Letter to the Editor

Optic Nerve Ultrasonography for Noninvasive Monitoring of Intracranial Pressure in COVID-19 Patients

Dear Editor,

The novel coronavirus, i.e., severe acute respiratory syndrome coronavirus-2, is among the one of the major pandemics in the 21st century.[1-3] Increasing evidence suggests that COVID-19 infection can lead to serious neurological complications, including cerebral hemorrhage, stroke, and encephalitis among others.[4,5] In the past, it is being suggested that viral meningitis can potentially cause elevated intracranial pressure.[6] Recent case reports support the occurrence of intracranial cranial hypertension in COIVD-19 cases.[7,8] It has been suggested that COVID-19–related thrombophilic disorders have the potential to present as headache and it is further suggested that there is a need for low threshold to investigate for cerebral venous sinus thrombosis and associated secondary idiopathic intracranial hypertension to avoid its complications.[9] Magnetic resonance imaging scan of the brain can show the structural and anatomical changes in patients with raised intracranial pressure (i.e., details of brain parenchyma, cerebrospinal fluid spaces, and course of the optic nerve).[8] Invasive methods can be used to monitor and manage these patients.[7,9] We take this opportunity to suggest to expand the scope optic nerve ultrasound to monitor the fundoscopic changes[10] and thus to monitor intracranial pressure[11] in patients where invasive monitoring is not available or because of hemodynamic instability it is difficult to shift these patients for Magnetic Resonance (MR) investigations.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Wu D, Wu T, Liu Q, Yang Z. The SARS-CoV-2 outbreak: What we know. Int J Infect Dis 2020;94:44-8.
2. Cherry JD, Krogstad P. SARS: The first pandemic of the 21st century. Pediatr Res 2004;56:1-5.
3. Al Hajjar S, McIntosh K. The first influenza pandemic of the 21st century. Ann Saudi Med 2010;30:1-0.
4. Mao L, Jin H, Wang M, Hu Y, Chen S, He Q, *et al.* Neurologic manifestations of hospitalized patients with coronavirus disease 2019 in Wuhan, China. JAMA Neurol 2020;77:683-90.
5. Sharifi-Razavi A, Karimi N, Rouhani N. COVID-19 and intracerebral haemorrhage: Causative or coincidental? New Microbes New Infect 2020;35:100669.
6. Beal JC. Increased intracranial pressure in the setting of *Enterovirus* and other viral meningitides. Neurol Res Int 2017;2017:2854043.
7. Svedung Wettervik T, Kumlien E, Rostami E, Howells T, von Seth M, Velickaite V, *et al.* Intracranial pressure dynamics and cerebral vasomotor reactivity in coronavirus disease 2019 patient with acute encephalitis. Crit Care Explor 2020;2:e0197.
8. Noro F, Cardoso FM, Marchiori E. COVID-19 and benign intracranial hypertension: A case report. Rev Soc Bras Med Trop 2020;53:e20200325.
9. Bhaskar S, Bradley S, Israeli-Korn S, Menon B, Chattu VK, Thomas P, *et al.* Chronic neurology in COVID-19 era: Clinical considerations and recommendations from the REPROGRAM consortium. Front Neurol 2020;11:664.
10. Lawrenson JG, Buckley RJ. COVID-19 and the eye. Ophthalmic Physiol Opt 2020;40:383-8.
11. Brain Trauma Foundation, American Association of Neurological Surgeons, Congress of Neurological Surgeons, Joint Section on Neurotrauma and Critical Care, AANS/CNS, Bratton SL, Chestnut RM, *et al.* Guidelines for the management of severe traumatic brain injury. VI. Indications for intracranial pressure monitoring. J Neurotrauma 2007;24 Suppl 1:S37-44.

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