***A multicentre audit of the use of MRI in multiple sclerosis***

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**Introduction:** Variations in the use of magnetic resonance imaging (MRI) in the management of multiple sclerosis (MS) affects patient care and service design. International consensus guidelines exist for the use of MRI in MS, but care has not been systematically assessed in the United Kingdom previously.

**Objectives:** To compare contemporary use of MRI in MS in the UK with consensus guidelines.

**Methods:** We audited the use of MRI in MS, using clinical and radiological data from 2567 consecutive clinic attendees in 25 UK MS centres.

**Results:** Most MRI scans are performed within ten years of diagnosis. The most common scan indications were routine monitoring (44.7%), and recent clinical relapse (20.3%). The mean inter-scan interval varied by centre from 12 to 32 months, a wide variation in practice. Detection of one new MS lesion on the routine monitoring brain scans was associated with 32.1% of patients subsequently changing disease-modifying treatment (DMT) at next clinical review and 56.2% when ⩾2 new lesions were reported. Overall, 12.5 routine monitoring brain scans were performed for one patient's DMT to be altered.

Spinal imaging was included in half of routine monitoring scans but had no impact on DMT decision-making (change in DMT 8.2% vs. 7.9%, p=0.954). Neither did it have any impact on the detection of radiological dissemination in time for diagnostic scans. For routine monitoring, 17.6% of scans where gadolinium was administered showed enhancement, but gadolinium enhancement was the only evidence of

radiological disease activity in just 8.6% of such scans. When scans were prompted by recent clinical relapse, these results were 27.3% and 2.8% respectively.

Only 53.8% of patients requiring progressive multifocal leukoencephalopathy (PML) surveillance were scanned at the frequency recommended in consensus guidelines. This is concerning given the improvement in survival associated with asymptomatic radiological detection of PML and that it has no proven treatment.

**Conclusions:** The availability of DMT for all stages of MS will cause additional MRI utilisation. We recommend standardising MRI protocols for diagnostic and monitoring scans to improve efficiency; restricting use of spinal and post-gadolinium sequences where it does not contribute to clinical decision making; and using audit to improve compliance with PML monitoring.

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