THE VULNERABILITY OF THE SUBCALLOSAL PART OF VENTROMEDIAL PREFRONTAL CORTEX IN FRONTOTEMPORAL LOBAR DEGENERATION AND ALZHEIMER'S DISEASE

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Introduction: Regions affected late in neurodegenerative disease are anatomically connected with regions that are affected early. The subcallosal part of the ventromedial prefrontal cortex (SMPC) becomes atrophied in dementia characterized either by initial temporal atrophy or by both temporal and frontal atrophy. This may be so because the SMPC has connections with dorsolateral cortex (DORS), orbitofrontal cortex (ORB), as well as the hippocampus.

Aim: We hypothesized that SMPC pathology could be explained by connectivity between (a) SMPC and frontal regions in dementia with initial frontal and temporal atrophy and (b) SMPC and hippocampus in dementias with initial temporal atrophy.

Method: Volumes of the abovementioned regions were manually calculated in 31 patients with frontotemporal lobar degeneration, 10 Alzheimer's dementia patients and 18 controls. Patients were classified as initial temporal atrophy only (DT) and both frontal and temporal atrophy (DF). Pearson’s r was calculated between the measured regions.

Results: Patients had significant atrophy in all regions, except DORS in DT.

In DT, SMPC correlated with hippocampus (r = 0.50 p = 0.015), but not DORS or ORB. Hippocampus also correlated with ORB (r = 0.44, p = 0.037) but not DORS. These findings agree with the fact that the SMPC and ORB, but not DORS, receive projections from the hippocampus.

In DF, SMPC correlated with ORB (r = 0.60, p = 0.004) and DORS (r = 0.45, p = 0.04), but not the hippocampus.

Conclusion: The SMPC is vulnerable to pathology originating both from frontal and temporal regions in FTLD and AD.