Quantitative susceptibility mapping suggests a paramagnetic effect in PML

A 42-year-old man previously treated with rituximab and stem cell transplantation for B-cell lymphoma presented with subacute cerebellar ataxia and cognitive decline.

Brain MRI revealed fluid-attenuated inversion recovery cortico-subcortical hyperintensities (figure 1, A and B). Adjacent cortex was hypointense on T2* (figure 1, A and B) and susceptibility-weighted imaging (SWI),
hyperintense on quantitative susceptibility mapping (QSM) (figure 2). CSF PCR analysis showed JC virus DNA. Follow-up MRI revealed more extensive lesions (figure 1, C–E).

SWI hypointensities have been described recently in progressive multifocal leukoencephalopathy (PML)\(^1\) suggesting diamagnetic (calcifications) or paramagnetic (blood degradation products or non-heme iron deposits) effect.\(^2\) This report using QSM in PML strongly suggests a paramagnetic effect.

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Author contributions: C. Carra-Dalliere, X. Ayrignac, and P. Labauge participated in drafting/revising the manuscript. N. Menjot de Champfleur participated in analysis of the data and revising the manuscript. J. Deverdun participated in analysis of the data.

Study Funding: No targeted funding reported.

Disclosure: The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

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Neurology 2015;84;1501-1502
DOI 10.1212/WNL.0000000000001455

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