

CHRONIC TRAUMATIC ENCEPHALOPATHY: A CASE REPORT

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Introduction

Chronic Traumatic Encephalopathy (CTE) is a neurodegenerative tauopathy resulting from repetitive head trauma, commonly observed in athletes from contact sports. Clinically, it manifests with cognitive decline, mood disturbances, and motor symptoms. Diagnosis during life is based on clinical criteria supported by neuroimaging and cerebrospinal fluid (CSF) biomarkers, while definitive diagnosis requires post-mortem neuropathological examination.

Case presentation

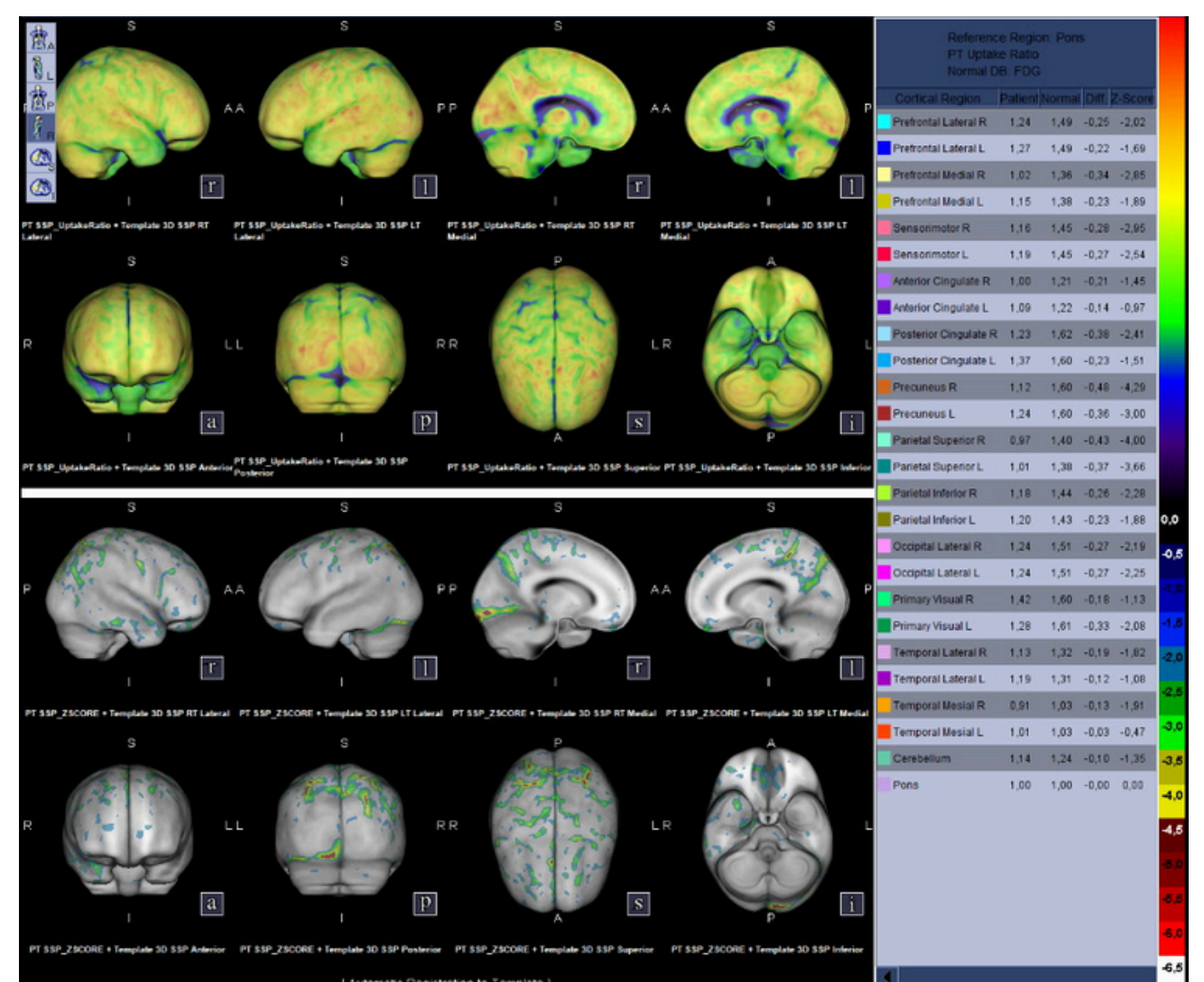
A 77-year-old male, former amateur boxer, was evaluated at the Neurology Department of the Policlinico of Foggia for a 7-month history of increasing short-term memory deficits and episodes of spatiotemporal disorientation. Neurocognitive assessment revealed a possible amnesic Mild Cognitive Impairment (MCI), characterized by objective memory deficits without significant impact on daily functioning. Brain MRI showed mild diffuse cortical atrophy. FDG-PET demonstrated bilateral prefrontal and parietal hypometabolism, more pronounced on the right, and reduced metabolism in the right posterior cingulate gyrus. CSF analysis revealed elevated phosphorylated tau (89.10 pg/mL) and hTau Ag (802 pg/mL), consistent with tau-related neurodegeneration.

Diagnosis

According to the National Institute of Neurological Disorders and Stroke (NINDS) consensus, probable CTE requires: a history of repetitive head trauma, progressive cognitive impairment (e.g., memory and executive dysfunction), at least one neuropsychiatric symptom (e.g., depression, apathy), no other condition fully explaining the clinical picture. Supportive findings include frontotemporal hypometabolism on 18-FDG PET and elevated tau levels in CSF.

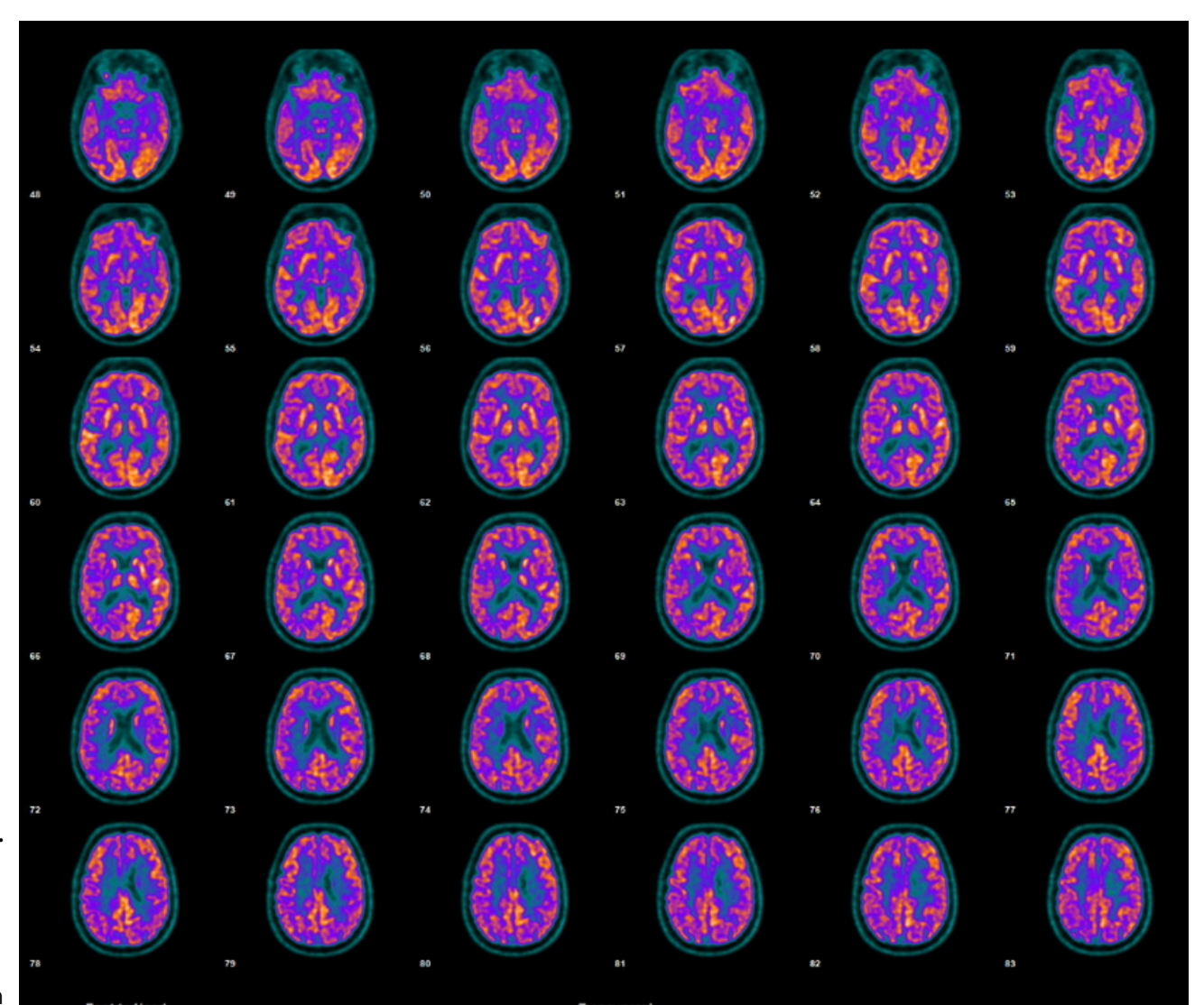
NINDS 2021 Consensus Criteria

Exposure	Substantial exposure to repetitive head impacts
Core clinical features	Cognitive impairment, Neurobehavioral dysregulation
Clinical course	Progressive and persistent symptoms
Minimum duration	Symptoms present for ≥ 12 months.
Exclusion	Symptoms not fully explained by another neurological, psychiatric, or medical condition



NINDS 2021 - TES Supportive Finding.

FDG-PET	Hypometabolism mainly in frontal and temporal cortices
Structural MRI	Frontotemporal and/or medial temporal atrophy; microbleeds
CSF biomarkers	\uparrow total tau, \uparrow p-tau, \uparrow neurofilament light (NfL).
Plasma/serum biomarkers	Plasma tau, p-tau: variable findings; NfL elevation correlates with repetitive head impact exposure.



Conclusion

This patient meets the clinical criteria for probable CTE, supported by a history of repetitive head trauma, progressive cognitive decline, neuroimaging findings, and elevated CSF tau levels. While definitive diagnosis remains post-mortem, this case underscores the importance of early recognition and monitoring of CTE in individuals with a history of contact sports.

Mez J, Daneshvar DH, Abdolmohammadi B, et al. - Duration of American football play and chronic traumatic encephalopathy. - Ann Neurol - 2020
 McKee AC, Cairns NJ, Dickson DW, et al. - The first NINDS/NIBIB consensus meeting to define neuropathological criteria for the diagnosis of chronic traumatic encephalopathy. Acta Neuropathol. - 2016
 McKee AC, Stern RA, Nowinski CJ, - The spectrum of disease in Brain. - 2013