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Response to correspondence concerning “Posterior reversible encephalopathy syndrome (PRES) associated with COVID-19”



We thank Sun et al. [1] for their interest and comments on our article [2], specifically with regard to case 1. In that case, we reported a previously healthy 49-year-old woman who developed sudden vision loss and right sided hemiparesis during the course of her infection with SARS-CoV-2, with computerized tomography (CT) angiography evidence of bilateral posterior cerebral artery stenosis. Given the initial suspicion of arterial ischemic stroke, intravenous thrombolysis was administered, and after identifying luminal irregularities concerning for stenosis (and possible vasospasm) during conventional angiography, empiric therapy with intraarterial nimodipine was given. Ten days after the onset of visual symptoms, magnetic resonance imaging (MRI) was performed, showing a significant improvement of the occipital lesions observed previously. MR angiography was simultaneously performed and no vasculopathy was observed.

We agree with Sun et al. that this case exhibits features that are consistent with reversible cerebral vasoconstriction syndrome (RCVS), and we ourselves had several doubts characterizing the disorder. Initially, the arteriographic findings in conjunction with the patient's sex and absence of vascular risk factors raised our pre-test probability of RCVS. It was because of this suspicion that we administered intraarterial nimodipine, and the patient demonstrated radiographic improvement of the vasculopathy. However, the absence of characteristic headache or RCVS trigger would be atypical for this condition. Moreover, PRES has a known association between immunomodulatory therapies, is increasingly recognized as a complication of severe SARS-CoV-2 infection, and demonstrates classic posterior predominant and oftentimes reversible vasogenic edema—as in our patient.

With regard to the RCVS2 score [3], it was designed to distinguish RCVS from primary angiitis of the central nervous system—not from posterior reversible encephalopathy. Therefore, we would not recommend it to be used to differentiate RCVS from other vasculopathies or parenchymal pathologies. Further, we would respectfully contend her RCVS2 score would be a 1 (for female sex), as there was no immediate vasoconstrictor trigger (3 points), subarachnoid hemorrhage (1 point) or antecedent headache (5 points).

We think this case highlights an important relationship between PRES and RCVS [4], and a shared pathophysiology between those two entities. In addition, several cases of PRES [5–9] and RCVS [10] have been described in context of SARS-COV-2

infection, which supports the theory of endothelial dysfunction and blood–brain barrier breakdown in these patients, which can lead to atypical radiological findings such as focal vasoconstriction, edema, and hemorrhage.

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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