

Treatment of Recalcitrant Mycotic Keratouveitis with Targeted Voriconazole Injection Combined with Hypopyon Drainage

Prateek Jain, Poulami Pal, Anshuman Pattnaik

Department of Ophthalmology, Global Hospital Institute of Ophthalmology, Abu Road, Sirohi, Rajasthan, India.

Abstract

Fungal keratitis is a common yet obstinate condition to treat with a wide range of ocular morbidity. Factors such as compromised immunity of the patient, reduced drug penetration, refractory nature of the disease contribute to difficulty in treatment. A 65 year old chronic smoker was referred to us with left eye deep fungal keratitis with hypopyon which was not responding to topical treatment. The patient was diagnosed as Recalcitrant Mycotic Keratouveitis and was posted for targeted management including hypopyon drainage with Intrastromal and Intracameral Voriconazole injection ; following which the condition improved significantly.

Delhi J Ophthalmol 2021;31; 105-107; Doi <http://dx.doi.org/10.7869/djo.643>

Keywords: Recalcitrant Fungal Keratitis, Mycotic Keratouveitis, Intrastromal Voriconazole, Hypopyon Drainage

A 65 year old male presented with complaints of redness, watering, photophobia, pain and progressive diminution of vision in left eye (LE) for last 1 ½ months. History of any ocular trauma or surgery, contact lens use, systemic illness were negative. The patient was on topical Natamycin (5%) 6 times, Moxifloxacin (0.5%) 6 times and Homatropine (2%) 2 times for four weeks before presenting to us.

Visual acuity was Hand movements close to face. Slit lamp examination (Figure 1a) showed irregular, dry corneal surface with central 3.5 mm² mid to deep stromal infiltrates with feathery margins extending superiorly. Satellite lesions and stromal oedema were also noted. Fluorescein staining showed pooling of dye with no epithelial defect (Figure 1b). Dense convex immobile hypopyon of height 4.5mm

was noted in Anterior chamber (AC) with diffuse keratic precipitates (KPs). Lacrimal sac syringing revealed patent passage. IOP was found to be 34 mmHg. B-Scan revealed acoustically clear vitreous cavity with normal RCS complex thickness, hence ruling out endophthalmitis (Figure 2a).

AC lavage for hypopyon along with intrastromal and intracameral Voriconazole injection was planned. Patient was started on topical Voriconazole (1%) and Natamycin (5%) 2 hourly, fortified Ceftazidime 2 hourly, Atropine (1%) TDS, Itraconazole ointment HS. Oral Acetazolamide and topical Brimonidine+Timolol were started to lower the IOP. Blood investigations like RBS, LFT, CBC, ESR were ordered. Oral Ketoconazole 200 mg bid was started after normal LFT

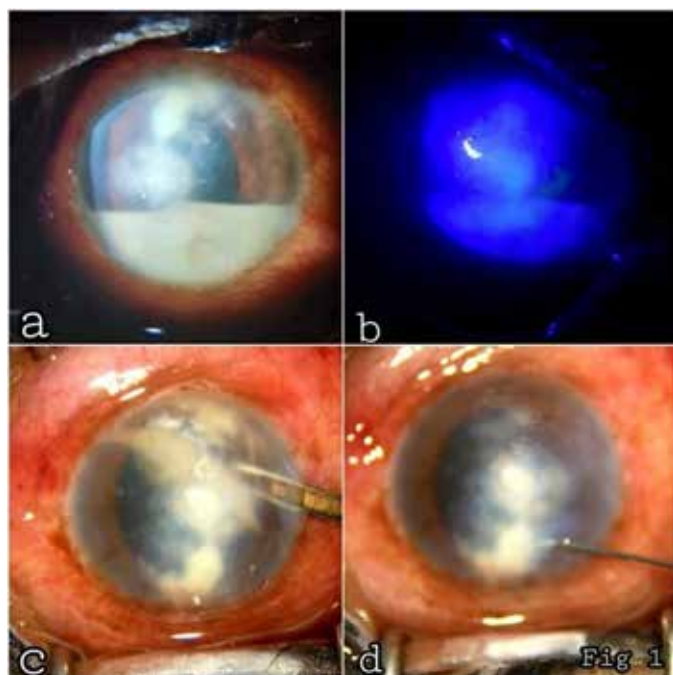


Figure 1: (a) Slit lamp photograph at presentation. (b) fluorescein staining showing absence of epithelial defect. (c) Aspiration of hypopyon being performed. (d) Intrastromal Voriconazole is being injected with 30G needle

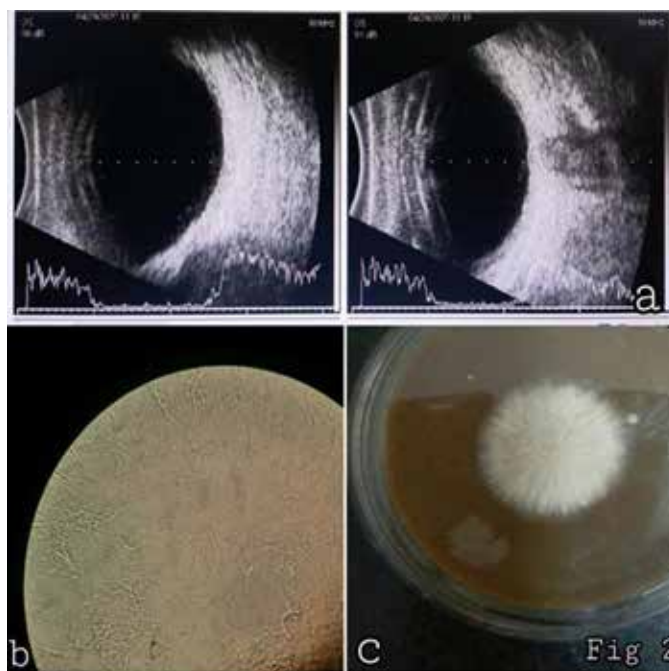


Figure 2: (a) B-Scan showing anechoic vitreous cavity (vertical transverse and horizontal axial scans) (b) KOH mount : numerous thin, slender, septate hyphae noted (c) SDA culture plate: growth of white cottony colonies on Day 6.

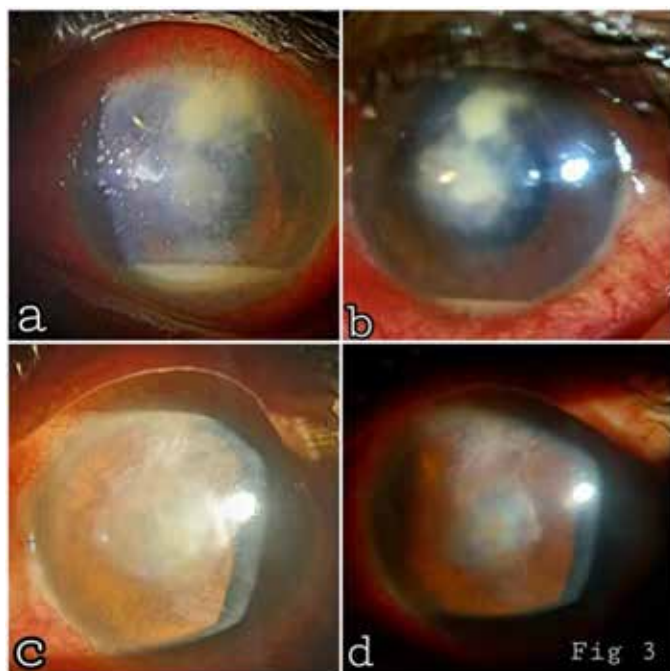


Figure 3: Progressive resolution of fungal keratitis in follow-ups.

(a) Post first injection day: presence of corneal infiltrates, Air bubble and reactionary hypopyon.

(b) Post second injection day: corneal infiltrates with resolving hypopyon.

(c) Slit lamp image at 7 weeks: stage of corneal ulcer regression: demarcation with enlargement of size and appearance of vascularisation from superior limbus.

(d) Slit lamp image at 9 weeks: stage of cicatrisation: absence of corneal infiltrates with well defined scar, healthy ocular surface with return of corneal lustre.

results. Patient was taken to OT next day after normalization of IOP. AC lavage was done with BSS using a 23G Simcoe cannula (Figure 1c). Intrastromal injection of Voriconazole 50µg/0.1ml was injected circumferentially into the mid-stroma to barrage the lesion¹ (Figure 1d).

Same dose of Voriconazole was given intracamerally at the end of the surgery. Collected sample of hypopyon was sent for microbiological investigations. KOH mount showed numerous septate hyphae (Figure 2b) and SDA showed white cottony colonies with fusiform septate macroconidia suggestive of *Fusarium* species (Figure 2c).

Next day, reduction in stromal infiltrates and hypopyon height (2mm) was noted (Figure 3a). A second intrastromal injection was given on day 4 following which ulcer size and hypopyon height reduced further (Figure 3b). Patient was followed up weekly in first month and fortnightly later. He was responding well to treatment with healing corneal infiltrates and decreasing KPs on every visit. Vascularisation developed from limbal vicinity (Figure 3c). On the last follow up, cornea was free of infiltrates and scarring had occurred (Figure 3d).

Managing fungal keratitis is a challenge to ophthalmologists because of poor drug penetration, surface toxicity, limited

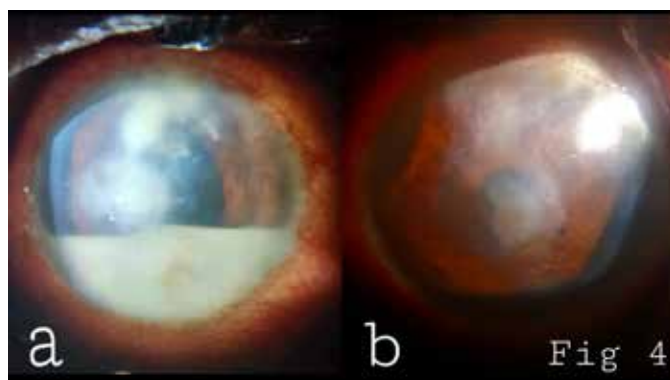


Figure 4: Slit lamp images at presentation (4a) and at last follow up (4b) after successful management of recalcitrant mycotic keratouveitis.

spectrum of and increasing resistance to antifungal agents.² The efficacy of AC evacuation of hypopyon in treatment of deep keratomycosis has been previously reported.³ Topical Natamycin is the first-line therapy in filamentous keratomycosis. However, due to high hydrophobicity, Natamycin is unable to penetrate into the AC. Therefore, its use is limited in cases of deep fungal keratitis with dense hypopyon.⁴ Prakash et al used intrastromal Voriconazole as an adjunct in management of deep fungal keratitis and found it to be effective.⁵

Intrastromal and intracameral Voriconazole might be used as an adjuvant along with AC lavage for recalcitrant keratomycosis with hypopyon. It may prevent corneal perforation, thus reducing the need for therapeutic or tectonic keratoplasty.

References

- 1 Konar P, Joshi S, Mandhare SJ, Thakur R, Deshpande M, Dayal A. Intrastromal voriconazole: An adjuvant approach for recalcitrant mycotic keratitis. *Indian J Ophthalmol* 2020;68:35-8.
- 2 Gubert Müller G, Kara José N, Silvestre De Castro R. Antifungals in eye infections: Drugs and routes of administration. *Rev Bras Oftalmol* 2013;72:132-41.
- 3 Jain R, Kapoor A, Virdi AS, et al. Role of evacuation of anterior chamber exudates as an adjunct in the management of deep fungal keratitis. *Adv Ophthalmol Vis Syst.* 2014;1(4):105-110.
- 4 Peters P, Oberacher-Velten I, Helbig H, Märker D. Successful treatment of *Fusarium solani* anterior chamber involvement secondary to contact lens associated corneal ulcer with intracameral Amphotericin B. *GMS Ophthalmol Cases.* 2019;9:Doc03
- 5 Prakash G, Sharma N, Goel M, et al. Evaluation of Intrastromal Injection of Voriconazole as a Therapeutic Adjunctive for the Management of Deep Recalcitrant Fungal Keratitis. *Am J Ophthalmol.* 2008;146(1):56-59.

Cite This Article as: Prateek Jain, Poulami Pal, Anshuman Pattnaik. Treatment Of Recalcitrant Mycotic Keratouveitis With Targeted Voriconazole Injection Combined With Hypopyon Drainage. Delhi Journal Of Ophthalmology. 2020; Vol 31, No (3): 105-107.

Acknowledgments: Nil

Conflict of interest: None declared

Source of Funding: None

Date of Submission: 04 July 2020
Date of Acceptance: 03 August 2020

Address for correspondence

Prateek Jain MS, DNB,
Consultant, Global Hospital
Institute of Ophthalmology, Abu
Road, Sirohi, Rajasthan, India.
Email: docprateekjain@gmail.com



Quick Response Code