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A TRAGIC TALE OF A LOST EYE: AN UNUSUAL CASE OF ENDOGENOUS ENDOPHTHALMITIS

Ophthalmology

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ABSTRACT

We present an unusual case of endogenous endophthalmitis who presented to the Eye OPD with rapid loss of vision in his LE over 3 days which was initially painful but became painless. He was a known diabetic and hypertensive with chronic kidney disease for which he was undergoing hemodialysis. He had no history of trauma or intraocular surgery. On examination, he had nil perception of light in the LE and his anterior segment examination showed matted eyelashes, mucopurulent discharge, edematous lids, conjunctive congestion, corneal stromal edema with infilitrates, flat and irregular anterior chamber. His fundus could not be evaluated due to hazy media. A diagnosis of endogenous endophthalmitis was made and the patient was immediately started on systemic intravenous, topical and intravitreal antibiotics. Culture of his intravitreal tap demonstrated Microsporidia. Visual prognosis was poor and at 6 months follow up, the patient had LE pthisis bulbi.

KEYWORDS

endogenous endophthalmitis, Microsporidia

Case Report

Endogenous endophthalmitis is a potentially devastating intraocular infection resulting from the haematogenous spread of infection from a distant foci (Cesar F. Romero, M.D., Mandeep K. Rai, M.D., Careen Y. Lowder, M.D., PhD. and Karim A. Adal, M.D., 1999). Accounting for approximately 2%-8% of all cases of endophthalmitis, it is not as common as exogenous endophthalmitis but is infinitely more challenging to diagnose and treat effectively (Cesar F. Romero, M.D., Mandeep K. Rai, M.D., Careen Y. Lowder, M.D., PhD. and Karim A. Adal, M.D., 1999; Chee SP, 2001). Indeed, it requires a high degree of clinical suspicion for early diagnosis and initiation of treatment (Faith Burnbaum, Gaurav Gupta, Sharon Fekrat, n.d.). Intravitreal antibiotics along with topical and systemic antibiotics as well as vitrectomy remain the cornerstone of effective management. However, due to delay in diagnosis, the visual outcome is usually poor. Herein, we describe a case of rapidly progressing endogenous endophthalmitis that eventually resulted in pthisis bulbi.

Report of a Case

A 42 year old male presented to the out patient department with complaints of diminution of vision in his left eye (LE) following haemodialysis which rapidly progressed over the course of 3 days. It was initially painful and became painless later. He had no history of intraocular surgery or trauma. However, he was a known diabetic and hypertensive with chronic kidney disease for which he was on haemodialysis three times a week.

On examination, he had nil perception of light in his LE. His eyelashes were matted with mucopurulent discharge and his lids were oedematous. His conjunctiva was congested and his cornea had stromal oedema with infiltrates. The anterior chamber was flat and irregular with lens details obscured. His fundus was not seen due to hazy media.

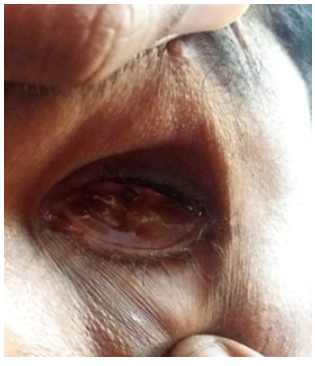
His right eye had an unremarkable anterior segment but fundus examination revealed arteriolar attenuation with venous looping. He had dot haemorrhages and hard exudates nasal to the macula with dull foveal reflex. The findings were consistent with early diabetic and hypertensive retinopathy. Based on the clinical findings, a presumptive diagnosis of endogenous endophthalmitis was made.

The patient was treated with intravitreal injection of vancomycin (2 mg in 0.1 ml) and ceftazidime (2 mg in 0.1 ml) along with topical Moxifloxacin eyedrops administered third hourly. In addition, he received oral antibiotics following a seven day course of intravenous antibiotics. An intravitreal tap was obtained and sent for culture in order to isolate the offending pathogen. On culture of his intravitreal tap, Microsporidia was demonstrated.

Unfortunately, since the patient presented with nil perception of light, his visual prognosis was poor in spite of intensive antibiotic therapy and he was unwilling to undergo destructive surgical procedures. With control of inflammation, the patient was discharged and asked to report for follow up. At 6 months follow up, the patient had pthisis bulbi.

Figure 1A: Figure showing the patient's LE at presentation

Figure 1B: Figure showing the patient's LE at 6 months follow up



Discussion

A relatively rare entity, endogenous endophthalmitis has potentially devastating visual consequences. It results from the hematogenous spread of the offending organism from a distant site of infection to the eye where it multiplies in the choroid, infiltrates the retina and spreads into the vitreous. A presumptive diagnosis of endogenous endophthalmitis warrants a systemic workup in order to isolate the source of infection. However, studies show that in 44% of cases, no source is found (Faith Burnbaum, Gaurav Gupta, Sharon Fekrat, n.d.). Diagnostically, it presents a unique challenge because it can occur at any age and can be caused by a wide array of organisms with significant geographical variation. Both bacteria and fungi are thought to cause endogenous endophthalmitis in developed countries with fungi accounting for the majority of cases. In North America and Europe, gram positive bacteria such as Staphylococcus aureus and Streptococcus pneumoniae predominantly cause endogenous endophthalmitis while in East Asian countries, gram negative organisms predominate (Faith Burnbaum, Gaurav Gupta, Sharon

Fekrat, n.d.). Among fungi, Candida albicans is the most common causative yeast while Aspergillus is the most commonly identified mold.

Like the patient described above, Yoken et al reported a singularly unusual case of endogenous endophthalmitis resulting from Microsporidia. Microsporidia are obligate, intracellular protozoan parasites that typically cause infection in humans following ingestion or inhalation of spores which then proliferate and disseminate to distant sites (Jonathan Yoken, Brian Forbes, Albert M Maguire, 2002). Ocular microsporidiasis usually present either as deep corneal stromal infection in immunocompetent patients and chronic keratoconj unctivitis in immunocompromised patients(Jonathan Yoken, Brian Forbes, Albert M Maguire, 2002). The reported cases of endogenous endophthalmitis resulting from Microsporidial infection remains a rare entity.

Endogenous endophthalmitis is commonly associated with predisposing conditions. The most common risk factors for the development of endogenous endophthalmitis are immunocom promised states (for example, chronic kidney disease, chronic corticosteroid intake, chronic liver disease, diabetes mellitus, malignancy and organ transplant), intravenous drug abuse and indwelling catheters (Connell et al., 2011). In several studies, diabetes mellitus was shown to be the most common association accounting for nearly 50% of cases (Nidhi Relhan MD, 2014).

Endogenous endophthalmitis affects both eyes in 14 to 25% of patients but in the vast majority of patients, unilateral involvement is typically seen (Nidhi Relhan MD, 2014). In individuals with unilateral involvement, the right eye is affected more commonly than the left eye due to the more direct route of the right carotid artery (Sadiq et al., 2015).

The diagnosis of endogenous endophthalmitis necessitates a high index of clinical suspicion on the basis of the presence of risk factors and characteristic ocular findings. To confirm the presence of the specific etiology, vitreous aspiration and diagnostic vitrectomy followed byculture and histopathological examination is used (Sadiq et al., 2015). Vitrectomy has the highest diagnostic yield for culture as compared to a vitreous aspirate as the vitreous samples during vitrectomy are typically taken from near the retinal surface (Sadiq et al., 2015). Newer modalities include the use of real time polymerase chain reaction of aqueous and vitreous samples. Such techniques are particularly useful in culture negative samples (Sadiq et al., 2015). Nevertheless, the most reliable method for detection of systemic involvement is blood culture possibly due to the larger volume of material sampled (Cesar F. Romero, M.D., Mandeep K. Rai, M.D., Careen Y. Lowder, M.D., PhD. and Karim A. Adal, M.D., 1999).

The outcome of endogenous endophthalmitis is generally disappointing due to a volatile mix of delay in diagnosis, the aggressive pathogens typically involved with this condition and compromised host immunity (Cesar F. Romero, M.D., Mandeep K. Rai, M.D., Careen Y. Lowder, M.D., PhD. and Karim A. Adal, M.D., 1999). The prognosis appears to be influenced by the patient's underlying health conditions, with worsened outcomes particularly noted among diabetics. The prognosis also depends on the responsible microorganism, the visual acuity at the time of diagnosis and the degree of vitreous opacity.

Due to the poor prognosis, it is imperative to begin treatment as soon as endogenous endophthalmitis is suspected . Prompt intravenous antibiotic therapy combined with intravitreal antibiotics is generally recommended. However, while the effectiveness of intravenous antibiotic therapy in treating the distant foci of infection while reducing bacteremia and the involvement of the unaffected eye has been well established, the role of intravitreal antibiotics is still evolving. Vitrectomy may reduce the burden of infectious organisms and inflammatory mediators but there is no consensus about the indications (Faith Burnbaum, Gaurav Gupta, Sharon Fekrat, n.d.). Studies, however, have demonstrated that eyes treated with vitrectomy and intravitreal antibiotics are two times more likely to have visual acuity of 20/200 and three times less likely to require enucleation or evisceration (Faith Burnbaum, Gaurav Gupta, Sharon Fekrat, n.d.). In spite of aggressive treatment, in only about 40% of patients vision is retained.

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