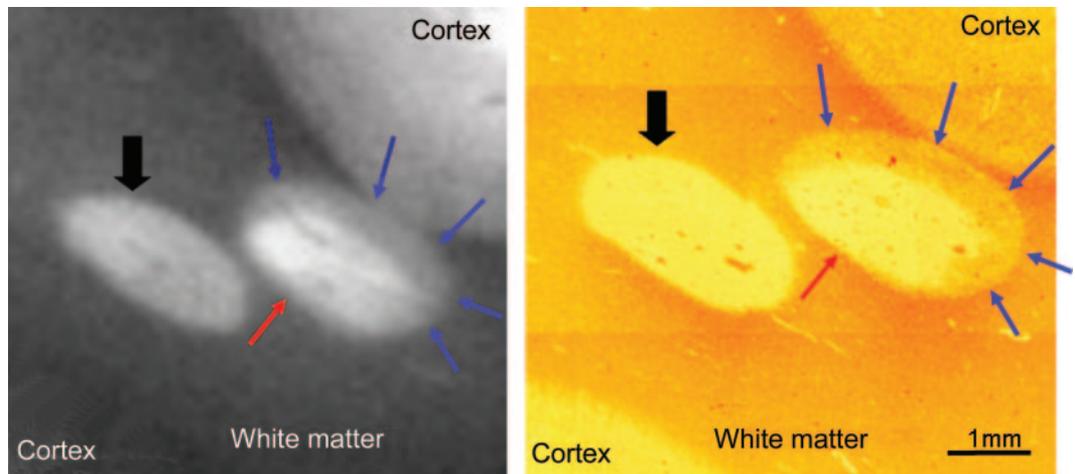


Direct visualization of remyelination in multiple sclerosis using T2-weighted high-field MRI

Figure Demyelinated (block arrow) and partially remyelinated (red arrow = demyelinated; blue arrows = remyelinated) lesions in postmortem multiple sclerosis brain



Spin-echo MRI (relaxation time = 3,000 msec, echo time = 60 msec, field of view = $30 \times 30 \text{ mm}^2$, matrix size 256×256 [$\sim 117 \mu\text{m}^2$ in-plane resolution], 16 averages). The corresponding histologic section was immunostained for myelin basic protein.

In multiple sclerosis (MS), remyelination may restore conduction and prevent axonal degeneration.¹ Ability to monitor remyelination in MS in vivo would benefit natural history studies and clinical trials of novel drugs.² High-field MRI ($\geq 3 \text{ T}$) is a promising tool to detect remyelination. We scanned a block of postmortem MS brain at 9.4 T. Histology revealed two areas of demyelination, and one showing remyelination. These findings corresponded to distinct changes visible on the T2-weighted MRI (figure). As human high-field MRI systems become increasingly widespread, remyelination in patients with MS may become detectable on T2-weighted scans.

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Supported by the Wellcome Trust (grant 075941) and the Multiple Sclerosis Society of Great Britain & Northern Ireland.

Disclosure: The authors report no disclosures.

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1. Rodriguez M. Effectors of demyelination and remyelination in the CNS: implications for multiple sclerosis. *Brain Pathol* 2007;17:219–229.
2. Zhao C, Zawadzka M, Roulois AJA, Bruce CC, Franklin RJM. Promoting remyelination in multiple sclerosis by endogenous adult neural stem/precursor cells: Defining cellular targets. *J Neurol Sci* 2008;265:12–16.

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Neurology 2009;72;472
DOI 10.1212/01.wnl.0000341878.80395.39

This information is current as of February 2, 2009

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