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

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


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 juxtaocular frontal hematoma and intracallosal hemorrhage; and (C) countless microbleeds all along the gray/white matter interface (figure).

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 juxtaocular 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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References

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