

Commentary: Fulminant fungal endogenous endophthalmitis following COVID-19

The COVID-19 (Corona virus disease-19) or SARS-CoV-2 viral infection causes a significant strain on the immune system of a patient. Endogenous endophthalmitis is a sight-threatening ocular infection presenting as a potential ocular emergency. Endogenous ocular infection can result from the hematogenous spread of the microorganisms to the eye from a primary focus elsewhere in the body unrelated to prior ophthalmic surgery or trauma.^[1] Risk factors such as prolonged hospital stay and long-dwelling intravenous cannula make patients with COVID-19 infection vulnerable to endogenous infections.^[2,3] A large proportion of these patients may have preexisting comorbidities like diabetes mellitus. A sustained and substantial reduction of the peripheral lymphocyte counts, especially the CD4 counts, could predispose to opportunistic infections in the COVID-19 patients.^[4] High-dose corticosteroid therapy as part of the management of COVID-19 may contribute to systemic immunosuppression.^[5] Even though the yield of an organism from ocular fluid culture is low, isolating the organism on culture in endogenous endophthalmitis will help to manage the cases better. Fungal endogenous endophthalmitis usually has an indolent course and the immunosuppressed state results in further masking the signs and symptoms of intraocular inflammation leading to delayed presentation and manifestations of endogenous endophthalmitis.

The present case report highlights the microbiology-proven fungal (*Aspergillus*) endogenous endophthalmitis post-COVID-19 infection which was resistant to treatment and had a fulminant course. In this case, in spite of proven aggressive treatment, the patient ended up with evisceration. Silicone oil injection during vitrectomy could have possibly salvaged the globe with some functional outcome. In a case series by Shah KK *et al.*, showed presumed fungal endogenous endophthalmitis of four cases in post COVID-19 patients.^[6] They showed improvement in the clinical picture post-treatment with moderate visual outcomes. However, a microbiological diagnosis could not be obtained in any of their cases. Shroff D *et al.* reported five cases (*Candida sp.* in 4 eyes, *Aspergillus sp.* in 1 eye) of culture proven endogenous fungal endophthalmitis in COVID-19 patients.^[7] All patients with endogenous infection were immunocompetent with a history of recent severe COVID-19 infection with prolonged hospitalization and treatment with corticosteroids. They were able to salvage all eyes with prompt vitrectomy along with intravitreal voriconazole injection. Postoperatively, all patients achieved the control of infection in the form of a clear vitreous cavity, along with an improvement in vision.

The prognosis and outcome of endogenous endophthalmitis are generally worse than exogenous endophthalmitis because of compromised host immunity, the initial involvement of the posterior segment, and aggressive pathogens being involved. However, a high index of suspicion, prompt diagnosis, and treatment would improve the anatomical and visual outcomes.^[8] It is advisable to do fundus evaluation in all patients on intensive steroid therapy for severe COVID-19, especially in those with any visual complaints. One should judiciously use steroids,

which while being a life-saving medication in patients with severe COVID-19, could predispose them to infections. It is important to create awareness among ophthalmologists of endogenous fungal endophthalmitis in COVID-19 patients.

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Conflicts of interest

There are no conflicts of interest.

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