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3T T2* MRI DISTINGUISHES MS FROM MICROANGIOPATHIC LESIONS

Niraj Mistry,¹ Rasha Abdel-Fahim,² Amal Samaraweera,² Olivier Mougin,³ Emma Tallantyre,⁴ Christopher Tench,² Tim Jaspan,¹ Paul Morgan,¹ Nikos Evangelou². ¹Nottingham University Hospitals NHS Trust; ²Division of Clinical Neuroscience, University of Nottingham; ³Sir Peter Mansfield Magnetic Resonance Centre, University of Nottingham; ⁴University Hospital of Wales, Cardiff

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Background White matter lesions are frequently detected using brain MRI performed for various indications. Most are microangiopathic but demyelination, including multiple sclerosis, is an important cause and conventional MRI cannot always distinguish between these pathologies. The proportion of lesions with a central vein on 7T T2*-weighted MRI prospectively distinguishes demyelination from microangiopathic white matter lesions.

Objective To test whether 3T T2*-weighted MRI can differentiate multiple sclerosis patients from patients with microangiopathic brain lesions.

Methods Forty patients were studied. Initially a test cohort of 10 patients with multiple sclerosis and 10 patients with microangiopathic white matter lesions underwent brain 3T MRI. Anonymised scans were analysed blind to clinical data, and simple diagnostic rules were devised, which were applied to a validation cohort of 20 patients (13 with multiple sclerosis and 7 with microangiopathic lesions).

Results Within the test cohort, all patients with multiple sclerosis had central veins visible in >45% of lesions, while the others all had central veins visible in <45% of lesions. By applying diagnostic rules to the validation cohort, all 20 patients were correctly categorised.

Conclusion T2*-weighted 3T MRI distinguishes multiple sclerosis from microangiopathic brain white matter lesions. Clinical application of this technique could supplement existing diagnostic algorithms.