Letter to the Editor Regarding "Aneurysmal Subarachnoid Hemorrhage in COVID-19 Patients: A Case Series"

Letter:

I read with great interest the paper by Dodd et al.[1] They mentioned that there are only a few cases reports with largely nonaneurysmal subarachnoid hemorrhage (SAH) and the only 1 reported aneurysmal SAH to date.[1] We also reported a small case series with SAH after COVID-19 infection.[2] It was surprising for us; our paper was ahead of print online in January 2021 and published in March 2021, but the author did not notice although it was one of the first SAH case series after COVID-19 infection.[2] As reported in our paper, 3 of 4 cases had been admitted to the hospital with a high fever.[2] We noticed that only 2 of 4 cases received an anticoagulant therapy.[2] Those reports are important because a comprehensive understanding of the pathophysiology is an important issue in neurosurgery.[3,4] However, Qureshi et al[5] reported that the risk of SAH was not increased in patients with COVID-19. I disagree with them. Cranial vascular endothelial dysfunction or inflammation in patients with COVID-19 may promote severe vessel weakening and SAH. Some triggers might exist in patients with COVID-19 and SAH concerning host immune responses,[6] because an indirect inflammatory response may occur. An increase in leukocyte count and elevated C-reactive protein in patients with COVID-19 infection might be interpreted as activation of the inflammation. The blood-brain barrier (BBB) has a value concerning brain function.[7] Systemic inflammation is known to change the permeability of the BBB. A high fever was noted in the cases of the study by Batcik et al.[2] In humans, fever production is modulated in the ventromedial preoptic area.[8] Inflammatory or inflammatory marker cytokines may increase in patients with COVID-19 infection. The inflammatory process in patients with COVID-19 may lead to SAH.

Another concern is that the study of Dodd et al is a multicenter study,[1] which, by nature, has disadvantages.[9] Pooling data from many centers resolve the problem of insufficient patient numbers, but it makes it harder to ensure stable conditions.[9]

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