



Neural correlates of focused attention in patients with mild Alzheimer' s disease

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ABSTRACT

Alzheimer' s Disease (AD) is characterized by an early and significant memory impairment, and progresses to affect other cognitive domains. Impairments in Focused Attention (FA) have been observed in patients diagnosed with mild AD. A functional magnetic resonance imaging (fMRI) Stroop paradigm with verbal responses was used to investigate the neural correlates of FA in AD patients. Twenty-one patients diagnosed with mild AD performed a verbal Stroop—fMRI paradigm. Colour words were printed in an incongruent ink colour. Series 1 consisted of four blocks " Read the word" followed by four blocks " Say the colour of the ink" ; Series 2 alternated between the two conditions. Functional data were analyzed using SPM5 to detect anatomical areas with significant signal intensity differences between the conditions. Within-group analyses of the colour minus word contrast yielded significant activation in the following left hemisphere regions: precentral gyrus, inferior frontal gyrus, fusiform gyrus and supplementary motor area ($p < 0.05$, uncorrected). Relative to cognitively normal older adults who underwent the same experimental task, Stroop performance was significantly worse in AD patients. The fMRI task yielded similar activated brain regions between the two groups. The use of verbal responses in this novel fMRI Stroop task avoids the confusion and memorizing of button locations seen with the manual response modality, allowing the neural correlates of FA to be investigated in AD patients.

KEYWORDS

fMRI; Focused Attention; Stroop; Alzheimer' s Disease

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