Abstract Preview - Step 3/4

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**Topic:** 20. Imaging

**Title:** Iron deposits within new T2 lesions in patients with clinically isolated syndrome

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**Text:**

**Background and objective:** In early stages of multiple sclerosis (MS) iron deposits within focal T2 lesions may be associated with the progression of the disease. The aim of this study is to evaluate the association between iron deposit within new T2 lesions and some radiological and clinical measurements in patients with clinically isolated syndrome (CIS).

**Materials and methods:** 17 patients (9 women; median age, 31 years; EDSS range, [0, 4.5]; mean disease duration, 3.29 months) with CIS. Baseline and 12 months proton density (PD) and T2-weighted, and susceptibility weighted (SW) sequences were acquired on a 3.0T MRI.

Iron content within new T2 lesions at month-12 (M12) MRI was measured on filtered-phase SW images as the increase with regard to white matter values obtained from 17 healthy controls (15 women; median age, 35 years). Two regions of interest (ROI) were defined at M12 MRI: PD/T2 new lesion mask (ROI-1), and region with high iron content (ROI-2) within ROI-1. The measurements analyzed were: Fe increase per tissue gram in ROI-1 (iFe₁M₁₂) and in ROI-2 (iFe₂M₁₂) at M12, number of pixels in ROI-2 (NPM₁₂) at M12, number (NGdM₁₂) and volume (VGdM₁₂) of gadolinium-enhanced lesions at M12, brain parenchymal fraction (BPFM₁₂) at M12, number (NNT₂M₁₂) and volume (VNT₂M₁₂) of new lesions at M12, the percentage of brain volume change (PBVC) between baseline and M12, EDSS, and disease duration. Statistical analysis involved Spearman rank correlation to test correlation between iron deposits and clinical and radiological variables.

**Results:** Some correlations between measurements involving iron deposits and radiological measurements were found (iFe₂M₁₂ vs. NNT₂M₁₂ [0.700, p=0.002]; NPM₁₂ vs. NNT₂M₁₂ [0.808, p< 0.001]; iFe₂M₁₂ vs. VNT₂M₁₂ [0.544, p=0.024]; NPM₁₂ vs. VNT₂M₁₂ [0.886, p< 0.001]; NPM₁₂ vs. NGdM₁₂ [0.765, p< 0.001]; NPM₁₂ vs. VGdM₁₂ [0.757, p< 0.001]).

**Conclusions:** The results obtained suggest a strong association in CIS patients between the presence of new T2 lesions and the extension or the level of abnormal iron deposits within them. The extension of the high iron content region is also correlated to the presence of active lesions.

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