



Case Report

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Endogenous Endophthalmitis with an Unusual Presentation

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ABSTRACT

Endogenous endophthalmitis is caused by the hematogenous dissemination of infectious organisms, resulting in intraocular infection. This entity is uncommon and accounts for 5–15% of all forms of endophthalmitis. Patients with compromised immune systems are most at risk for endogenous endophthalmitis. An immunocompetent 20-year-old man, following a recent hospitalization and ventilator-associated pneumonia (VAP), presented with blurred vision in the left eye. Fundoscopy revealed dense white-to-yellow, pus-like subfoveal material originating from the choroid, breaking through the retina, and dispersing into the vitreous. According to polymerase chain reaction (PCR) findings, the infection had a bacterial origin and caused irreversible damage to the macula.

Introduction

Endophthalmitis is a rare but severe form of ocular inflammation caused by infection of the intraocular cavity, which can lead to irreversible visual loss if not treated properly and promptly. Endophthalmitis can be classified as either endogenous or exogenous, depending on the route of infection. Exogenous endophthalmitis occurs when intraocular surgery, penetrating injury, a corneal ulcer, or periocular infection breaches the external ocular barriers, allowing an infective agent to access the intraocular spaces. Endogenous endophthalmitis (EE) occurs when organisms reach the eye via the

bloodstream and enter the internal ocular spaces by crossing the blood–ocular barrier. Endogenous endophthalmitis is less common than exogenous endophthalmitis and has been reported to account for 2–8% of all cases of endophthalmitis. Delayed diagnosis of endogenous endophthalmitis can lead not only to visual loss but also to an increased risk of mortality [1, 2].

Case Presentation

A 20-year-old man complained of blurred vision in the left eye following recovery from a 2-week comatose state after a motor vehicle accident. His medical records revealed a subdural hematoma (SDH) in the

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left temporal lobe, brain contusion, clavicular abscess secondary to fracture, and ventilator-associated pneumonia (VAP) during the recent hospitalization. At presentation, the best-corrected visual acuity (BCVA) was 20/20 in the right eye and counting fingers at 2 meters in the left eye. The relative afferent pupillary defect was negative. Both eyes were externally quiet; however, slit lamp examination revealed trace cells in the anterior chamber (AC) and anterior vitreous of the left eye. The intraocular pressure was within normal limits. On fundusoscopic examination of the left eye, although the media was clear, a yellowish fibrovascular lesion measuring approximately 5 disc diameters covered the macula and optic nerve. Dense white-to-yellow subretinal material from the choroid was visible in the subfoveal region. This pus-like

lesion disrupted the internal limiting membrane and dispersed into the vitreous (Figure 1). Additionally, there was vascular tortuosity and mild perivascular sheathing in the macular region. Optical coherence tomography (OCT, Topcon, Tokyo, Japan) showed severe retinal thickening and disruption of the normal retinal contour. The line passing through the dense part of the lesion revealed a hyperreflective area in the inner part of the lesion (Figure 1).

Fluorescein angiography (FA, Heidelberg Engineering, Heidelberg, Germany) revealed a large area of blockage over the disc and macula in the early phase, followed by mild staining in the late phase (Figure 2).

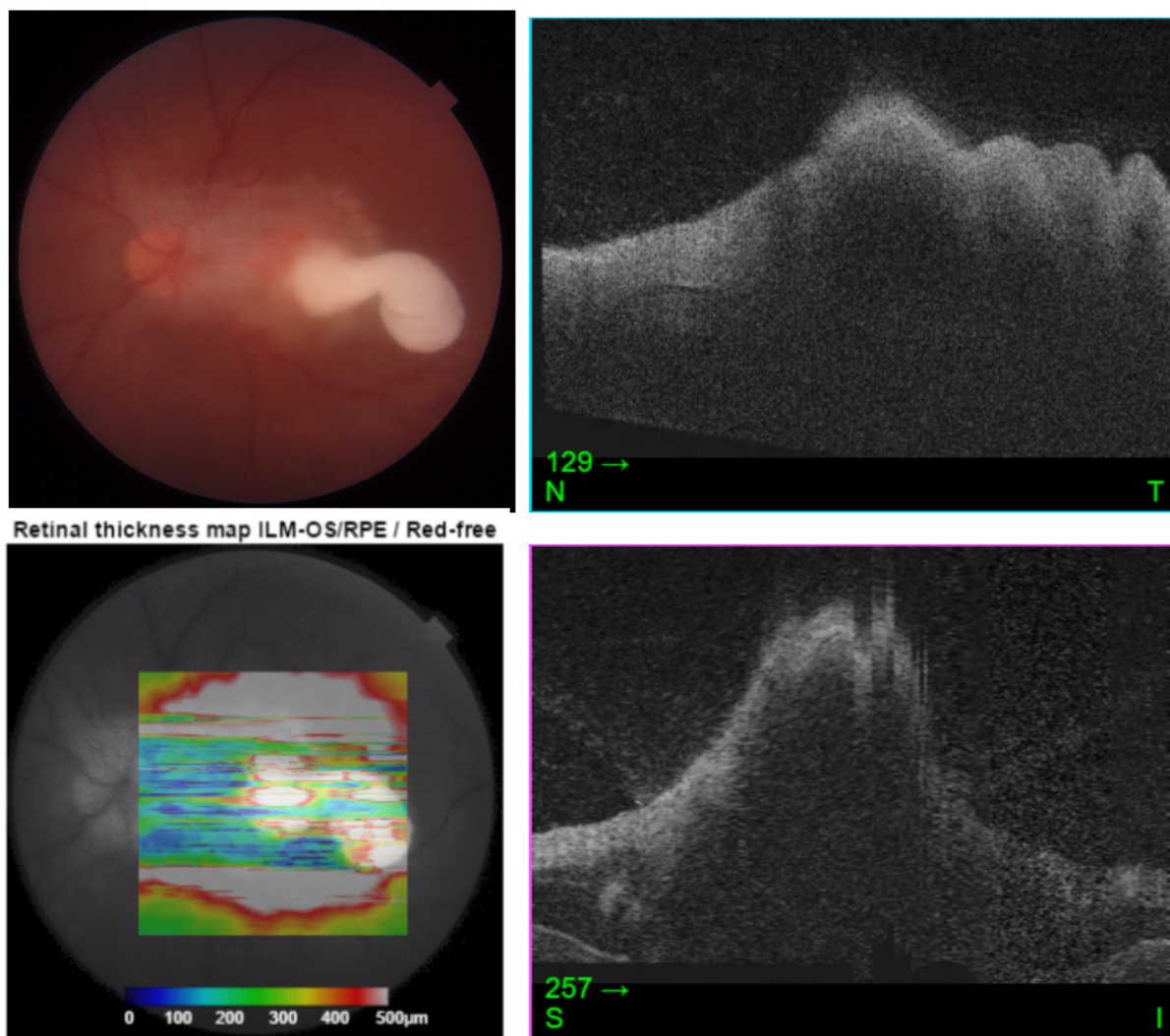


Fig. 1. The left upper image shows a yellowish fibrovascular lesion covering the macula and optic nerve, measuring approximately 5-disc diameters. A dense white to yellow subretinal lesion originating from the choroid is visible in the subfoveal region, breaking through the choroid into the retina. This pus-like lesion disrupted the internal limiting membrane and was dispersed in the vitreous. The lower left image demonstrates a retinal thickness map over the red-free fundus image, an increased thickness is apparent. Optical coherence tomography (OCT, Topcon, Tokyo, Japan), two right photos, showed severe retinal thickening and disruption of the normal retinal contour. The line passing through the dense part of the lesion revealed a hyperreflective area in the inner part of the lesion



Fig. 2. Fluorescein angiography (FA) of the left eye shows a large area of blockage over the optic nerve and macula in the early phase that reveals mild staining with the progression of the FA phase.



Fig. 3. Fundus photo after six-month follow-up revealed the pus-like lesion density decrease and the fibrovascular lesion shrinkage without any treatment.

The patient underwent AC paracentesis, and the aqueous humor was tested for bacterial, fungal, and viral pathogens using polymerase chain reaction (PCR). Although PCR was positive only for 16s ribosomal RNA, aqueous humor and blood cultures showed no bacterial growth. Considering the funduscopic appearance, paraclinical images, and the positive test for 16s rRNA, endogenous bacterial endophthalmitis was deemed the most probable diagnosis.

After six months, BCVA improved to counting fingers at 3 meters with eccentric fixation. The density of the pus-like lesion decreased, and shrinkage of the fibrovascular lesion was observed (Figure 3). We report an unusual presentation of endogenous purulent choroiditis in an immunocompetent young patient following recent hospitalization and VAP. According to the PCR findings, the infection had a bacterial origin, resulting in irreversible damage to the macula.

Discussion

Endogenous bacterial endophthalmitis (EBE) is associated with underlying medical conditions such as diabetes, cardiac disease, and malignancy. Although it can occur in isolation, hematogenous spread typically results in its association with other foci of infection. Patients may present with systemic infections, such as liver abscess, meningitis, and endocarditis, and subsequently develop EBE. Identifying the source of infection is crucial for detecting the potential pathogen and modifying the empiric therapy that has been initiated [2, 3].

In this case, considering VAP as the systemic infection, the respiratory tract was the possible extraocular source of infection. VAP is not a rare phenomenon in intubated patients and may lead to the subsequent involvement of ocular tissues. Transient bacteremia can result in bacterial seeding of the choroid and subsequent invasion into the subretinal space [4].

Retinal involvement largely depends on the bacterial load, previous retinal pathology, and persistence of bacteria in the systemic circulation. In our patient, it appears that a suppurative choroidal infection resulted in an unusual clinical presentation. This was characterized by the penetration of pus-like material into the subretinal space, followed by its dispersion into the vitreous, manifesting as spontaneous abscess drainage.

Conclusions

In conclusion, this case highlights an unusual presentation of endogenous bacterial endophthalmitis in an immunocompetent young patient following hospitalization and ventilator-associated pneumonia (VAP). The clinical course emphasizes the importance of considering endogenous endophthalmitis in patients with systemic infections, even in the absence of traditional risk factors such as immunosuppression. The unique manifestation of purulent choroiditis with subretinal and vitreous involvement, as observed in this case, illustrates the potential for severe and irreversible ocular damage. Early recognition, thorough diagnostic investigations, and prompt treatment are crucial for improving outcomes in such rare but sight-threatening conditions. Additionally, this case underscores the need for heightened awareness among clinicians regarding the ocular complications of systemic infections like VAP to enable timely diagnosis and intervention.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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