

## **A Case of Dissociation Between Neuropathology and Cognition in the Oldest-old: A Protective Role of APOE2**

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**Objective:** To describe a dissociation between severe Alzheimer's disease (AD) neuropathology with normal cognition in a woman with Apolipoprotein E  $\epsilon 2/\epsilon 2$  (APOE2/2) genotype.

**Design:** Case report from a community-based prospective study of people 90 years or older (*The 90+ Study*).

**Participant:** A 92 year-old non-demented woman (JB) with an APOE2/2 genotype who lived independently without significant cognitive or functional loss and was a participant in The 90+ Autopsy Study. She died in December 2004 and her brain was examined post-mortem.

**Main outcome measures:** Neurological examination and a battery of neuropsychological tests were performed 6 months and 1 month before death. Neuropathological examination included Braak and Braak staging for senile plaques (SP) and neurofibrillary tangles (NFT).

**Results:** Neuropathological examination of her brain revealed advanced senile plaque and neurofibrillary tangle pathology consistent with a high likelihood of AD. On clinical evaluation, JB was non-demented with only mild cognitive deficits.

**Conclusions:** Her APOE genotype may have contributed to her maintenance of cognition despite advanced AD neuropathology. This case suggests that the APOE2 isoform may have a protective effect against cognitive decline from AD that may be independent from SPs and NFTs.