



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Chronic TBI Outcomes and Treatment Strategies

Chronic Effects of Neurotrauma Consortium (CENC) Studies Investigate the Potential Relationships Between TBI and Dementia

The CENC is coordinated by researchers at Virginia Commonwealth University (Richmond, VA) and includes collaborators from 57 academic institutions, Veterans Affairs Medical Centers, and Military Treatment Facilities nationwide. The CENC seeks to understand the association (onset, prevalence, and severity) of the chronic effects of mTBI and comorbidities and probe for correlations to neurodegenerative disease. One area of particular interest for the CENC is to investigate potential correlations between TBI and Parkinson's Disease or dementia. In FY18, CENC researchers published two papers examining these linkages.

Researchers at the San Francisco Veterans Affairs Medical Center and the University of California, San Francisco retrospectively examined records from a random sampling of patients with and without TBI, and without dementia at baseline, from Veterans Health Administration (VHA) databases ($n = 325,870$). They found that a history of TBI is associated with an increased risk of Parkinson's Disease (hazard ratios for mTBI: 1.56, all severity TBI: 1.71, moderate-severe TBI: 1.83) (*Gardner et al., 2018*).

This group also investigated associations between TBI severity, loss of consciousness, and dementia. Their study included 178,779 patients diagnosed with a TBI in the Veterans Health Administration health care system and 178,779 patients in a propensity-matched comparison group, none of whom had dementia at baseline. The prevalence of eventual dementia diagnosis was relatively low in both cohorts but was higher in those with TBI than in those without TBI (6.1 vs 2.6 percent). Adjusted hazard ratios for dementia were 2.36 for mTBI without LOC, 2.51 for mTBI with LOC, and 3.77 for moderate to severe TBI (*Barnes et al., 2018*). Characterization of the relationship between TBI and dementia-related diagnoses may lead to increased awareness of the risk of military service-connected TBI and dementia that may develop later in life.

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REFERENCES:

Barnes, D. E., Byers, A. L., Gardner, R. C., Seal, K. H., Boscardin, W. J., & Yaffe, K. (2018). Association of Mild Traumatic Brain Injury With and Without Loss of Consciousness With Dementia in US Military Veterans. *JAMA Neurol*, 75(9), 1055-1061. doi:10.1001/jamaneurol.2018.0815

Gardner, R. C., Byers, A. L., Barnes, D. E., Li, Y., Boscardin, J., & Yaffe, K. (2018). Mild TBI and risk of Parkinson disease: A Chronic Effects of Neurotrauma Consortium Study. *Neurology*, 90(20), e1771-e1779. doi:10.1212/WNL.0000000000005522

