

Low signal intensity of motor cortex in SWI sequence: a radiological marker for motor neuron disease?

Baixa intensidade de sinal do córtex motor na sequência SWI: um sinal radiológico de doença do neurônio motor?

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We describe 03 patients with motor neuron disease: one with primary lateral sclerosis (PLS) (Figure 1) and two with amyotrophic lateral sclerosis (ALS) (Figures 2 and 3) whose brain MRI disclosed hypointense signal in precentral gyri gray matter in susceptibility weighted imaging (SWI) in High-Field MRI (3T).

MRI techniques have been used with variable success in identifying upper motor neuron (UMN) involvement

in ALS¹. Our report also describes similar findings in one patient with PLS. Hypointensity in precentral gyrus gray matter in SWI is presumably related to iron accumulation, proportionally to severity of UMN impairment^{2,3}. Recent data have proposed hypointense signal in precentral gyri gray matter as a neuroimaging biomarker for ALS⁴.

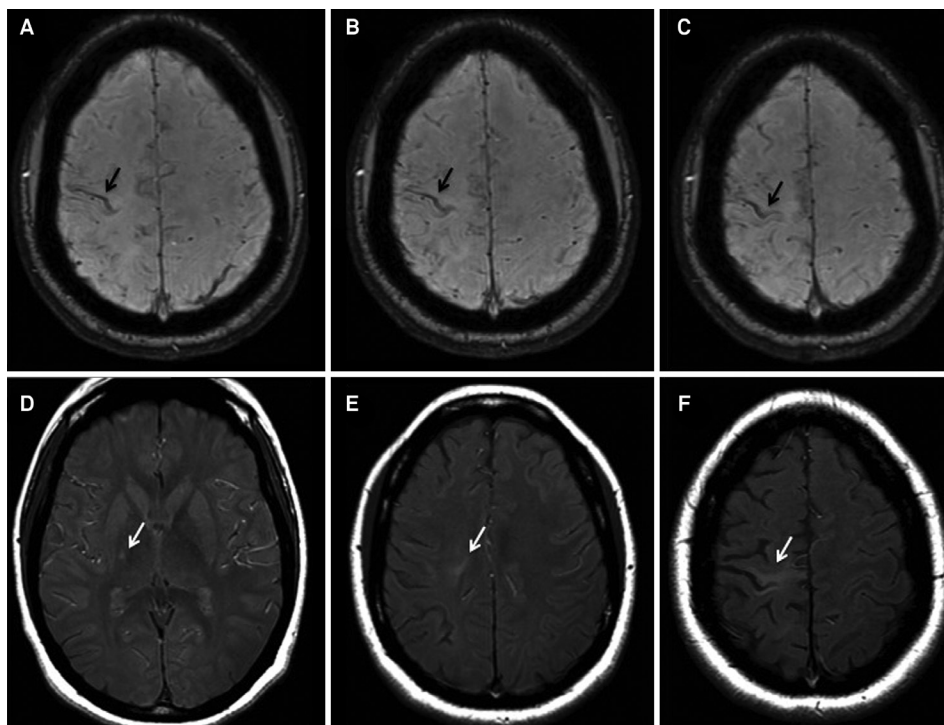


Figure 1. Axial SWI MRI (A, B and C) in a 31 year-old woman with PLS demonstrates linear low signal intensity in right precentral gyrus gray matter (black arrows). Axial T1-weighted magnetization transfer contrast-enhanced (MTC) images (D, E and F) show hyperintense signal along the right corticospinal tract, from the motor cortex until the posterior limb of internal capsule (white arrows). Signs of ipsilateral perirolandic atrophy can also be appreciated.

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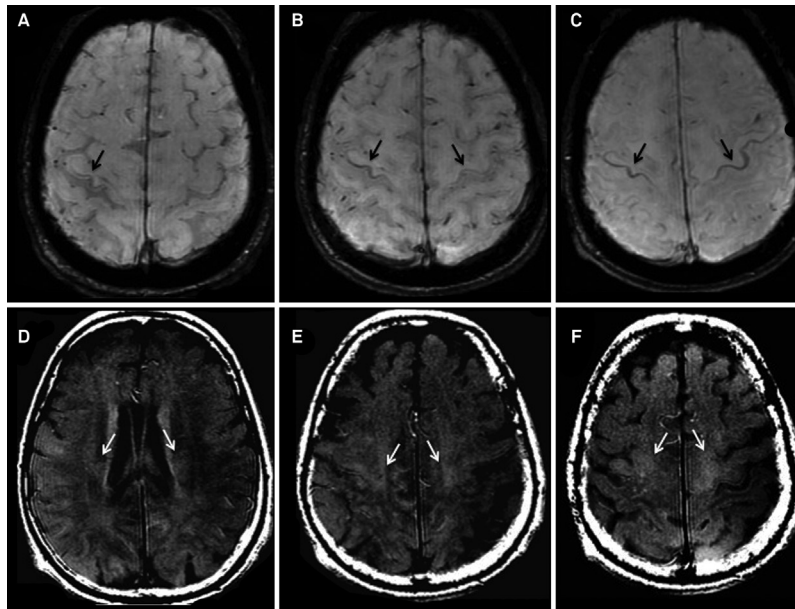


Figure 2. Axial SWI MRI (A, B and C) in a 81 year-old man with ALS demonstrates progressive linear low signal intensities in precentral gyri gray matter (black arrows) over one year, first unilateral and later bilateral. Axial T1-weighted MTC MR images (D, E and F), done at the same period as (C), depicted bilateral hyperintense signal along the cranial segment of corticospinal tract (white arrows).

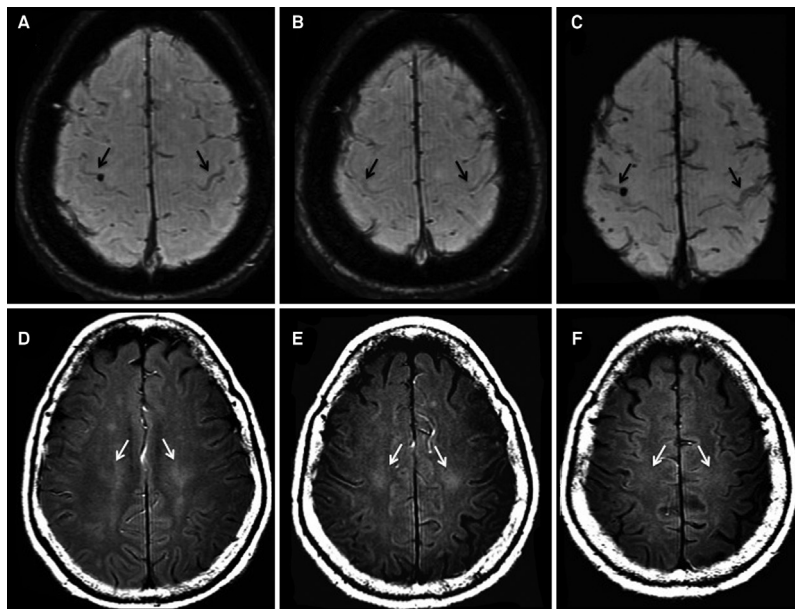


Figure 3. Axial SWI (A and B) and SWI MIP reconstruction (C) MRI in a 76 year-old man with ALS demonstrate bilateral linear hypointensities in precentral gyri gray matter (black arrows). As additional findings, were noticed multiple subcortical small foci of marked low signal intensity in the supratentorial compartment, that was presumed to be due to microhaemorrhages. Axial T1-weighted MTC MR images (D, E and F) show bilateral hyperintense signal along the cranial segment of corticospinal tract (white arrows).

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