

Traumatic brain injury associates with an earlier onset in sporadic frontotemporal dementia

Helmi Soppela, Johanna Krüger, Päivi Hartikainen, Anne Koivisto, Annakaisa Haapasalo, Barbara Borroni, Anne Remes, Kasper Katisko, Eino Solje

State of the art: Currently, there are few studies considering possible modifiable risk factors of frontotemporal dementia (FTD). The aim of this retrospective case-control study was to examine whether a history of traumatic brain injury (TBI) associates with a diagnosis of FTD or influences the clinical phenotype or onset age in FTD patients.

Methodology: The prevalence of prior TBI was compared between FTD patients (N=218), age and sex-matched AD patients (N=214) and healthy controls (HC; N=100). The patients were categorized to the TBI+ group if they had suffered from TBI during lifetime, based on the individual's medical records. We also assessed the possible associations of TBI with age of disease onset and duration in the whole FTD group and separately in the sporadic and genetic FTD groups.

Results: The FTD group had the highest prevalence of previous TBI (19.3%) when compared to the AD group (13.1 %, $p=0.050$) or the HC group (12 %, $p=0.108$, not significant). A history of TBI was associated with the sporadic FTD cases more often than with patients carrying the causal *C9orf72* repeat expansion mutation ($p=0.003$). Furthermore, comparison of the TBI+ and TBI- FTD groups showed an association between previous TBI and an earlier age of onset in the FTD group ($B=3.066$, $p=0.010$).

Conclusion: A history of TBI seems be associated with sporadic FTD and with an earlier disease onset. This study suggests TBI as a triggering factor for the neurodegenerative processes in FTD. However, further research is needed to understand the precise underlying mechanisms.

Conflicts of interest

N/A