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Thursday

A Longitudinal Analysis of Regional Cerebral Perfusion in Genetic Frontotemporal Dementia: Results from GENFI

Maurice Pasternak, Saira Mirza, Nicholas Luciw, Henk Mutsaerts, David Thomas, Martina Bocchetta, Enrico de Vita, Maria Carmela Tartaglia, Sara Mitchell, Sandra Black, Morris Freedman, David Tang-Wai, Ekaterina Rogaeva, John van Swieten, Robert Jr. Laforce, Fabrizio Tagliavini, Barbara Borroni, Daniela Galimberti, James Rowe, Caroline Graff, Elizabeth Finger, Sandro Sorbi, Alexandre de Mendonça, Christopher Butler, Alexander Gerhard, Raquel Sanchez-Valle, Fermin Moreno, Matthis Synofzik, Rik Vandenberghe, Simon Ducharme, Johannes Levin, Adrian Danek, Markus Otto, Isabel Santana, Bradley MacIntosh, John Rohrer, Mario Masellis

State of the art: Frontotemporal dementia is a group of clinically and pathologically heterogenous disorders involving progressive decline in behavior, language, cognitive and motor functions. Many cases are due to autosomal dominant mutations in one of three genes: *C9orf72*, *GRN*, and *MAPT*. Presymptomatic carriers harboring these mutations represent a key group for the study of biomarkers, including cerebral blood flow (CBF) measured by arterial spin labeling MRI. Herein, we investigated changes in CBF over time in presymptomatic FTD mutation carriers versus healthy non-carriers from the same families.

Methodology: Arterial spin labeling and structural MRI images were processed as outlined previously (Mutsaerts et al. Brain 2019; 142 e28) to produce perfusion volumes. Mean CBF values from regions of interest based on the AAL2 atlas were analysed using mixed effects linear models, contrasting presymptomatic carriers to healthy controls. Analyses were carried out separately for the *C9orf72*, *GRN*, and *MAPT* groups.

Results: Decreases in CBF over time were more prominent in presymptomatic carriers relative to non-carriers in several regions, with the *C9orf72* group demonstrating changes in the frontal lobe in a symmetric manner, while the *GRN* group showed asymmetric regions impacted across the temporal and parietal lobes, as well as the right insula. Presymptomatic *MAPT* individuals did not show any significant changes in any region.

Conclusion: Regional reductions in CBF over time holds great promise as a biomarker for investigating genetic FTD at the presymptomatic stage and in differentiating disease trajectory among the different genetic groups of FTD.

Conflicts of interest

N/A