

Traumatic brain injury as a risk factor for dementia

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Contact: emezzalana@bwh.harvard.edu**Introduction:**

The Centers for Disease Control and Prevention (CDC) reports that there were 2.87 million cases of traumatic brain injury (TBI) in the United States in 2014, 69 million worldwide. Some studies suggest a connection between TBI and increased risk of dementia, but it remains unclear whether the risk increases with age and TBI severity. Given our aging population, it is essential to better characterize the link between TBI and dementia.

Methods:

We conducted a retrospective cohort study of two major academic medical centers for years 2000-2015. We identified all patients with TBI, aged 45 and older. Variables included age, TBI severity, pre-existing dementia, dementia diagnosed after TBI, years to dementia, and follow-up time. TBI severity was determined by head/neck AIS score, using ICD-PIC software. Mild TBI was defined as AIS 0-2, and Moderate/Severe as AIS 3-6. Analysis was done in R.v.3.0.1 software.

Results:

Overall, there were 14,199 patients with TBI, of which 9,938 (70%) were mild and 4,261 (30%) were moderate/severe. Mean age was 70.5 (± 14.0). There were 1,422 cases (10%) of pre-existing dementia, and 850 (6%) cases of dementia diagnosed after TBI. The mean follow-up time was 1,129 ($\pm 1,474$) days.

The 75-84 age group had the highest incidence of TBI (28%). When compared by age group and TBI severity, the proportion of moderate/severe TBI increased with increasing age. The proportion of pre-existing dementia increased with age, as expected. Notably, there is increased incidence of dementia after TBI in patients aged 65 and older (7-10%, $p < 0.001$). There was no observed effect of TBI severity on the risk of dementia after TBI.

Conclusions:

Our results indicate that TBI is a risk factor for the development of dementia, especially in patients aged 65 and older. Given the global public health burden of these two diseases it is critical to develop effective TBI primary prevention strategies.

Key messages:

- TBI is a risk factor for the development of dementia.
- Need for public health measures to mitigate the risk of TBI in the patient population 65 and older.