COGNITIVE AND NEUROPSYCHIATRIC CORRELATES OF MEDIAL TEMPORAL LOBE INTEGRITY IN PARKINSON'S DISEASE


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Introduction: Volumetric changes in the medial temporal lobe may be associated with some of the memory and neuropsychiatric correlates in Parkinson's disease (PD).

Aims: The current study investigated possible volumetric reductions of the amygdala and parahippocampal gyrus in patients with PD without cognitive impairment (PD-U), PD with mild cognitive impairment (PD-MCI), and PD with dementia (PD-D). The focus was to provide a preliminary assessment of volumetric differences of the amygdala and parahippocampal gyrus across the spectrum of PD psychopathology, and examine whether these volumetric reductions were related to neuropsychological and neuropsychiatric measures.

Methods: We carried out MRI volumetric studies in 5 patients with PD-U, 5 patients with PD-MCI, and 5 patients with PD-D.

Results: The general analysis of variance (ANOVA) showed a significant between group difference for the parahippocampal gyrus, but not the amygdala. Post hoc tests demonstrated that the differences were due to PD-D and PD-MCI, and PD-D and PD-U comparisons for the parahippocampal gyrus. The parahippocampal gyrus was further divided into the perirhinal cortex, entorhinal cortex and parahippocampal cortex. ANOVA indicated a significant between group difference for the perirhinal and entorhinal cortices, but not the parahippocampal cortex. The bilateral perirhinal and right entorhinal cortex volume significantly predicted the occurrence of neuropsychiatric symptoms in PD. Furthermore, the right entorhinal cortex volume was also a significant predictor of recall of memory performance in PD.

Conclusions: Parahippocampal gyrus atrophy precedes the onset of dementia in PD, and it might provide a presymptomatic marker for dementia risk.