

were associated with increased ACC CBF ($q=.021$). NSI somatic-sensory subscale scores were not associated with ROI CBF.

Conclusions: Results demonstrate that in TBI-susceptible anterior ROIs, alterations in CBF but not cortical thickness are associated with postconcussive symptomatology in Veterans with a history of mTBI. Specifically, postconcussive total symptoms as well as affective, cognitive, and vestibular subscale symptoms were strongly linked primarily to CBF of frontal regions. Remarkably, these results indicate that enduring symptoms in generally younger samples of Veterans with head injury histories may be closely tied to cerebrovascular function rather than brain structure changes. These findings may provide a neurological basis for negative clinical outcomes (e.g., enduring PCS and poor quality of life) that is frequently reported by many individuals following mTBI. Future work is needed to examine unique effects of blast exposure as well as associations with repeated injury on brain-behavior relationships.

Categories: Concussion/Mild TBI (Adult)

Keyword 1: cerebral blood flow

Keyword 2: brain structure

Keyword 3: concussion/ mild traumatic brain injury

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49 Longitudinal White Matter Changes in First Time Mild Traumatic Brain Injury in Relationship with Cognitive Performance: A Diffusion Tensor Imaging Study

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Objective: The objective of the study was to examine longitudinal changes in the white matter tracts with diffusion tensor imaging (DTI), neuropsychological performance, and the

associate between the two in adults with a mild traumatic brain injury (mTBI).

Participants and Methods: Sixteen adult patients (age = 38.5(12.8); 75% female) seeking medical care at an emergency department for their first mTBI and 15 healthy adults (age = 30.5(11.3); 33% female) from the community were recruited. DTI and the neuropsychological evaluation were performed at 7 days and 4-months post-injury. The neuropsychological evaluation consisted of the CNS Vital Signs computerized neurocognitive test battery and 2 trials of the Paced Auditory Serial-Addition Test.

Results: Results showed a significant decrease in fractional anisotropy (FA) and an increase in radial diffusivity (RD) of the right uncinate fasciculus as well as a significant decrease in FA and axial diffusivity (AD) of the right inferior fronto-occipital fasciculus over the 4-month follow-up period in the mTBI group compared to the Control group.

The FA of multiple white matter tracts at baseline were positively associated with working memory, sustained attention, and complex attention at baseline in the mTBI group but not the Control group.

The global mean cerebral diffusivity for FA at baseline was positively associated with working memory and sustained attention at 4-months post-injury.

Conclusions: The current findings of abnormal white matter suggest an oxidative stress reaction as a result of mTBI altering the diffusivity of some white matter tracts. Furthermore, the disruption of the white matter tracts at baseline may serve as a biomarker for identifying mTBI and those who may have prolonged cognitive difficulties in working memory and attention as a result of the mTBI.

Categories: Concussion/Mild TBI (Adult)

Keyword 1: concussion/ mild traumatic brain injury

Keyword 2: neuroimaging: structural

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50 Sex differences in psychological features in adolescents after concussion

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