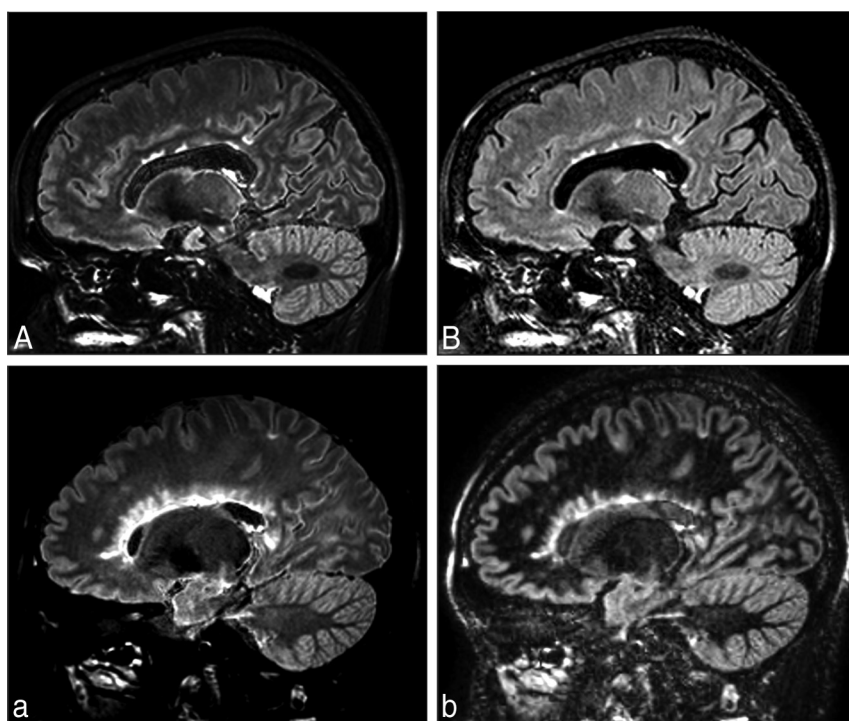


**ON-LINE FIG 1.** T2 (A), FLAIR<sup>2</sup> (B), and DIR (C) show different juxtacortical and mixed GM-WM lesions in a patient with relapsing-remitting MS (a 48-year-old woman). While the appearance of CSF on T2-weighted imaging hampers the identification of these lesions, low SNR and lower CNR between the cortical GM and lesions impede lesion detection on DIR. In comparison, FLAIR<sup>2</sup> exhibits excellent SNR and CNR among GM, WM, and lesion tissue. (FLAIR was acquired within 6 minutes and 54 seconds at  $1 \times 0.87 \times 1 \text{ mm}^3$  spatial resolution with non-overcontiguous sections, reconstructed to  $1 \text{ mm}^3$  isotropic). T2 acquisition with the same spatial resolution took 5 minutes and 30 seconds.



**ON-LINE FIG 2.** FLAIR<sup>2</sup> in comparison with more conventional MS lesion imaging in 2 different patients. An intracortical lesion is seen on FLAIR<sup>2</sup> (A) and FLAIR (B) in a patient with relapsing-remitting MS (a 46-year-old woman). Usually, partial volume effects due to CSF may impede lesion identification in this region. The improved CNR helps classify lesions as leuko- or intracortical (voxel size =  $1.0 \times 1.0 \times 1.6 \text{ mm}^3$  acquired,  $0.51 \text{ mm}^3$  reconstructed). In another patient (a 23-year-old woman), a juxtacortical/leukocortical lesion is seen on FLAIR<sup>2</sup> (a), which presents only weakly on DIR (b). Furthermore, DIR presents bright areas in the frontal cortex. These, however, may be false-positive lesions because no such contrast changes indicative of lesion tissue are seen on FLAIR<sup>2</sup>. (FLAIR<sup>2</sup> was acquired at  $0.8 \times 0.8 \times 1.6 \text{ mm}^3$  and reconstructed to  $0.51 \text{ mm}^3$  isotropic). Acquisition times were 6 minutes and 16 seconds for FLAIR and 3 minutes and 33 seconds for T2. DIR was acquired as described previously at  $1 \times 2 \text{ mm}^3$  and reconstructed to  $1 \text{ mm}^3$ .