p-070

Thursday

7T imaging in progressive supranuclear palsy and behavioural variant frontotemporal dementia

Michelle Naessens, Thomas E Cope, Alexander G Murley, Catarina Rua, Laura E Hughes, Alistair Perry, Maura Malpetti, Rong Ye, Chris Rodgers, P. Simon Jones, James Benedict Rowe

Background: Progressive supranuclear palsy (PSP) and behavioural variant frontotemporal dementia (bvFTD) are clinical syndromes associated with frontotemporal lobar degeneration (FTLD) with similar cognitive and behavioural changes. This study compared grey and white matter atrophy between patients with bvFTD, PSP, and healthy controls using 7T voxel-based morphometry.

Methods: 23 Healthy controls, 25 individuals with probable PSP, and 19 individuals with probable bvFTD underwent structural imaging at ultra-high field (7T). Grey and white matter volumes were compared using independent two-sample t-tests. Significant effects were identified using cluster-level statistics ($p<0.05$, FWE corrected for multiple comparisons) above a height threshold of $p<0.001$ (uncorrected).

Results:
Compared to controls, patients with PSP and bvFTD show significant atrophy of the cingulate gyrus, frontal gyri, and the supplementary motor cortex with the parietal and especially occipital lobe being spared ($p <0.05$, FWE). Patients with PSP show additional white matter atrophy of the brainstem and basal ganglia ($p <0.05$, FWE). Compared to PSP, patients with bvFTD show more grey matter atrophy in the inferior frontal gyrus, inferior temporal gyrus, temporal pole, and right insula. Patients with PSP show more white matter atrophy of the basal ganglia and brain stem compared to those with bvFTD ($p<0.001$, uncorrected).

Conclusion:
This is the first voxel-based morphometry study comparing bvFTD and PSP at ultra-high field, with higher resolution imaging than previous studies. Although both classified as syndromes associated with FTLD, patients with bvFTD and PSP show both specific and complementary patterns of atrophy compared to those of healthy controls and each other.

Conflicts of interest

I have no conflicts of interest to disclose