

Supplementary Material

Associations Between Sub-Threshold Amyloid- β Deposition, Cortical Volume, and Cognitive Function Modulated by *APOE* $\epsilon 4$ Carrier Status in Cognitively Normal Older Adults

Supplementary Methods

Neuropsychological evaluation

Cognitive status was assessed using neuropsychological testing at Yeouido St. Mary's Hospital, The Catholic University of Korea. Cognitive functions in all the subjects were assessed using the Korean version of the Consortium to Establish a Registry for Alzheimer's Disease (CERAD-K), which included verbal fluency (VF), the 15-item Boston Naming Test (BNT), MMSE-K, Word List Memory (WLM), Word List Recall (WLR), Word List Recognition (WLRc), Constructional Praxis (CP), and Constructional Recall (CR). The CERAD is a standardized clinical and neuropsychological assessment battery for the evaluation of patients with AD. The results were reviewed by a neuropsychologist to determine whether there was evidence of cognitive impairment.

The VF score is the number of animal names that the subject could name in one minute. The BNT scores ranged from 0 to 15 points. The MMSE-K score ranged from 0 to 30 points. The WLM scores ranged from 0 to 30 points. The WLR scores ranged from 0 to 10 points. The WLRc scores ranged from 0 to 10 points. The CP scores ranged from 0 to 11 points. The CR scores ranged from 0 to 11 points. The total memory domain scores ranged from 0 to 67 points. Finally, the total CERAD-K scores ranged from 0 to 100 points.

To evaluate executive function, we performed the Stroop task, which requires pre-directed reactions while suppressing the dominant response, such as letter reading and color reading conditions. In the current study, the Korean Color Word Stroop Test (K-CWST) was used. The subjects were requested to read the color of letters when letters were written in red, blue, yellow, and black colors within a limited time [1]. Additionally, participants carried out trail-making test B, which alternatively measures the time required to connect letters and numbers in the sequence. Finally, the VF test, the subdomain of the CERAD-K battery, counts the number of animals recalled within a minute.

APOE genotyping

DNA was isolated from blood using the QIAmp Blood DNA Maxi Kit protocol (Qiagen, Valencia, CA). Genotypes for two *APOE* SNPs, rs429358 (E*4) and rs7412 (E*2) were determined using TaqMan SNP genotyping assays (Applied Biosystems, Foster City, CA).

REFERENCES

- [1] Byeon H, Jin H, Cho S (2017) Development of Parkinson's disease dementia prediction model based on verbal memory, visuospatial memory, and executive function. *J Med Imaging Health Inform* **7**, 1517-1521.