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Teaching NeuroImages: Cytotoxic lesions of the corpus callosum (CLOCCs) in encephalopathic patients with COVID-19

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Two men, aged 49 and 51, with acute encephalopathy and rapid clinical deterioration were transferred to intensive care unit. Both were recently tested positive for COVID-19 on nasopharyngeal swab. On brain MRI, a lesion of the splenium of the corpus callosum was found, with T2-FLAIR hyperintensity and restricted diffusion (Figure). This pattern is characteristic of Cytotoxic lesion of the corpus callosum (CLOCC), an entity described previously as secondary to an underlying cause such as infection, drug toxicity, subarachnoid hemorrhage, history of CNS malignancy, or metabolic disorders.¹ These lesions are non-ischemic lesions, usually transient and reversible on follow-up. The underlying mechanism relies on the vulnerability of the splenium of the corpus callosum to cytokinopathy.

Appendix 1. Authors

Name	Location	Contribution
Myriam Edjlali, MD, PhD	APHP, DMU Smart Imaging, GH Université Paris-Saclay, France	Design and conceptualized study; analyzed the data; drafted the manuscript for intellectual content
Aurélie Le Gal, MD	APHP, GH Université Paris-Saclay, France	Major role in the acquisition of data
Martin Louvet, MD	Hôpital Privé de Parly II, Le Chesnay, France	Major role in the acquisition of data
Morgan Matt, MD	APHP, GH Université Paris-Saclay, France	Revised the manuscript for intellectual content
Christophe Leveque, MD	Hôpital Privé de Parly II, Le Chesnay, France	Revised the manuscript for intellectual content
Caroline Diffre, MD	APHP, GH Université Paris-Saclay, France	Major role in the acquisition of data

David Orlikowski, MD, PhD	APHP, GH Université Paris-Saclay, France	Analyzed the data; Revised the manuscript for intellectual content
Djillali Annane, MD, PhD	APHP, GH Université Paris-Saclay, France	Analyzed the data; Revised the manuscript for intellectual content
Robert-Yves Carrier, MD, PhD	APHP, DMU Smart Imaging, GH Université Paris-Saclay, France	Analyzed the data; Revised the manuscript for intellectual content

On behalf of The Garches COVID 19 Collaborative Group (Appendix 2)

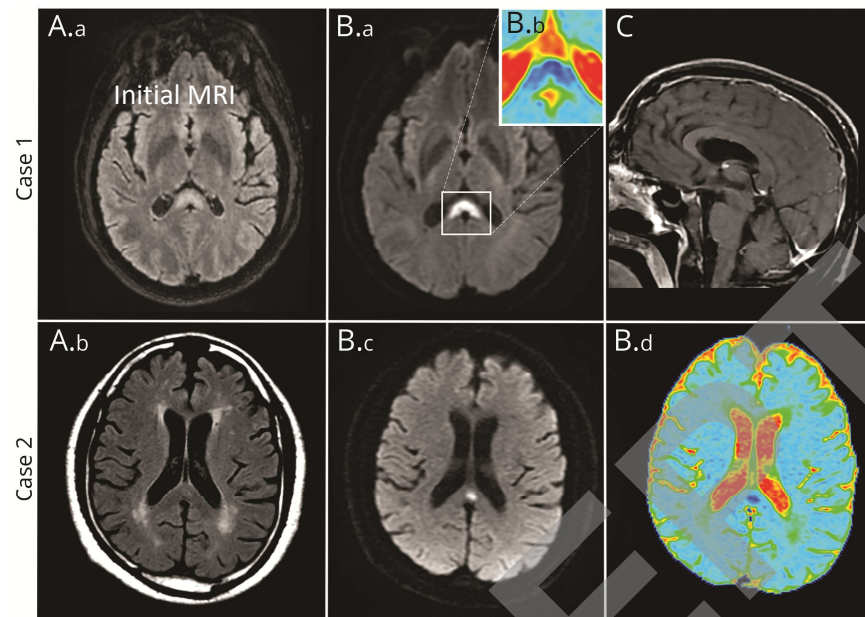
Teaching Slides-<http://links.lww.com/WNL/B239>

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Figure: Typical aspect of Cytotoxic Lesion Of the Corpus Callosum (CLOCC) in patients COVID-19 positive

Ovoid lesion of the splenium of the corpus callosum, with increased T2/FLAIR signal (A.a, A.b), Diffusion-Weighted Imaging hyperintensity (B.a, B.c) with abnormal restricted diffusion on multi-chromatic ADC maps (B.b, B.d) (ADC values $<500 \times 10^{-6}$ mm²/s) and reduced T1 signal without enhancement (C).



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