

Secondary Fungal Infection in Viral Keratitis

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Purpose: To report incidence of secondary fungal infection in herpes simplex keratitis.

Case Summary: Two patients of recurrent viral keratitis who were on systemic antivirals and topical steroids presented with worsening symptoms and decreased vision with epithelial defect and pigmented stromal infiltrate. Corneal scrapings were done. Fungal hyphae were seen on smears and growth on culture. Steroid therapy was stopped, systemic antivirals continued and antifungal therapy was started.

Abstract

Conclusion: Secondary infection has to be considered, when herpes keratitis worsens on treatment. We should be aware of uncommon manifestations of keratitis.

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Keywords: Herpes simplex keratitis, secondary infection, fungal infection.

Introduction

Herpes simplex virus (HSV) keratitis is one of the most common infective causes for blindness with a reported incidence between 5.9 and 20.7 episodes per 100,000 persons each year.¹ HSV keratitis is believed to be an important cause of infectious blindness, mainly resulting from stromal opacification.² Topical corticosteroids are valuable therapeutic agents in the management of stromal herpes simplex keratitis. The Herpetic Eye Disease Study (HEDS) evaluated the efficacy of topical corticosteroids used in conjunction with topical antiviral medication in the treatment of HSV immune stromal keratitis.³ Usage of corticosteroids without proper surveillance is associated with secondary microbial infections.^{4,5}

Case: 1

A 45yr old farmer presented with complaints of pain, redness, watering, foreign body sensation, photophobia associated with diminution of vision in right eye (RE) with best corrected visual acuity (BCVA) in right eye 6/24 and left eye 6/9. He gave history of similar episodes in the right eye for the past 3 years and was diagnosed as RE recurrent viral keratitis. Previously, he was given oral Acyclovir 400mg 5 times per day, Moxifloxacin 0.5% with prednisolone acetate 1% eye drops 4times/day, Sodium carboxymethyl cellulose 0.5% eye drops 6times/day. He was advised to review after 2 weeks. Patient was lost to follow up and had 3 episodes since then for which he self medicated using steroid eye drops 4times/day and stopped when he experienced relief.

On slit lamp examination, right eye revealed circumcorneal congestion, a paracentral 8×7mm size epithelial defect, 5×5mm light brown pigmented deep stromal infiltrate with inferior corneal thinning and clumps of exudates on endothelium (Figure 1). Hypopyon of 1.5mm was also noted. Corneal sensations were reduced. Left eye examination was within normal limits.

Corneal scrapings were taken for microbiological investigations. On KOH mount and Grams stain, oval budding yeast cells were seen. On Sabouraud dextrose agar, mucoid creamy egg white colonies suggestive of *Candida*

species (Figure 2) were isolated. Patient was then diagnosed as Right eye-recurrent viral keratitis with secondary fungal keratitis. The patient was started on Fluconazole 0.3% eyedrops one hourly, Voriconazole 1% eyedrops one hourly, Moxifloxacin 0.5% eyedrops 4 times/day, Atropine 1% eyedrops 2 times/day. He was advised for Liver function tests and started on oral ketoconazole 200mg BD.

On next week follow up, BCVA in right eye was 1/60. Patient had epithelial defect of 7×7mm, central pigmented infiltrate of size 5×5mm and 1mm hypopyon in right eye. Therapeutic

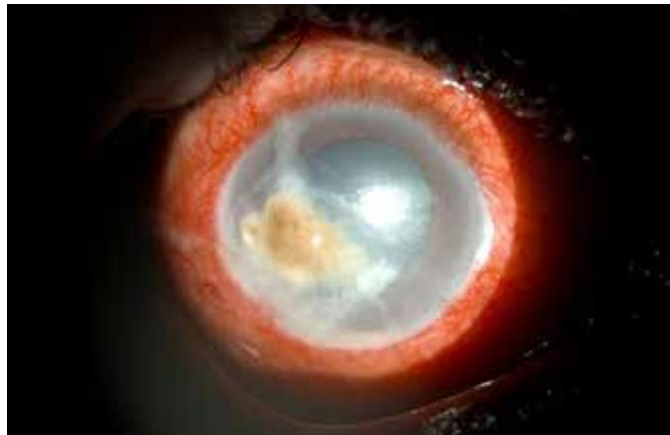


Figure 1: Epithelial defect of 8×7mm, light brown Pigmented infiltrate of 5×5mm extending to deeper stroma with exudates on endothelium associated with inferior corneal thinning

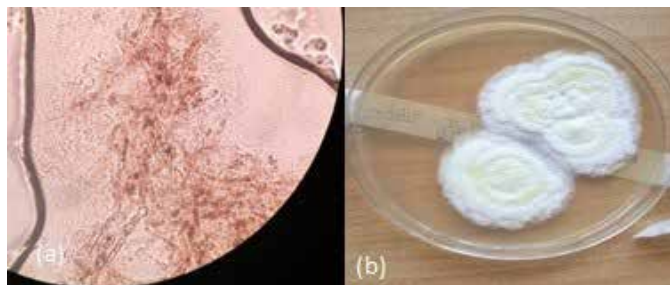


Figure 2: (a) On KOH mount – budding yeast were seen, (b) mucoid creamy egg white colonies suggestive of *Candida* species

debridement was done. Patient was counselled about the poor prognosis and the need for therapeutic keratoplasty and continued the same treatment. After 2 weeks, patient had BCVA in RE-1/60 with 7×7mm epithelial defect, 5×5mm pigmented infiltrate, 1mm hypopyon and Inferior descemetocele (Figure 3). As ulcer was not responding to current treatment, Natamycin 5% eyedrops one hourly and Itraconazole eye ointment BD were added in the treatment. On subsequent follow up after a week, patient's right eye vision dropped to counting fingers close to face with no symptomatic improvement and progressive inferior thinning of cornea with descemetocele observed. Patient was given treatment options of Tissue adhesive with bandage contact lens or Therapeutic keratoplasty for tectonic purpose only. Patient underwent application of tissue adhesive with bandage contact lens (Figure 4) and was continued with same medication except natamycin which was stopped. After 6 months of intensive therapy, ulcer healed resulting in inferior corneal opacity with vascularisation. (Figure 5)

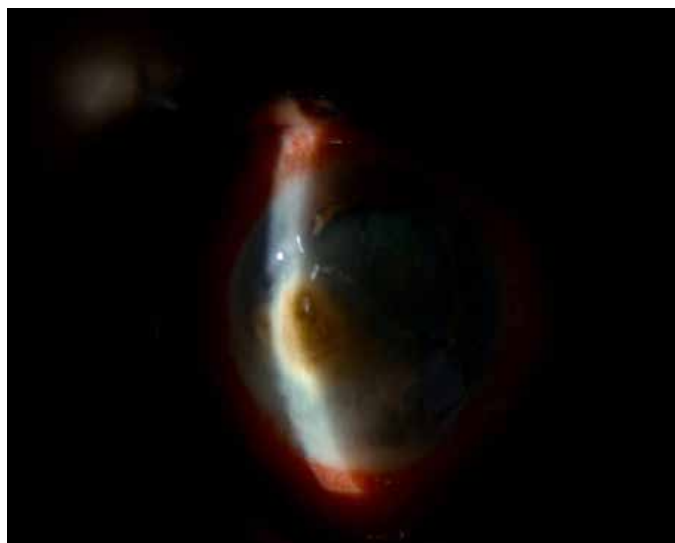


Figure 3: Epithelial defect of 7×7mm and pigmented infiltrate of 5×5mm, hypopyon of 1mm and Inferior descemetocele



Figure 4: Tissue adhesive with bandage contact lens



Figure 5: After 6 months of intensive treatment inferior corneal opacity with vascularisation observed



Figure 6: Epithelial defect of 5 × 5 mm and pigmented deep stromal infiltrate of 4×4 mm with 1mm hypopyon

Case: 2

A 58 year old farmer came with complaints of pain, redness, watering, photophobia and diminution of vision in RE for the past 2 days. No history of trauma was present. Previously, he had recurrent episodes of similar complaints in the past and was diagnosed as Herpes Stromal Keratitis. He was using Loteprednol 0.5% eyedrops 4 times/day, oral acyclovir 400mg BD chloramphenicol & polymyxin -B sulphate eye ointment twice daily.

His vision in right eye was hand movements close to face and left eye 6/9. On slit lamp examination, left eye was normal, right eye had a 5×5 mm epithelial defect in inferotemporal quadrant with 4×4mm pigmented deep stromal infiltrate and 1 mm hypopyon (Figure 6). Corneal sensations were reduced. Corneal scrapings were taken, On KOH mount and Grams stain - septate fungal hyphae were seen (Figure 7). On sabouraud dextrose agar- brown pigmented colonies were observed, suggestive of *Aspergillus fumigatus* (Figure 8). Patient was diagnosed with Right eye recurrent viral keratitis with secondary fungal infection. He was started on Voriconazole 1% eyedrops one hourly, Natamycin 5% eyedrops one hourly, Moxifloxacin 0.5% eyedrops 6 times/day, Atropine 1% eyedrops 3 times/day, Itraconazole 1% eye ointment thrice daily. After 1 week, there was 3×3mm epithelial defect with 4×3 mm pigmented stromal infiltrate and 0.5mm hypopyon (Figure 9). He was continued on same medication and advised to review after 1 week, but the patient was lost to follow up.

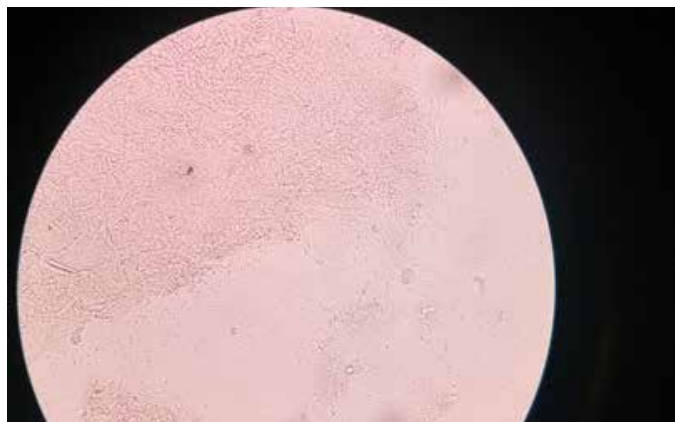


Figure 7: On KOH mount- septate fungal hyphae were seen



Figure 8: On saboraaud dextrose agar brown pigmented colonies were observed suggestive of Aspergillus species



Figure 9: One week later 3x3mm epithelial defect with pigmented stromal infiltrate of 4x3 mm with 0.5mm hypopyon

Discussion

In cases of recurrent viral keratitis, inadvertent use of topical corticosteroids without proper surveillance can lead to secondary infections. Usually, *Candida* is not a pigmented fungi but usage of steroids can alter its morphological pattern giving a different appearance. Patient must be counselled not to self medicate with steroids eye drops. Whenever, a patient of recurrent viral keratitis does not respond to standard antiviral therapy, it's better to repeat the investigations. Corneal scrapings for smears and culture must be done to rule out secondary infections and treated accordingly. Delay in appropriate treatment may lead to vision threatening complications such as descemetocele and perforation. So prompt intervention at proper time is required to halt the progression of keratitis.

References

1. Liesegang TJ, Melton LJ, Daly PJ ID. Epidemiology of ocular herpes simplex. Incidence in Rochester, Minn., 1950 through 1982. *Arch Ophthalmol.* 1989; 107:1155–9.
2. Azher TN, Yin XT, Tajfirooz D, Huang AJ, Stuart PM. Herpes simplex keratitis: Challenges in diagnosis and clinical management. *Clin Ophthalmol.* 2017; 11:185–91.
3. Binder PS. Herpes simplex keratitis. *Surv Ophthalmol* 1977; 21(4):313–31.
4. Nissenkorn I, Wood TO. Secondary bacterial infections in herpes simplex keratitis. *Ann Ophthalmol.* 1982; 14(8):757–9.
5. Boisjoly HM, Pavan-Langston D, Kenyon KR, Baker AS. Superinfections in herpes simplex keratitis. *Am J Ophthalmol.* 1983; 96(3):354–61.

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