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LETTER TO THE EDITOR

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Unilateral submacular hemorrhage: Novel presentation of COVID-19 infection

1 | CASE REPORT

A 25-year-old male, with no known co-morbidities, presented to the emergency department with sudden diminution of vision in left eye associated with fever, myalgia, and fever for 2 days. As per hospital protocol, he underwent reverse transcriptase-polymerase chain reaction (RT-PCR) and was diagnosed to be positive for coronavirus disease 2019 (COVID-19) for which he was admitted and treated in hospital for the next 10 days with oxygen supplementation and supportive therapy.

Ophthalmic evaluation with adequate prophylaxis and preventive measures revealed best corrected visual acuity in right eye of 6/6, left eye of 6/60 with normal anterior segment in both eyes. On fundus examination, left eye showed tortuous vessels with large submacular hemorrhage (blue arrow) and subretinal fluid involving foveal center (Figure 1A). Spectral domain optical coherence tomography (SD-OCT) of right eye was normal and left eye showed increased hyperreflectivity below retinal pigment epithelium in foveal and parafoveal region suggestive of submacular hemorrhage (yellow arrows) with intraretinal cystic spaces (Figure 1B). Systemic workup for ischemic causes, vasculitis, blood dyscrasias was performed and found to be unremarkable. Hence, diagnosis of COVID-19-related submacular hemorrhage in left eye was made.

In view of active moderate to severe COVID-19 infection, patient was managed in intensive care unit with oxygen supplementation, oral steroids and supportive therapy. After stabilization of systemic parameters and RT-PCR became negative, he was managed with intravitreal injection of anti-vascular endothelial growth factor (anti-VEGF) in form of ranibizumab in view of intraretinal fluid and submacular hemorrhage. At 1 month post intravitreal injection, the best-corrected visual acuity in left eye improved to 6/9. Fundus examination of left eye showed resolving submacular hemorrhage and complete resolution of intraretinal fluid (Figure 1C). SD-OCT of left eye revealed normal foveal contour, resorption of intraretinal fluid, and almost resolved submacular hemorrhage in parafoveal region (Figure 1D).

2 | DISCUSSION

COVID-19 is a type of severe acute respiratory syndrome caused by coronavirus-2 and known to affect various organs including the eye. Multiple ophthalmic complications of COVID-19 like conjunctivitis Cotton wool spots, retinal hemorrhages, and retinal vein occlusions have been reported.[1–3] Posterior pole involvement is quite rare; occasionally presenting with foveolitis-related maculopathy or preretinal hemorrhages resulting from COVID-19-induced blood dyscrasias.[4]

The multiorgan involvement due to COVID-19 can result from direct viral toxicity, endothelial cell damage, thromboinflammation, dysregulation of immune response of renin–angiotensin–aldosterone system. Endothelial damage involving retinal capillaries leads to complement activation, thrombin production, and inhibition of fibrinolysis which results in microthrombi and microvascular dysfunction resulting in submacular hemorrhage as seen in our case.[5,6] The vision significantly improved after intravitreal anti-VEGF injection in our patient with resolution of intraretinal fluid as well as resorption of submacular hemorrhage over 4 weeks. This probably resulted from stabilization of blood retinal barrier and reduction in microvascular dysfunction resulting with anti-VEGF injection.

Coronavirus disease can present with varied ophthalmic features or complications which are rarely reported. Our present case, where in for the first time in literature, we reported a COVID-19 patient presenting with unilateral submacular hemorrhage; will increase our knowledge about its potential ocular manifestations. The ophthalmologist needs to be vigilant so as to promptly diagnose and effectively treat such unusual vision-affecting clinical entities.

CONFLICT OF INTERESTS

All the authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Concept: Ashok Kumar, Akanksha Sahu, and Amit Arora. *Data Collection or Processing*: Ashok Kumar, Akanksha Sahu, and Jaya Kaushik.

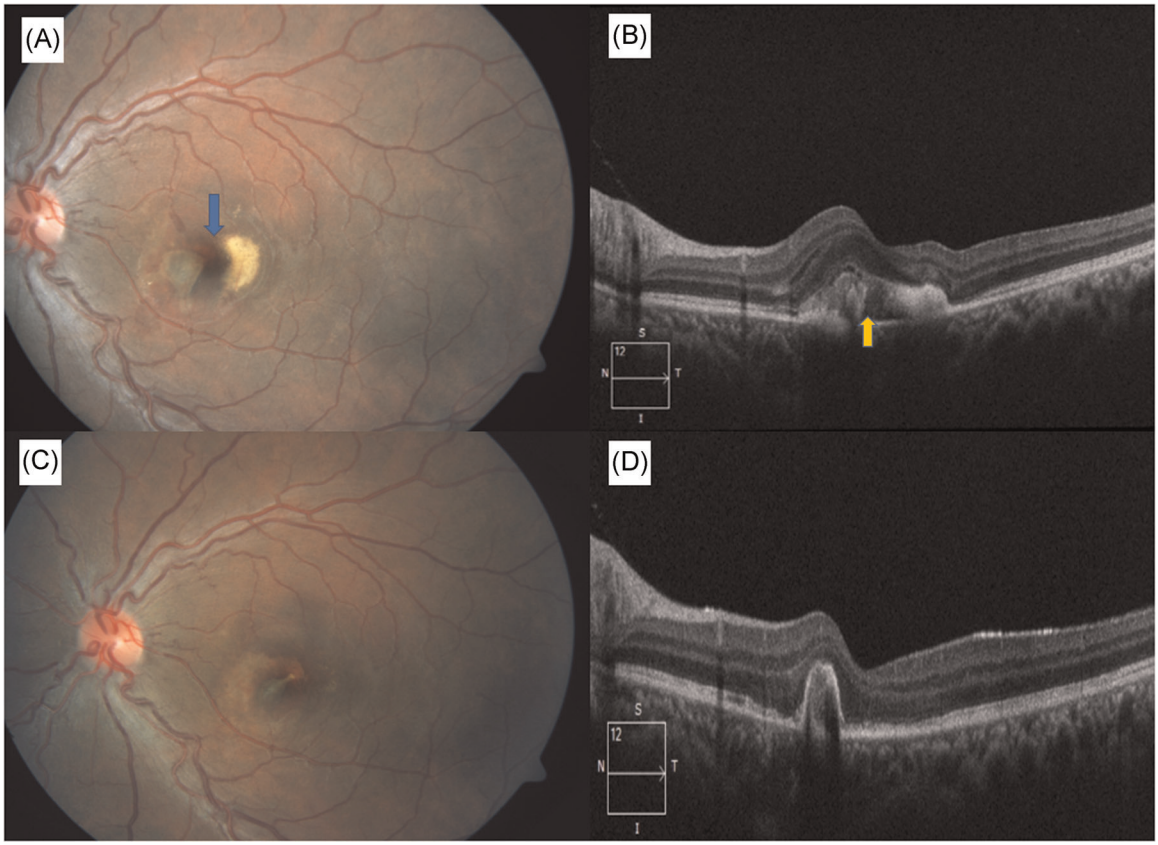

FIGURE 1 (A) Fundus photo of left eye showing tortuous retinal vessels with large submacular hemorrhage (blue arrow) and subretinal fluid involving foveal center. (B) Spectral domain optical coherence tomography (SD-OCT) of left eye showing increased hyperreflectivity below retinal pigment epithelium in foveal and parafoveal region suggestive of submacular hemorrhage (yellow arrows) with intraretinal cystic spaces. (C) Fundus photo of left eye at 1 month post injection showing resolving submacular hemorrhage and complete resolution of intraretinal fluid. (D) SD-OCT of left eye at 1 month post injection revealing normal foveal contour, resorption of intraretinal fluid and almost resolved submacular hemorrhage in parafoveal region

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PATIENT CONSENT

Written informed consent obtained for publication

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