432 – Correlation between regional brain volume and olfactory function in very mild amnestic patients

Tetsuo Kashibayashi, MD

Background & Aims: We aimed to determine neural correlates of olfactory detection and identification and analyze associations between cognitive function and olfactory identification or detection in very mild amnestic patients.

Methods: We recruited 70 patients with chief complaints of memory impairment diagnosed as amnestic mild cognitive impairment (MCI) or Alzheimer's disease (AD) with a clinical dementia rating of 0.5. Olfactory detection and identification were assessed using T&T olfactometry. A voxel-wise correlation analysis of gray matter volume and olfactometry scores was performed. We also analyzed correlations between neuropsychological results and olfactometry scores.

Results: A significant negative correlation was observed between detection scores and nucleus accumbens and left parahippocampal gyrus volumes and between identification scores and orbitofrontal, right frontal, and right anterior temporal cortex volumes ($p<0.001$). No significant correlation existed between detection and cognitive assessment scores. Identification score was significantly correlated with the Alzheimer's Disease Assessment Scale-Cognitive Part word recall score ($r=0.305$, $p=0.01$).

Conclusions: Olfactory detection and identification dysfunction were attributable to impairments in different regions in MCI and very early AD; the former was attributed to the olfactory circuit, while the latter to neocortices. The dysfunction of identification of olfactory information was associated with episodic memory in those patients.

https://doi.org/10.1017/S1041610220002859 Published online by Cambridge University Press