

Unveiling endophthalmitis post COVID-19 – A case series

Paras R Khatwani, Nikita P Goel, Kinjal Y Trivedi, Somesh V Aggarwal

Since December 2019, coronavirus disease 2019 (COVID-19), caused by SARS-CoV-2, has become a global pandemic. There has been a resurgence in complications involving various organs in patients recovered from COVID-19, and endophthalmitis is one of them. Endophthalmitis—an inflammation of intraocular tissues leading to loss of vision or even loss of eye—has been a rare occurrence in the past, but has been on the rise in the post-COVID-19 times. Here we report seven such cases.

Key words: COVID-19, endogenous, endophthalmitis, fungal, orbital cellulitis

Endophthalmitis is an inflammation of the intraocular tissues mainly due to infection, 70% of which are post-surgical,^[1]

25%–31% are post-traumatic, and only a small percentage are caused by either a hematogenous spread from a systemic infection (endogenous) or direct spread from a neighboring infective foci.^[2,3] Endophthalmitis, apart from being a blinding condition, can also lead to perforation, panophthalmitis, or spread to neighboring structures, and eventually loss of eye. Endogenous endophthalmitis and endophthalmitis with orbital cellulitis are both extremely uncommon entities and such cases are on the rise post the dreaded COVID-19 infection, and early detection and treatment is the key to preserve vision. Herein, we report seven such cases.

Case Reports

Demography, symptoms, clinical signs, diagnosis and the microbiological profile of the seven cases that we have seen are summarized in Table 1.

Discussion

Endophthalmitis, not associated with a history of surgery, trauma tends to have a poor prognosis due to difficulty in diagnosing and identifying the causative organisms.

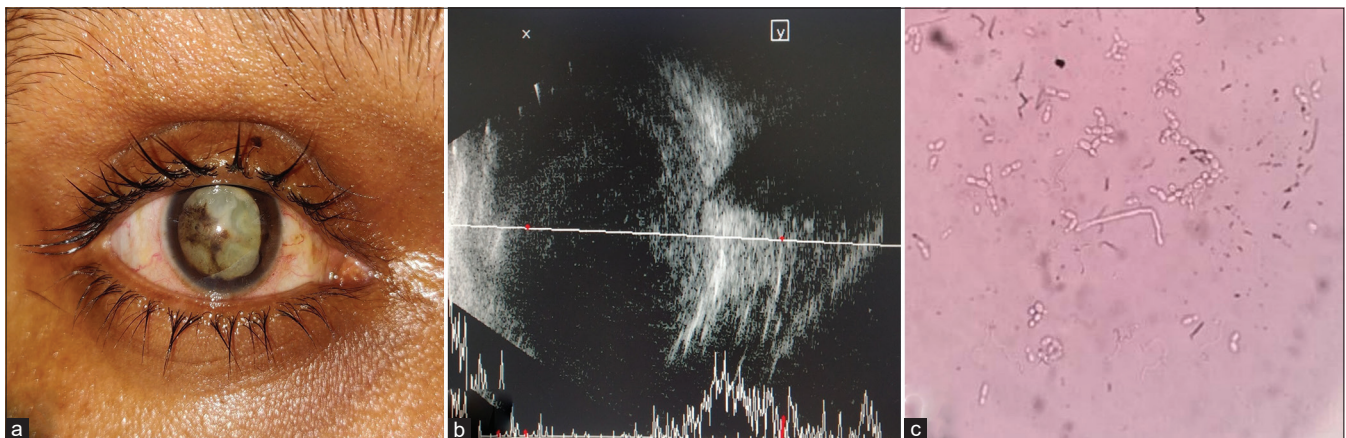


Figure 1: (CASE-4): (a) Clinical photograph demonstrates posterior synechiae, pigments over the anterior lens capsule, and intumescent cataract. (b) Moderate-intensity vitreous echoes on USG. (c) Candida isolated on the KOH mount of the sputum sample

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Table 1. Demography, symptoms, clinical signs, diagnosis and the microbiological profile of the seven cases of endophthalmitis post-COVID-19

Case no.	Age (in years)/ Sex/Systemic illness	Ocular symptoms; Duration since COVID-19 recovery	Vision	Ocular signs	Investigations	Organism
1	45/Male/ diabetes mellitus	Right-sided headache, eye swelling, and pain; 19 days	RE-no PL LE-20/30	RE- total ophthalmoplegia, chemosis, grade 4 vitritis LE: WNL	MRI- right pan-sinusitis with orbital cellulitis	Endonasal biopsy - Mucormycosis
2	56/Male/ diabetes mellitus	Left eye swelling and DOV; 25 days	RE-20/20 LE-no PL	RE-WNL LE-total ophthalmoplegia, exposure keratopathy, hyphema - 1/3 of anterior chamber and grade 4 vitritis	MRI-left pan-sinusitis with orbital cellulitis, optic neuritis, and left cavernous sinus thrombosis	Endonasal biopsy - Mucormycosis
3	48/Male	Right-sided facial numbness, DOV, and eye swelling; 15 days	RE-no PL LE-20/30	RE-total ophthalmoplegia, chemosis, grade 4 vitritis LE-WNL	MRI-right pan-sinusitis with orbital cellulitis	Endonasal biopsy - Mucormycosis
4	40/Male [Fig. 1]	Right-eye DOV, pain, and mucoid discharge; 30 days	RE-no PL LE-20/20	RE-shallow anterior chamber, intumescent cataract, and hazy fundus LE-WNL	USG (RE)-moderate-intensity vitreous echoes, membranes, and suprachoroidal effusion HRCT-necrotizing pneumonia with pleural effusion WBC-34,000/cmm	Sputum - Tuberculum bacilli + Candida Pleural fluid - <i>Spingomonas paucibacillus</i>
5	51/Female/ diabetes mellitus	Both-eye DOV, pain, and redness; 11 days	BE-hand movement + with defective projection of rays	RE-conjunctival congestion, +2 anterior chamber cells, and grade 3 vitritis LE-conjunctival congestion, +3 anterior chamber cells, inflammatory membrane, and grade 4 vitritis	USG (BE)-moderate-intensity vitreous echoes with membranes HRCT-bilateral pneumonia with pleural effusion MRI-meningoencephalitis	BAL-Aspergillosis
6	56/Male/ diabetes mellitus and hypertension	Both-eye DOV and swelling; 15 days	BE-no PL	RE-total ophthalmoplegia, proptosis, and grade 4 vitritis LE- total ophthalmoplegia, scleral abscess, Descemet membrane folds, and grade 2 vitritis	MRI-bilateral pan-sinusitis with orbital cellulitis	Endonasal biopsy - Mucormycosis
7	72/Female	Left-eye DOV and pain; 7 days	RE-20/30 LE-no PL	RE-WNL LE-total ophthalmoplegia, chemosis, and grade 4 vitritis	USG (LE)-vitritis with posterior scleritis WBC-20,000/cmm MRI-clear sinus with orbital cellulitis	none

RE - right eye; LE - left eye; NO PL - no perception of light; BE- both eye; MRI - magnetic resonance imaging, WNL - within normal limit; USG - ultrasonography

Here, we have reported seven cases of endophthalmitis post-COVID-19 infection in a span of one month presenting at our tertiary care center. All patients were COVID-19 positive and received systemic steroids, oxygen therapy, anticoagulants, and anti-viral drugs as a standard treatment protocol. All patients upon being diagnosed with endophthalmitis underwent a Pars Plana Vitrectomy with intra-vitreous anti-fungal injection. They were also started on systemic antimicrobial agents based on the culture sensitivity report.

Of the seven cases, three were secondary to mucormycosis-associated sinusitis and orbital cellulitis. One had endophthalmitis in one eye and panophthalmitis

in the other with secondary orbital cellulitis caused by mucormycosis-associated bilateral pansinusitis. Two patients had endogenous endophthalmitis secondary to a systemic fungal infection, one of which was polymicrobial. One patient had endogenous endophthalmitis, leading to panophthalmitis with secondary orbital cellulitis.

Vitreous taps were not obtained from any patients as ocular fluid cultures are recommended only when organisms cannot be isolated from a nonocular source.^[4]

Ratra *et al.*^[5] reported 85.3% bacterial and 14.7% fungal cause of culture-positive endogenous endophthalmitis. In our

study, 85.7% were of fungal and 12.5% of bacterial etiology. This shows an increasing trend of fungal endophthalmitis post COVID-19, which generally has a subacute course, leading to a delayed presentation and hence a poor prognosis.

Conclusion

As fungal infections are on the rise in patients recovered from COVID-19, a high index of suspicion is essential in patients having ocular complaints as early diagnosis and treatment is crucial in salvaging vision.

A thorough systemic evaluation is imperative to identify any systemic infective foci and prevent the spread of infection by its appropriate treatment.

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Conflicts of interest

There are no conflicts of interest.

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