

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

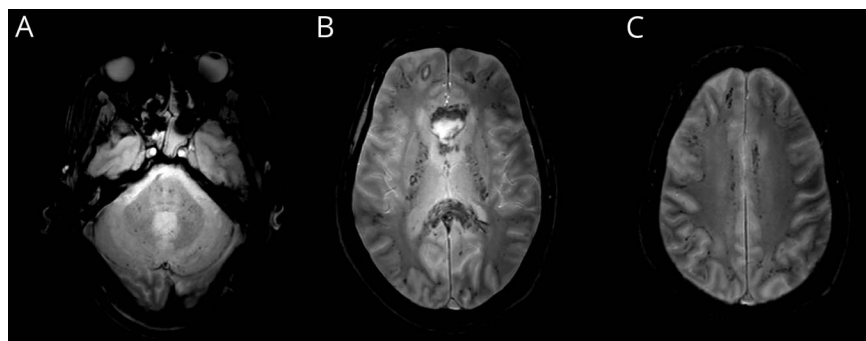
Octave Cannac, Laurent Martinez-Almoyna, MD, and Sami Hraiech, MD, PhD

*Neurology*® 2020;95:498-499. doi:10.1212/WNL.00000000000010537

## 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.<sup>1</sup> 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.<sup>2-4</sup> 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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From Médecine Intensive Réanimation (O.C., S.H.) and Service de Neurochirurgie, Pôle de Neurosciences Cliniques (L.M.-A.), Hôpital Nord, Assistance Publique–Hôpitaux de Marseille; and Centre d'Etudes et de Recherches sur les Services de Santé et Qualité de vie EA 3279 (O.C., S.H.), Faculté de Médecine, Aix-Marseille Université, Marseille, France.

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## Study funding

No targeted funding reported.

## Disclosure

The authors report no disclosures relevant to the manuscript. Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures.

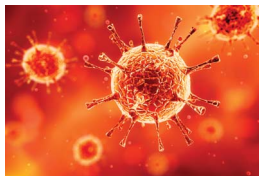
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## Appendix Authors

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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*Neurology* 2020;95;498-499 Published Online before print July 29, 2020  
DOI 10.1212/WNL.0000000000010537

**This information is current as of July 29, 2020**

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