

Fungal hyphae in the Anterior Chamber in a case of Anterior Uveitis: A case report

Abstract

Uveitis is the inflammation of the vascular coat of the eyeball with anterior uveitis being the most common form. *Fusarium* is a filamentous fungus widely found in the nature and is commonly associated with keratitis, endophthalmitis and rarely with anterior uveitis. A 54-year-old female presented with pain, redness, diminution of vision. The anterior chamber (AC) showed presence of cells and flare and hyphae like structures suggestive of probable fungal anterior uveitis. The diagnosis was confirmed on microbiological examination and treated successfully. To the best of our knowledge, this case report is first of its kind to describe *Fusarium* associated anterior uveitis with unique photo documentation of the fungal hyphae in the anterior chamber.

Keywords: anterior uveitis, fungal hyphae, *fusarium*

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Introduction

Uveitis is the inflammation of the vascular coat of the eyeball and it can either be anterior, intermediate, posterior or panuveitis depending on the structures involved. Anterior uveitis is the commonest form.¹ Ocular fungal infections most commonly involve the cornea, anterior chamber, and the vitreous.² One important fungus is the *Fusarium*. It is a filamentous fungus, is ubiquitous and commonly found in the soil and on the plants. It is a common cause of fungal keratitis and keratitis-associated fungal endophthalmitis.³ *F. solani* and *F. oxysporum* are the most common species affecting the humans, with *F. solani* being the most virulent. Numerous cases of keratitis and endophthalmitis caused by *F. solani* and *F. oxysporum* have been reported but a case of isolated anterior uveitis has not been reported in the literature.⁴ Herein, this case report emphasizes on considering the morphological characteristics of the lesion when making a provisional diagnosis. To the best of our knowledge, this is the first case report describing the fungal hyphae in the anterior chamber as a cause of anterior uveitis.

Case report

A 54-year-old female presented with pain, redness, and diminution of vision in her right eye for 10 days. She gave a history of undergoing uncomplicated standard phacoemulsification through 2.75 mm self-sealing clear corneal incision with foldable intraocular lens implantation

56 days back and post surgery she was on standard topical antibiotic and steroid regimen for one month. Her general physical examination and systemic workup were within normal limits. She was afebrile. No past history any other systemic disease. Systemic investigations to locate specific foci including blood, urine and cardiac evaluation were negative. Her best corrected visual acuity was 20/200 in her right eye and 20/20 in the left eye. The left eye examination was normal. The right eye showed deep anterior chamber (AC) with 2+ cells and flare and trace hypopyon. There was presence of hyphae-like structures floating in the AC inferiorly (Figure 1A, 1B). It was not possible to get the details of the posterior segment, however vitreous was found to be echo-free on ultrasonography B-scan (Figure 1C). Considering the morphology of the hyphae-like structures, a provisional diagnosis of fungal anterior uveitis was made. Diagnostic AC tap was done and AC lavage with voriconazole was done. Lactophenol cotton blue stain of the AC fluid revealed fungal hyphae (Figure 2A). Initial AC fluid grew *Fusarium sp.* on Sabouraud's dextrose agar (SDA) (Figure 2B, 2C). The patient was started on oral fluconazole 400 mg initial dose followed by 200 mg daily, topical 1% voriconazole eye drops every hour and 1% atropine sulphate eye drops three times a day. Over the next one-month period there was gradual regression of hyphae and resolution of AC reaction. The patient's vision improved to 20/40 and there was no inflammation or evidence of recurrence 1 year after the treatment.

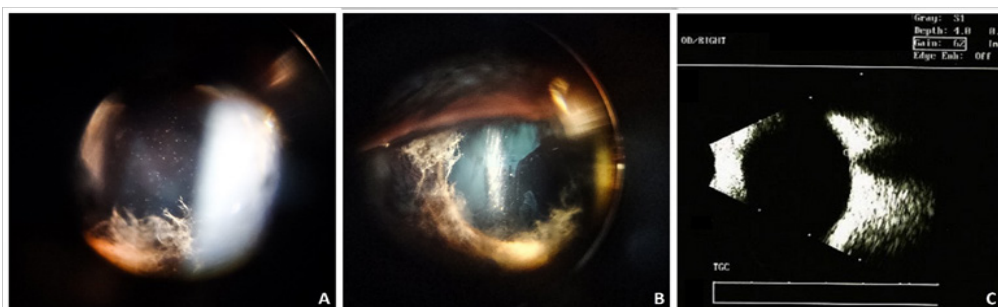


Figure 1 (A, B) Slit lamp photographs showing presence of cells and flare and hyphae in the anterior chamber of the right eye. (C) Ultrasound B-scan showing normal looking posterior segment.

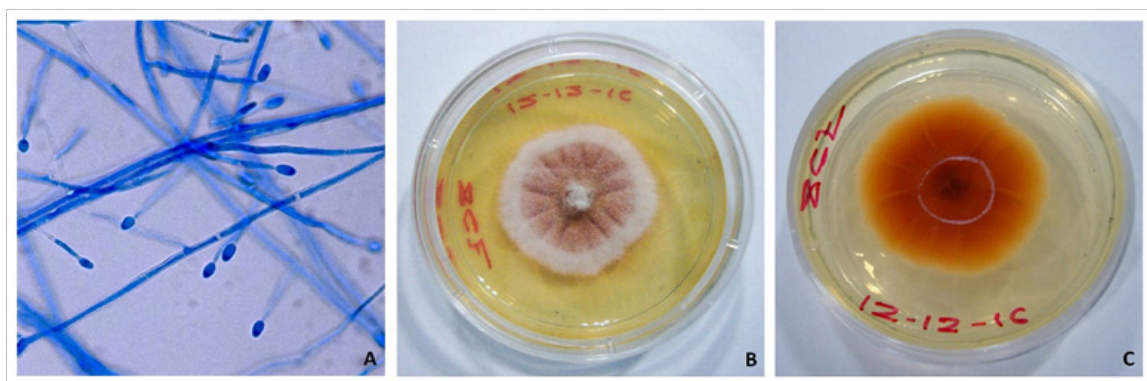


Figure 2 (A) Lactophenol cotton blue stain of the AC fluid showing *Fusarium*. Colony grown on Sabouraud's dextrose agar. (B) Obverse. (C) Reverse.

Discussion

Fungal ocular infection is often a severe disease for which challenging to diagnose, the response to medical treatment is slow, and the clinical outcome meager. It may extend to adjacent tissues, inducing scleritis or endophthalmitis that could potentially result in the loss of the eye.⁵

Fusarium is a filamentous fungus widely found in the nature. The genus has over 100 species. With respect to ocular infections, it is commonly associated with keratitis and endophthalmitis.^{6,7} It is one of the most drug-resistant fungi and is noticeably destructive because it produces extracellular proteases that cause matrix degeneration. This explains the poor visual prognosis in these cases.^{5,8}

The diagnostic point of this case report is that, the hyphae were observed using anterior segment photography which helped us to decide the course of management. Even though the source could not be identified, it is likely that the infection occurred at the time of cataract surgery. In the operating room, the fungal hyphae were removed successfully by aspiration using a phacoemulsification probe. We used voriconazole because it is a broad-spectrum antifungal agent. Amphotericin B or voriconazole are the first-line drugs in cases of unknown fungal etiology since they cover a broader spectrum.⁹ Voriconazole is a synthetic, second-generation, broad-spectrum triazole derivative of fluconazole that inhibits the synthesis of ergosterol. Consequently, it disrupts the fungal cell membrane, with a broader spectrum as compared to amphotericin B and fluconazole.¹⁰

Thus, to conclude, ours is the first report of anterior uveitis by *Fusarium* in an immunocompetent individual in which the hyphae could be photo documented. A high degree of clinical suspicion based on morphological features of the lesion, combined with microbiological evaluation helped to arrive at an appropriate diagnosis and successful management in our case.

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Conflict of interest: Authors declare that there is no conflict of interest.

References

1. Baarsma GS. The epidemiology and genetics of uveitis. *Curr Eye Res.* 1992;11:1-9.
2. Marangon FB, Miller D, Giaconi JA, et al. *In vitro* investigation of voriconazole susceptibility for keratitis and endophthalmitis fungal pathogens. *Am J Ophthalmol.* 2004;137:820-825.
3. Wykoff CC, Flynn HW, Miller D, et al. Exogenous fungal endophthalmitis: microbiology and clinical outcomes. *Ophthalmology.* 2008;115:1501-1507
4. Ferrer C, Alio J, Rodriguez A, et al. Endophthalmitis caused by *Fusarium proliferatum*. *J Clin Microbiol.* 2005;43:5372-5375.
5. Gopinathan U, Ramakrishna T, Willcox M, et al. Enzymatic, clinical and histologic evaluation of corneal tissues in experimental fungal keratitis in rabbits. *Exp Eye Res.* 2001;72:433-442.
6. Dursun D, Fernandez V, Miller D, et al. Advanced fusarium keratitis progressing to endophthalmitis. *Cornea.* 2003;22:300-303.
7. Louie T, el Baba F, Shulman M, et al. Endogenous endophthalmitis due to *Fusarium*: case report and review. *Clin Infect Dis.* 1994;18:585-588.
8. Aggermann T, Haas P, Krepler K, et al. *Fusarium* endophthalmitis following refractive lens exchange for correction of high myopia. *J Cataract Refract Surg.* 2009;35:1468-1470.
9. Tuli SS. Fungal keratitis. *Clin Ophthalmol.* 2011;5:275-279.
10. Lalitha P, Shapiro BL, Srinivasan M, et al. Antimicrobial susceptibility of *Fusarium*, *Aspergillus*, and other filamentous fungi isolated from keratitis. *Arch Ophthalmol.* 2007;125:789-793.