



Chronic Repetitive Mild Traumatic Brain Injury Results in Reduced Cerebral Blood Flow, Axonal Injury, Gliosis, and Increased T-Tau and Tau Oligomers

Purpose

To address the inconsistencies in study findings regarding the correlation of tau in age of individuals and the time post mTBI.

Participants

Researchers used mice with a human tau genetic background (hTau).

How was the study conducted?

Mice were assigned to two groups, one group receiving repeated mTBI over a period of months and one control group not receiving mTBI. The mice were observed and neurobehavioral tests conducted. The mice were then euthanized and their brains examined for tau pathology. Comparisons were conducted between the brains of the two groups.

Findings

Investigators confirmed an increase in tau pathology (tau levels, tau oligomers/conformers and pTau species in the gray matter) up to 3 months after mTBI. Mice receiving repeated mTBI demonstrated findings on the neurobehavioral tests that were consistent with mTBI (disinhibition). These findings may be on a continuum of progressive and persistent TBI-dependent tau pathology.

Military Impact

These data confirm the previously-inconsistent relationship between tau pathology and mTBI, and support the relevance of this new mTBI injury model for studying the consequences of chronic repetitive mTBI in humans, and the role of tau in TBI. For Veterans and service members with repeated mTBI, looking at tau in the brain may help with diagnosis and treatment.

Ojo J.O., Mouzon B., Algamil M., Leary P., Lynch C., Abdullah L., Evans .J, Mullan M., Bachmeier C., Stewart W., Crawford F. Chronic Repetitive Mild Traumatic Brain Injury Results in Reduced Cerebral Blood Flow, Axonal Injury, Gliosis, and Increased T-Tau and Tau Oligomers. Journal of Neuropathology and Experimental Neurology. 2016 Jul; 75(7): 636-55. PubMed: 27251042 PubMed Central: PMC4913432 <https://academic.oup.com/jnen/article/75/7/636/2579743>