org/10.1001/jamaneurol.2014.4778)

Provided by The JAMA Network Journals

Citation: Cerebral blood flow as a possible marker for concussion outcomes (2015, March 2)
retrieved 9 May 2024 from
<https://medicalxpress.com/news/2015-03-cerebral-blood-marker-concussion-outcomes.html>

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