Double Inversion Recovery (DIR) @3T in MS

Known histopathological abundance of cortical lesions in MS however conventional MRI sensitivity is low. Improved at 3T with higher acute and chronic lesion load detection.

DIR improves cortical, juxtacortical, white matter and infratentorial lesion detection.

Approximately 1/3 of patients referred will demonstrate more lesions on DIR than other sequences. Most of these will be cortical or juxtacortical. DIR is as accurate as conventional sequences combined. No loss of specificity. DIR has better lesion contrast.

**Fig. 1** (left) Demonstrates the high contrast of lesions on DIR even when cavitated.

**Fig. 2** (below left) Demonstrates the high contrast of DIR cortical/juxtacortical lesions.

**Fig. 3** (below) Demonstrates the high contrast of an infratentorial lesion on DIR.

2015 Update Spinal MR sequences in Multiple Sclerosis

2015 Revised Recommendations of the CMSC Task Force for a Standardized MRI Protocol and Clinical Guidelines for the Diagnosis and Follow-up of Multiple Sclerosis Committee spinal cord MRI protocol

- sagittal T2-weighted and
- proton density, short time inversion recovery (STIR) or phase sensitive inversion recovery (PSIR)
- axial T2- or T2* (GRE)-weighted through suspicious lesions, and, in some cases,
- post-contrast gadolinium-enhanced T1-weighted imaging

- In a recent evaluation Proton Density (FSE) imaging detected a greater number of lesions (n=181) compared to T2-FSE imaging (n=137, P<0.001). Fifteen patients (19%) with abnormal proton density-FSE imaging had normal T2-FSE imaging; no patient with abnormal T2-FSE imaging had normal proton density-FSE imaging. Proton density had greater lesion-contrast-to-noise ratio.

Figure 1: (a) Sagittal PD-FSE imaging demonstrates a lesion at C2 (black arrow) and C4 (white arrow). (b) Sagittal T2-FSE imaging demonstrates the same C2 lesion (black arrow), but not the C4 lesion. (c) Axial GRE imaging confirms the C4 lesion (black arrow).

Chong A, Chandra R, Roberts E, Chua K, Stuckey S. Proton Density MRI increases detection of Cervical Spinal Cord Multiple Sclerosis Lesions compared to T2-weighted Fast Spin-Echo. AJNR In Press

Please note Direct Radiology routinely uses DIR and spinal PD or STIR sequences in MS.
Level 1, 149-153 Station Street Fairfield Vic 3078 P: 03 9489-8884  F: 03 9489-8887