

## Lay Summary

**BRAIN UK Ref: 16/004**

### Neuropathological Characterization of 'CTE'

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Traumatic brain injury (TBI) causes unexplained brain disease, which gets worse over time (called degeneration). This contributes to 5-10% of all dementia cases. This is a problem because we don't have a way of defining this degenerative disease after a brain injury as a separate disease. Also, we don't know how this degeneration happens. So we want to develop the criteria to diagnose this disorder and see how it is related to other degenerative brain diseases such as Alzheimers.

We also want to look at the chemical make up of TBI and the genetic footprint in cases of degeneration in the brain after a TBI. We particularly want to look at the time scale and how inflammation may add to the degeneration. If we do this this could change our understanding of long-term exposure to TBI as well as opening up new ways of developing treatments for TBI.

To do this we want to bring together the international research community to develop collective intelligence and to work collaboratively. We will use a combination of face to face and advanced digital pathology 'round microscope' techniques to enable us to review case material quickly and to validate criteria. In time this archive will be available for the wider research community.

#### Publications:

Date	Publication title
2019	<a href="#">Chronic traumatic encephalopathy is a common co-morbidity, but less frequent primary dementia in former soccer and rugby players.</a>
2019	<a href="#">Induction of a transmissible tau pathology by traumatic brain injury.</a>
2020	<a href="#">Tau immunophenotypes in chronic traumatic encephalopathy recapitulate those of ageing and Alzheimer's disease</a>
2020	<a href="#">Astroglial tau pathology alone preferentially concentrates at sulcal depths in chronic traumatic encephalopathy neuropathologic change</a>
2021	<a href="#">COLlaborative Neuropathology NETwork Characterizing ouTcomes of TBI (CONNECT-TBI)</a>