



Chronic cerebrovascular abnormalities in a mouse model of repetitive mild traumatic brain injury

Purpose

To study the status of the cerebrovasculature following repetitive mild traumatic brain injury (r-mTBI).

Participants

Researchers used male and female C57BL/6 mice.

How was the study conducted?

r-mTBI was delivered to adult mice twice per week for 3 months, beginning at 12 months of age. The mice were tested for spatial memory deficits at 1 and 6 months post-last injury. At 7 months post-last injury, brain blood flow was assessed and, following euthanasia, the brain was examined for markers of vascular dysfunction and inflammation.

Findings

Learning and memory impairment was identified at 1 month following injury and persisted as late as 6 months post-injury. Furthermore, significant immunopathological trauma, inflammation, and reductions in brain blood flow were observed.

Military Impact

This study shows that in a mouse model of repetitive mild traumatic brain injury, memory difficulties and alterations in cerebrovascular markers and function can occur. These findings may have implication for Veterans and service members who have repeated mTBIs.

Lynch C.E., Crynen G., Ferguson S., Mouzon B., Paris D., Ojo J., Leary P., Crawford F., Bachmeier C.
Chronic cerebrovascular abnormalities in a mouse model of repetitive mild traumatic brain injury. Brain Injury. 2016 ;30(12): 1414-1427. PubMed: 27834539
<https://www.tandfonline.com/doi/full/10.1080/02699052.2016.1219060>