

Posterior cerebral changes in ALS: Occipital and parietal pathology.

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Background: ALS is widely recognised as multi-system disorder with extensive motor and extra-motor involvement. The objective of this study is the multiparametric characterisation of posterior cerebral pathology in ALS. Abstracts ENCALS meeting 2019 15-17 May Tours

Methods: Eighty-five patients and 76 healthy controls were enrolled into a prospective neuroimaging study. Whole-brain and region of interest grey and white matter analyses were performed assessing regional brain volumes and indices of white matter integrity; fractional anisotropy (FA), axial diffusivity (AD) and radial diffusivity (RD).

Results: Whole brain analyses revealed extensive extra-motor grey and white matter pathology. Region of interest analyses highlighted additional grey matter volume reductions in parietal and occipital areas. Significantly FA reductions and increased RD were observed in both occipital and parietal regions whereas increased AD was detected in the parietal lobes.

Conclusions: Extra-motor pathology in ALS is not confined to frontal and temporal regions, but includes occipital and parietal brain regions. The imaging profile of extra-motor regions is consistent with recent neuropathology studies. The characterisation of extra-motor involvement in ALS has implications for individualised patient care, caregiver support and the development of novel biomarkers.