**MAPT rs242557 variant is associated with hippocampus tau uptake on ¹⁸F-AV-1451 PET in non-demented elders**

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**Abstract**

**Background:** The microtubule-associated protein tau gene rs242557 variant is associated with multiple tauopathies and dementia. This study investigated whether it was correlated with brain tau-PET uptake in non-demented elders.

**Method:** Ninety non-demented elders were identified from the Alzheimer’s Disease Neuroimaging Initiative cohort. We compared standardized uptake value ratios of tau-PET tracer ¹⁸F-AV-1451 between rs242557 variant carriers and non-carriers in 25 regions of interest.

**Result:** The minor allele A was associated with increased hippocampus ¹⁸F-AV-1451 uptake in non-demented elders (left: \( \beta = 0.111 \), Bonferroni corrected \( p = 0.035 \); right: \( \beta = 0.103 \), Bonferroni corrected \( p = 0.031 \)). Aβ-positive participants (left: \( \beta = 0.206 \), Bonferroni corrected \( p = 0.029 \); right: \( \beta = 0.198 \), Bonferroni corrected \( p = 0.035 \)) and APOE ε4 non-carriers (left: \( \beta = 0.140 \), Bonferroni corrected \( p = 0.006 \); right: \( \beta = 0.134 \), Bonferroni corrected \( p = 0.004 \)) exhibited approximately the same findings in hippocampus.

**Conclusion:** Considering no obvious associations in other regions, we confirmed the significant correlation of MAPT rs242557 risk variant with increased hippocampus tau deposition in non-demented elders. With higher magnitude signals in the hippocampus that is more likely to be uniquely affected in AD, the tau PET ligand ¹⁸F-AV-1451 seemed to possess a specific binding property for AD-like tau pathology.
FIGURE 1

A. Left hippocampus (non-demented elders)

B. Right hippocampus (non-demented elders)

FIGURE 2

A. Left hippocampus (Aβ-positive group)

B. Right hippocampus (Aβ-positive group)

C. Left hippocampus (Aβ-negative group)

D. Right hippocampus (Aβ-negative group)
FIGURE 3

A. Left hippocampus (APOE ε4 non-carriers)

B. Right hippocampus (APOE ε4 non-carriers)

C. Left hippocampus (APOE ε4 carriers)

D. Right hippocampus (APOE ε4 carriers)