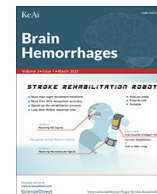




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Correspondence

Response to the Letter regarding article, “Vertebral artery dissecting aneurysm rupture under severe COVID-19”

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We appreciate the thoughtful comments by Dr. Finsterer regarding our manuscript.¹ We agree with the statement that the causality between SARS-CoV-2 and the dissecting aneurysm remains unclear.¹ However, we still consider that it is worth reporting the case.²

First, we provide the missing information that Dr. Finsterer pointed out.¹ 1) The patient had no family history of subarachnoid hemorrhage (SAH), aneurysms, arterial dissection and connective tissue diseases. 2) It is not exactly known when the dissection developed and the dissecting aneurysm ruptured, because the patient was sedated so that both right occipital headache or neck pain and neurological changes could not be detected. However, retrospectively, the only possible timing for the aneurysm rupture was at the time of a sudden rise in blood pressure, which happened only once. We assumed that the sudden rise in blood pressure was a change in response to SAH, although there is no evidence. We were very careful to avoid sudden rises in blood pressure, and no other triggers for sudden rises in blood pressure were found. Despite the release of sedation, the patient continued to suffer from persistent disturbance of consciousness, and SAH was first diagnosed when CT scans were taken to investigate the cause. 3) The patient had not received any medication until she was infected with COVID-19. 4) The treatment for COVID-19 was as shown in the paper,² and the other treatments included expectorants (ambroxol hydrochloride and L-carbocysteine), an antibiotic (ceftriaxone sodium hydrate), a benzodiazepine receptor antagonist (flumazenil), a proton pump inhibitor (lansoprazole), infusions such as Ringer's solution and enteral nutrition. We do not consider that any of the newly presented information contributed to the development of the dissecting aneurysm.

The relationships between SARS-CoV-2 and the dissecting aneurysm that we described in our paper are only hypothetical,² as Dr. Finsterer pointed out.¹ There is a report that the number of hospitalizations for acute stroke patients, especially for ischemic stroke ones, declined, resulting in that the number of hospitalizations for aneurysmal SAH patients increased relatively under the COVID-19 pandemic compared with the pre-pandemic period, although the exact reasons are unknown.³ Dissecting aneurysms differ from saccular aneurysms, and are most common in the East Asian population, particularly in males, and in the vertebrobasilar artery, accounting for only 3–5 % of aneurysmal SAH cases in the general population.⁴ In COVID-19 – positive patients with aneurysmal SAH, however, a higher frequency of dissecting aneurysms as a cause of SAH and young patients was reported.^{5–6} In addition, all COVID-19 – positive patients with ruptured dissecting aneurysms were reported from Western countries, and the location was uncommonly in the vertebrobasilar artery.^{5–8} Our case was also a non-Asian Hispanic woman. These findings may give some reason to believe in an association between COVID-19 and SAH due to dissecting aneurysms.

Thus, it is meaningful to report our case, and we believe that the accumulation of such a case will bring us closer to the truth. Finally, we thank Dr. Finsterer and the editors in this journal for the opportunity to provide supplementary information to our paper.

Declarations

Author contribution: first draft (TS, HS), critical comments (YM, RY, NT).

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Ethical statement

The study was approved by the ethics committee of Mie University Graduate School of Medicine. The study was conducted in accordance with the Declaration of Helsinki.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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