FRONTAL AND POSTERIOR CINGULATE METABOLIC IMPAIRMENT IN FRONTOTEMPORAL LOBE DEGENERATION WITH IMPAIRED AUTONOETIC CONSCIOUSNESS

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Introduction: Although memory dysfunction does not constitute a prominent feature of frontotemporal lobe degeneration (FTLD), there is evidence of specific difficulties with episodic memory in these patients.

Aims: The objective of the study was to explore the ability to consciously re-experience events (autonoetic consciousness) in FTLD and to relate it to the cerebral glucose metabolism of the patients. A related objective was to measure the ability to monitor memory performance.

Methods: Autonoetic consciousness was evaluated in 10 FTLD patients and 26 healthy controls by Remember responses during recognition memory. Accuracy of feeling-of-knowing judgments provided a measure of memory monitoring. Cerebral metabolism was assessed by means of FDG-PET measurements.

Results: As a group, FTLD patients demonstrated a decline of autonoetic consciousness (Remember responses), as well as a feeling-of-knowing accuracy at chance level. Good memory monitoring was correlated with high autonoetic consciousness in controls, but not in FTLD patients. While memory monitoring was impaired in most (nine) patients, a subgroup of five FTLD participants showed individual impairment of autonoetic consciousness. They specifically showed reduced metabolism in the anterior medial prefrontal cortex, the left dorsolateral prefrontal cortex (near the superior frontal sulcus), and the posterior cingulate (P < .05 FWE-corrected for multiple comparisons).

Conclusions: These findings were interpreted by considering the role of metabolically impaired brain regions in self-referential and autobiographical processes, suggesting that the difficulty of FTLD patients to consciously re-experience a past event may at least partly stem from deficient access to, and maintenance/use of information about self.