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Thursday

Altered fronto-temporo-striatal brain metabolism in behavioral variant frontotemporal dementia and primary psychiatric diseases

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State of the art
Behavioral disturbances and brain metabolic patterns are overlapping between behavioral-variant frontotemporal dementia (bvFTD) and primary psychiatric disorders (PPD) hampering their diagnostic distinction. Voxel-wise comparisons of brain metabolism can help to identify specific functionally affected brain areas. We aimed to investigate brain metabolism in bvFTD and PPD and its associations with neuropsychiatric symptoms and (social)cognition.
Methodology
28 bvFTD patients (age;63±7.9, 38% females), 35 PPD with frontal symptoms (age;60±5.8, 23% females), and 16 controls (age;66±5, 38% females) with available MRI, [18F]FDG-PET-scans and neuropsychiatric data were included. [18F]FDG-PET images were normalized for body weight and injected activity using PPET to obtain standardized uptake values and images were warped and smoothed (8mm FWHM) using SPM12. Voxel-wise comparisons were performed in a priori defined frontotemporal-striatal-regions using proportional scaling ($p<0.001$UNCORRECTED and $p<0.05$FWE), and regression analysis was performed to assess the association between brain metabolism and neuropsychiatric data/(social)cognition.
Results
Compared to controls, bvFTD patients showed lower metabolism in the dorsal-anterior-cingulate-cortex (dACC) ($p<0.05$FWE), orbital and dorsolateral-prefrontal-cortex, temporal pole and caudate ($p<0.001$UNCORRECTED) whereas PPD only showed lower metabolism in the orbitofrontal-cortex compared to controls ($p<0.001$UNCORRECTED). In bvFTD and PPD frontotemporal hypometabolism was associated with worse facial emotion recognition, increased compulsiveness and executive dysfunctioning ($p<0.001$UNCORRECTED).
Conclusion
Our findings show distinct metabolic patterns between bvFTD, PPD and controls with the dACC as key hypometabolic region in bvFTD. The severity of fronto-temporo-striatal hypometabolism was related to worse neuropsychiatric symptoms and (social)cognition. Our study implicates that dACC hypometabolism in bvFTD might contribute to distinction from PPD in clinical practice.

Conflicts of interest

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Competing interest
The authors report no competing interests.