

Critical illness–associated cerebral microbleeds in COVID-19 acute respiratory distress syndrome

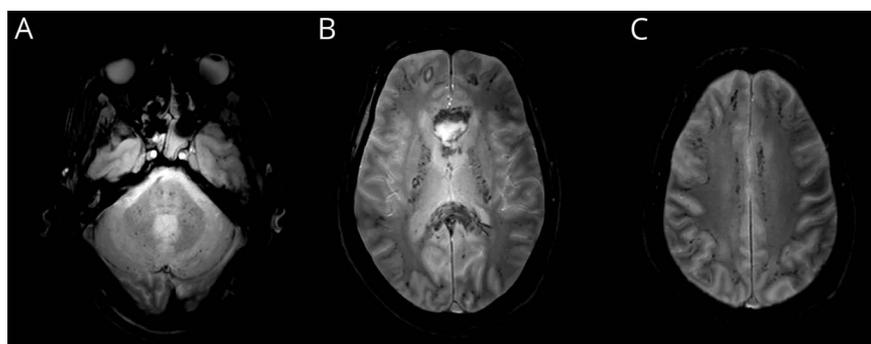
Octave Cannac, Laurent Martinez-Almoyna, MD, and Sami Hraiech, MD, PhD

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Correspondence

Dr. Martinez-Almoyna
laurent.martinez-almoyna@ap-hm.fr

Figure Brain MRI



Axial gradient recalled echo T2*-weighted sequence reveals (A) microbleeds scattered in cerebellum and brainstem; (B) innumerable microbleeds predominantly located in corpus callosum and internal capsules, associated with small right juxtacortical frontal hematoma and intracallosal hemorrhage; and (C) countless microbleeds all along the gray/white matter interface.

A 63-year-old man developed coronavirus disease 2019 acute respiratory distress syndrome requiring mechanical ventilation and extracorporeal membrane oxygenation (ECMO). Brain MRI performed because of delirium revealed callosal and juxtacortical hematomas associated with countless and punctate cerebral microbleeds disseminated in the corpus callosum and along the gray/white matter interface (figure).

This pattern, only detected by blood-sensitive MRI sequences, is typical of critical illness–associated cerebral microbleeds (CI-aCMB), a rare condition reported in patients with acute respiratory failure, requiring mechanical ventilation, and sometimes undergoing ECMO.¹ Even though the pathophysiologic mechanisms remain unknown (probably related to severe hypoxemia), a relatively high proportion of CI-aCMB published cases are induced by influenza.²⁻⁴ In this patient infected with severe acute respiratory syndrome coronavirus 2, we postulate a possible contribution of a viral-related endotheliopathy.

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Disclosure

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References

1. Fanou EM, Coutinho JM, Shannon P, et al. Critical illness-associated cerebral microbleeds. *Stroke* 2017;48:1085–1087.
2. Chow FC, Edlow BL, Frosch MP, Copen WA, Greer DM. Outcome in patients with H1N1 influenza and cerebrovascular injury treated with extracorporeal membrane oxygenation. *Neurocrit Care* 2011;15:156–160.
3. Shah J, Armstrong MJ. Extracorporeal membrane oxygenation: uncommon cause of corpus callosal microhemorrhage. *Neurology* 2015;84:630.
4. Gijs J, Lambert J, Meyfroidt G, Demeestere J. Cerebral microbleeds and intracerebral hemorrhage associated with veno-venous extracorporeal membrane oxygenation. *Acta Neurol Belg* 2018;118:513–515.

Appendix Authors

Name	Location	Contribution
Octave Cannac	Hôpitaux Universitaires de Marseille	Drafting and revision of manuscript for intellectual content
Laurent Martinez-Almoyna, MD	Hôpitaux Universitaires de Marseille	Drafting and revision of manuscript for intellectual content
Sami Hraiech, MD, PhD	Hôpitaux Universitaires de Marseille	Revision of manuscript for intellectual content

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