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Authors

Sajjadi, S Ahmad
Corrada-Bravo, Maria
Robinson, John
et al.

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Neuropathological and neuropsychological associations in hippocampal sclerosis of ageing; the 90+ study (P1.183)

S. Ahmad Sajjadi, Maria Corrada, John Robinson, Ronald Kim, John Trojanowski, Claudia Kawas

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Abstract

Objective: To identify the relationship between hippocampal sclerosis (HS) and other common degenerative brain pathologies and to identify neuropsychological impairments associated with HS

Background: Hippocampal sclerosis of ageing is a common neuropathological finding in the oldest-old who die with dementia. HS has a strong association with dementia (5 times stronger than Alzheimer's disease (AD)) and during life, is commonly misdiagnosed as AD. Previous studies have consistently shown a relationship between TDP-43 and HS and conflicting associations between HS and other degenerative pathologies.

Design/Methods: We studied 143 participants from the 90+ study, a population based study of people aged 90 and older (the oldest-old). Neuropathology data was available for HS, Alzheimer's disease, TDP-43, Lewy body disease (LBD), arteriolosclerosis, atherosclerosis, and infarcts. We used Neuropsychological data closest to onset of cognitive impairment or death (for cognitively normal participants). We used regression analyses to study the associations between HS and other neuropathologies and to study the effect of neuropathologies on global and domain specific cognitive measures.

Results: 96% (21/22) of participants with HS had dementia at death. In the whole sample, there was no difference in demographics between those with and without HS. Logistic regressions revealed TDP-43 (OR: 20.1, $p<0.001$) and LBD (OR: 8.7, $p=0.007$) were associated with HS and arteriolosclerosis (OR: 2.65, $p=0.08$) trended toward significance. However, there was no association between HS and AD (OR: 1.1, $p=0.6$). Multiple linear regression revealed that HS, TDP-43 and AD, were independently associated with lower scores on a global cognitive measure (3MS). Linear regressions also revealed associations between HS and TDP-43 with impaired verbal memory and semantic knowledge, and between AD and construction apraxia.

Conclusions: In the oldest-old, HS is associated with TDP-43 and LBD but not AD. Differential involvement of cognitive domains in HS and TDP-43 vs. AD might help diagnosing HS during life.

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