Cerebral microbleeds after COVID-19 infection: an Italian case report

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Dear Editor,

Coronavirus disease 2019 (COVID-19) infection has the potential for targeting the central nervous system and several neurological symptoms have been reported in patients with severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2). We report the neuroradiological pattern in a currently mild symptomatic patient previously in-hospitalized due to SARS-CoV-2 infection. He is a 57 years-old Caucasian patient, ambulatory evaluated due to persistent subjective dizziness. At March 2020 he was in-hospitalized for two months due to SARS-CoV-2 interstitial pneumonia conditioning intubation with mechanical ventilation, acute respiratory distress syndrome, right lung abscess, sepsis, acute renal failure conditioning continuous veno-venous hemodialysis. His clinical history also included atrial fibrillation and chronic hepatitis B; he denied previous or recent brain injuries. Neurological examination resulted unremarkable. A previous magnetic resonance imaging performed in 2017 due to persistent headache resulted negative. He performed magnetic resonance brain imaging that showed bilateral hypo-intense signals at gradient echo sequences both in bilateral fronto-mesial regions and right frontal with corpus callosum involvement (mostly splenium) compatible with cerebral microbleeds (Figures 1-3). Considering distribution and the absence of major brain injuries history they were referred as possible results of previous white-matter micro-thrombosis-hemorrhages due to previous SARS-CoV-2 infection. In conclusion, cerebral microbleeds are increasingly being recognized as a complication of COVID-19, with a predilection for the corpus callosum, the juxtacortical white matter and brainstem, especially in patients who had a preceding period of critical illness with respiratory failure and severe hypoxia necessitating intubation and mechanical ventilation. Among performed hypothesis there were hypoxemia, which seemed associated with disruptions

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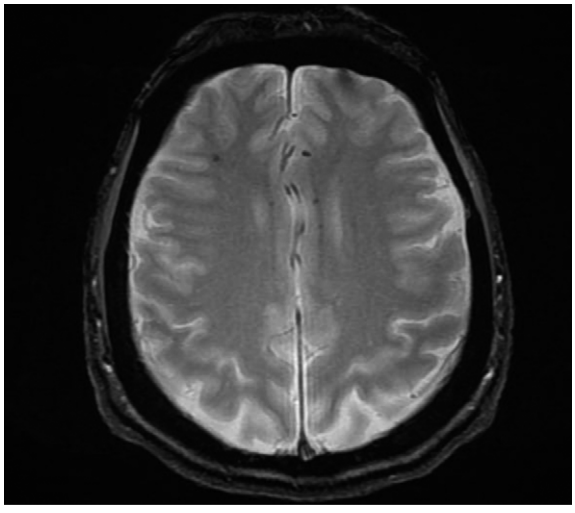

Figure 1. Axial gradient echo image showing bilateral fronto-mesial microbleeds.

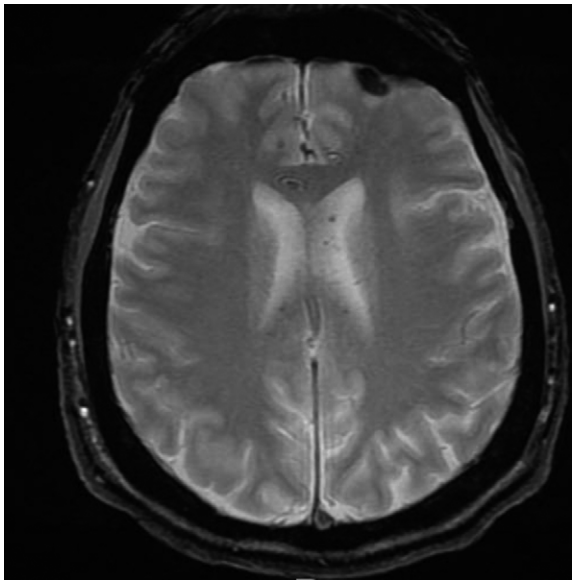

Figure 2. Axial gradient echo image showing right frontal microbleeds.

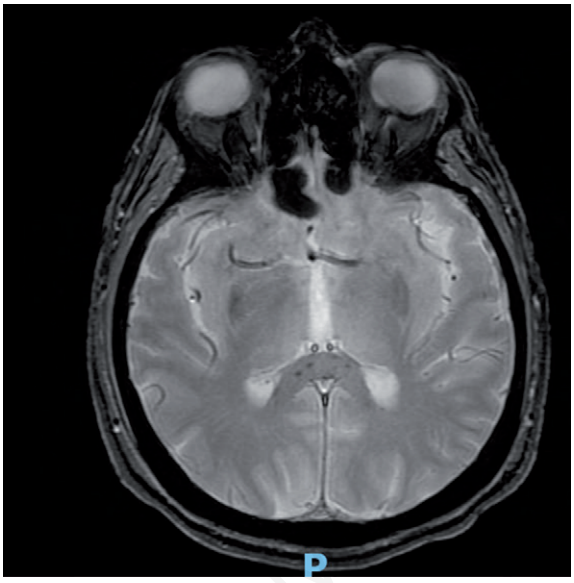

Figure 3. Axial gradient echo image showing corpus callosum microbleeds.

in the blood-brain barrier leading to extravasation of erythrocytes. Other hypotheses considered the role of microangiopathy, since patients with microhemorrhages presented a higher increase of the D-dimers and a tendency to more frequent thrombotic events, or the role of kidney failure, which was more severe in the group with diffuse microhemorrhages and more dialysis were introduced during intensive care unit stay (as in our patient). We report a single case report of a patient with residual subjective dizziness and negative neurological examination, that can expand recent literature.[1-3]

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