

Lay Summary

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Chronic traumatic encephalopathy (CTE) pathology in the brains of boxers

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Dementia pugilistica or “punchdrunk syndrome” is a neurodegenerative disease associated with the repetitive traumatic brain injuries which occur in boxing. Patients present with behavioural changes, aggression, and ultimately dementia or Parkinsonism. However, it is now appreciated that a considerably larger population of individuals are affected by this condition, particularly athletes and military veterans. The more general term now used for the condition is chronic traumatic encephalopathy (CTE). The seminal study on dementia pugilistica was published in 1973 on a series of boxers in the Corsellis collection. We recently accessed these cases and confirmed that they show the distinctive pathology now associated with CTE. The aim of this study is to look in more detail at the changes that occur in these brains, particularly around the blood vessels, to gain some insight in to the pathological mechanisms that are involved. We will be using a newly developed technique, called CLARITY, that allows the tissue to be made transparent and reveal its detailed 3D structure. Ultimately we hope to better understand the long-term effects of traumatic brain injury on the brain.