

COVID-19 - associated third nerve palsy

Dear Editor,

We read with interest the article by Sen *et al.*^[1] on "COVID-19 and eye." The authors have well summarized various ophthalmic manifestations of coronavirus disease 2019 (COVID-19). There

have been sporadic case reports and case series depicting the association between cerebral venous thrombosis (CVT) and internal carotid artery (ICA) thrombosis with COVID-19.^[2-4] CVT and ICA thrombosis are uncommon etiologies of stroke. COVID-19 induces a prothrombotic state, either by increased levels of factor VIII, fibrinogen, and D- dimer or circulating prothrombotic microparticles such as antiphospholipid antibodies.^[3] Neurological manifestations after ICA



Figure 1: 9-gaze clinical picture of the patient

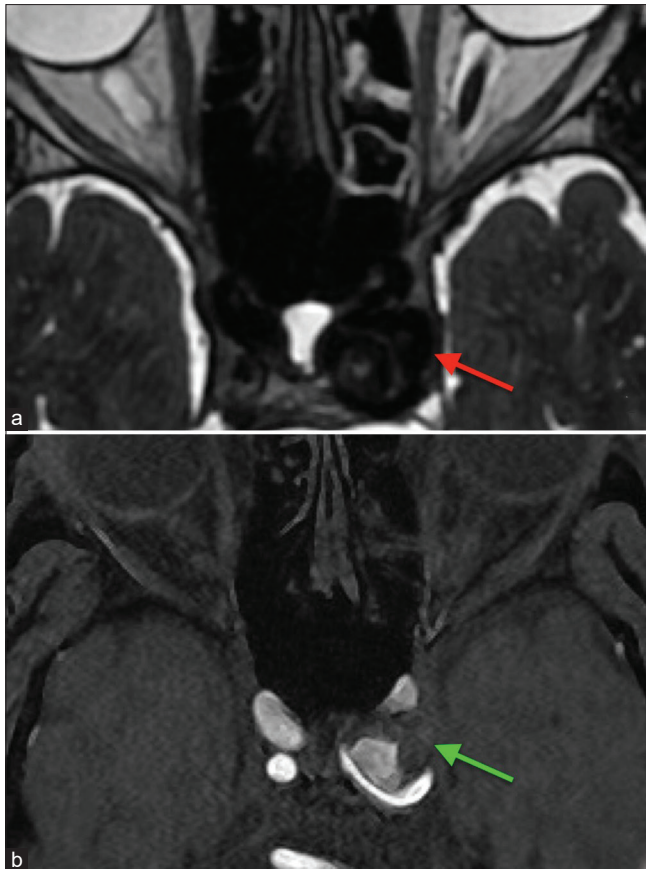


Figure 2: (a) T2-weighted contrast-enhanced magnetic resonance imaging of brain and orbit, showing partially thrombosed aneurysm in cavernous part of left internal carotid artery (red arrow). (b) Magnetic resonance angiography showing reduced blood flow in the thrombosed part of left internal carotid artery (green arrow)

thrombosis have been reported after COVID-19.^[4] So far, there is one case report on acute monocular vision loss after ICA occlusion in COVID-19.^[5] We would like to highlight a case of third nerve palsy after ICA thrombosis in COVID-19. A 66-year-old male presented to us with chief complaints of drooping of left upper eyelid associated with mild headache and multiple episodes of nonprojectile vomiting for the last 7 days. He had mild nonpulsatile, left-sided headache since then. He was tested COVID-19 positive 45 days back and had mild symptoms only. No history of any other systemic illness. On examination, his best-corrected visual acuity on Snellen's chart in right eye (RE) and left eye (LE) was 6/6 and 6/9. Intraocular pressures were 14 mmHg and 16 mmHg in RE and LE. LE had severe ptosis with limitation of ocular movements in all gazes except for abduction [Fig. 1]. LE had 6–7 mm nonreacting pupil. Slit-lamp examination was normal in both eyes (BE). Fundus examination showed a cup-disc-ratio of 0.3:1 with no treatable lesion. Color vision and contrast sensitivity were normal in BE.

On contrast-enhanced magnetic resonance imaging of brain and orbit, partially thrombosed aneurysm arising from the cavernous segment of left ICA causing compression of the

left oculomotor nerve and stretching of the cavernous dura was found, which was confirmed with magnetic resonance angiography [Fig. 2]. He also had elevated levels of IL-6, D-dimer, and ferritin.

He was started on oral antiplatelet agents and anticoagulants. Patient is still on regular follow-up. Third nerve palsy due to an unruptured aneurysm from various branches of the ICA has been reported previously, but none had an associated thrombosis.^[6,7] Therefore, the possibility of vessel/aneurysm thrombosis causing nerve palsy cannot be ruled out in our patient. Severe inflammatory response after COVID-19 increases the vulnerability of such thrombotic events, which are potentially life threatening.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Sen M, Honavar SG, Sharma N, Sachdev MS. COVID-19 and eye: A review of ophthalmic manifestations of COVID-19. *Indian J Ophthalmol* 2021;69:488-509.
2. Mowla A, Shakibajahromi B, Shahjouei S, Borhani-Haghighi A, Rahimian N, Baharvahdat H, *et al.* Cerebral venous sinus thrombosis associated with SARS-CoV-2; a multinational case series. *J Neurol Sci* 2020;419:117183.
3. Tu T, Goh C, Tan Y, Leow A, Pang Y, Chien J, *et al.* Cerebral venous thrombosis in patients with COVID-19 infection: A case series and systematic review. *J Stroke Cerebrovasc Dis* 2020;29:105379.
4. Moreno YÁ, Figueroa JB, Figueroa EB, Fonseca MS, Torres JE. Internal carotid artery thrombosis in COVID 19. *Colomb Med (Cali)* 2020;51:e504560.
5. Deshpande G, Giri P. Acute monocular vision loss as presenting symptom of delayed stroke from internal carotid occlusion in COVID-19. *Indian J Ophthalmol* 2021;69:1325-7.

6. Amin MN, Vassallo J, Butler L, Catania JD. A man with headache and double vision. *BMJ* 2015;351:h5375.
7. Woodruff MM, Edlow JA. Evaluation of third nerve palsy in the emergency department. *J Emerg Med* 2008;35:239-46.

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