

## **Cortical atrophy and altered functional connectivity in the salience network in bvFTD**

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### **State of Art**

The behavioral variant of frontotemporal dementia (bvFTD) is a neurodegenerative disease mainly affecting frontal and anterior temporal lobes as well as the anterior insula. Pathology initially occurs in the salience network (SN, also called the ventral attention network VAN) centered in the dorsal anterior cingulate (dACC) and the anterior insula (AI) which is known to be involved in social-emotional processing.

### **Methodology**

We investigated regional cortical atrophy and resting-state functional connectivity (rsFC) in 19 bvFTD patients and 27 controls. Dual regression and seed-based analysis (SBA) of BOLD signal in fMRI was performed using FSL 6.0.3, and cortical thickness calculated from T1 images using Freesurfer 6.

### **Results**

Patients displayed cortical atrophy in large areas of the frontal, temporal and parietal lobes. Dual regression revealed reduced rsFC between the VAN and (a) posterior cingulate, precuneus, occipital, hippocampus, amygdala, lingual gyrus on the right, and (b) postcentral and supramarginal gyri, thalamus, planum polare and insula on the left.

The SBA demonstrated reduced rsFC within the VAN between (a) right ventral AI with right and left dACC and left dorsal AI (b) right dorsal AI with right dACC and left ventral (c) left dACC with right dACC.

### **Conclusion**

Consistent with existing literature, we found reduced rsFC both between the VAN and other brain areas in bvFTD, and between key nodes within the VAN. Interestingly the left and right dACC displayed reduced connectivity but not cortical atrophy in patients, suggesting that rsFC may be an earlier biomarker of bvFTD pathology than cortical atrophy.

### **Conflicts of interest**

N/A