

Recurrence of Herpes Simplex Keratitis in Corneal Grafts

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ABSTRACT

Recurrence of herpes simplex virus (HSV) keratitis is a possible complication of keratoplasty done for corneal scars resulting from herpes simplex keratitis. Prognosis is often poor. A couple of months ago, a 38-year-old woman with penetrating keratoplasty operated for herpes simplex keratitis two years back presented to us with corneal oedema in the left eye with vision of counting fingers at one foot. We prescribed her topical steroids, and she improved significantly but she failed to come for follow-up regularly. Last week, she presented to us again and had unfortunately developed epithelial dendritic keratitis (stain positive) along with minimal corneal oedema. This time, we treated her with topical aciclovir and discontinued previously prescribed steroids. She responded dramatically well to aciclovir with disappearance of dendrites, within 4 days, but her corneal oedema increased again. Hence, we have started her on oral steroids along with topical aciclovir, mild topical steroids, and hypersol. She improved her vision from 3/60 to 6/24. She is now on regular follow-up.

Keywords: Case report, Corneal grafts, Herpes simplex virus, Penetrating keratoplasty.

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SUMMARY

Recurrent herpes simplex virus (HSV) keratitis is a potential complication following keratoplasty for corneal scars resulting from previous herpes simplex keratitis. Unfortunately, the prognosis for this condition is often unfavorable. Recently, we encountered a case involving a 38-year-old woman who had undergone penetrating keratoplasty two years ago for corneal scarring due to herpes simplex keratitis. She presented to us a few months ago with corneal edema in her left eye and had a visual acuity of counting fingers at a distance of one foot. Initially, we prescribed topical steroids, which led to significant improvement. However, the patient did not adhere to regular follow-up visits.

Last week, she returned with the development of epithelial dendritic keratitis (positive staining) and minimal corneal edema. This time, we initiated treatment with topical aciclovir (acyclovir) and discontinued the previously prescribed steroids. The patient responded remarkably well to aciclovir, with the dendrites disappearing within four days. Unfortunately, her corneal edema returned thereafter. Consequently, we decided to administer oral steroids in addition to topical aciclovir, mild topical steroids, and hypersol. This combined approach resulted in a notable improvement in her vision, increasing from 3/60 to 6/24. The patient is currently undergoing regular follow-up visits to monitor her progress.

CASE DESCRIPTION

A 38-year-old female, a housewife residing in Sakipur, Greater Noida, experienced an episode of herpes simplex keratitis (HSK) in her left eye two years ago, leading her to undergo penetrating keratoplasty at Rajender Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi.

According to her records from three months ago, her best-corrected visual acuity (BCVA) was 6/18, with a clear graft and no ongoing medication. However, she presented to our clinic two months ago with complaints of pain, redness, watering, and a

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recent decrease in vision, which had been persisting for one week. She denied having any fever, history of trauma, or systemic illness.

Upon examination, her vision in the right eye was 6/6, while in the left eye, it was 3/60. She exhibited mild blepharospasm and ciliary congestion in the left eye. The host corneal rim displayed mild edema but was non-vascularized. The junction between the host tissue and the graft showed mild edema, with 8 out of 16 sutures remaining intact. The corneal graft (8 mm) appeared moderately edematous, ectatic, non-vascularized, and hazy due to edema. Corneal sensations were impaired, but no abnormal endothelial deposits were observed (Fig. 1). Unfortunately, details of the fundus examination were not visible.

After duration of 2 years following penetrating keratoplasty, the patient experienced the onset of corneal edema without any preceding illness, leading to the diagnosis of graft rejection. To manage the condition, the patient was prescribed topical steroids (Moxi-PD) to be administered hourly for 3 days, followed by every two hours for the next four days. After 1 week, her best-corrected visual acuity (BCVA) improved to 6/18, and the corneal edema had also reduced. Unfortunately, the patient was lost to follow-up and

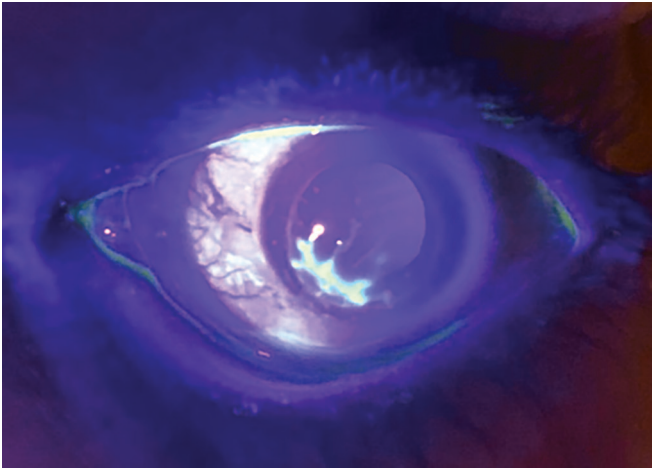


Fig. 1: Stain positive epithelial dendritic lesions with minimal corneal oedema

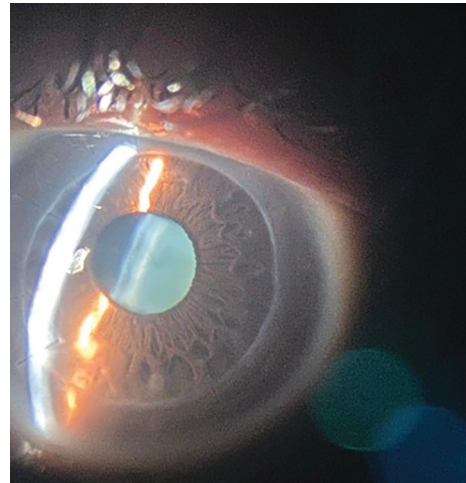


Fig. 3: No lesions and minimal corneal oedema

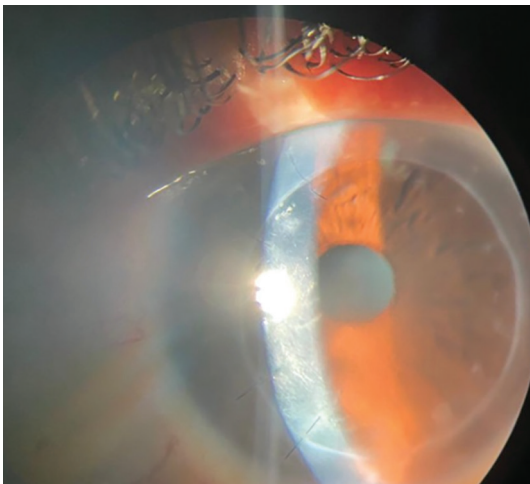


Fig. 2: No dendritic lesions but corneal oedema present



Fig. 4: Clear cornea

only returned after a gap of one and a half months, reporting pain, redness, watering, and a decrease in vision in the left eye.

Upon examination, fluorescein staining revealed positive results, indicating the presence of epithelial dendritic keratitis with minimal corneal edema. Consequently, the administration of topical steroids was discontinued. The patient was then diagnosed with a recurrence of herpes simplex keratitis in the graft (Fig. 1). Treatment was initiated, including systemic Acyclovir at a dosage of 400 mg five times a day, topical 3% acicvir eye ointment five times a day, and prophylactic tobra eye drops four times a day.

After 4 days, the patient's vision deteriorated to counting fingers at a distance of one foot. The previously observed dendritic lesions had disappeared, and the fluorescein stain was negative. However, there was an increase in corneal edema (Fig. 2). As a result, the use of topical acicvir was discontinued. Instead, the patient was prescribed Gatifloxacin-P eye drops to be administered every hour for 3 days, followed by every 2 hours after 4 days. Additionally, eye ointment containing sodium chloride and oral steroids were added to the treatment regimen.

After 1 week of follow-up, the patient's vision showed improvement, reaching 6/24. The graft also cleared up, displaying

minimal edema (Figs 3 and 4). No signs of endothelial deposits were observed. During the fundus examination, mild media haze was noted. The optic disc had a normal cup-to-disc ratio of 0.3:1, and the vessels appeared normal. The macula also appeared normal.

DISCUSSION

Herpetic keratitis can manifest as either a unilateral or bilateral condition, with bilateral involvement being more common in patients with atopy due to immune dysregulation and increased susceptibility to viral infections.¹ The characteristic presentation of herpes keratitis includes the presence of classic dendritic lesions with terminal bulbs. Recurrent activations of the virus within the sensory ganglion can result in corneal scarring, necrosis, and diminished sensation, leading to a condition known as neurotrophic cornea.

Ocular herpetic disease is primarily caused by HSV-1, which enters the cornea through the trigeminal nerve following oral infection.² Initially, the infection may be asymptomatic, but patients may eventually present with symptoms such as acute follicular conjunctivitis and upper respiratory infection. After the primary infection, the virus travels along the axons of sensory nerves and

establishes a latent infection in the trigeminal ganglion, where it remains indefinitely. Subsequently, the virus can reactivate at any point along the branches of the trigeminal nerve, leading to various ocular complications and morbidity.²

Herpes simplex virus keratitis is characterized by the presence of multiple epithelial lesions, initially presenting as a coarse, punctate epithelial keratitis that can be mistaken for viral keratitis. The characteristic feature of HSV keratitis is the occurrence of small arborizing epithelial dendrites on the corneal surface. These dendrites possess terminal bulbs, allowing them to be differentiated from pseudo dendrites seen in herpes zoster keratitis. Importantly, the dendrites follow the nerve pattern of the cornea, aiding in the diagnosis of HSV keratitis.³

Fluorescein staining reveals the ulcer bed in HSV keratitis, while the swollen corneal epithelium at the ulcer's edge typically stains with Rose Bengal. The presence of multiple dendrites can sometimes merge to form a geographic epithelial ulcer.⁴ Additionally, mild conjunctival injection, ciliary flush, mild stromal edema, and subepithelial white blood cell infiltration may be observed. In primary HSV epithelial keratitis, spontaneous resolution is possible, but antiviral medication is often prescribed to expedite recovery and potentially reduce long-term complications.⁵

The primary approach to treatment involves the use of antiviral medications, which can be administered orally as acyclovir, valacyclovir, or famciclovir for a duration of 10–14 days. Alternatively, topical antiviral medications can also be employed.⁶ One option is topical ganciclovir 0.15%, which is FDA approved for the treatment of acute herpetic keratitis. It is typically applied five times a day until the corneal ulcer heals, after which the frequency is tapered to three times a day for an additional week. Another topical therapy option is trifluridine 1%, which can be prescribed eight to nine times a day. However, caution should be exercised to discontinue the use of antiviral drops within 10–14 days due to the potential for significant corneal toxicity.

In addition to antiviral therapy, epithelial debridement of the dendrites can be performed to aid in reducing the viral load. The use of an amniotic membrane can also be beneficial in promoting epithelial healing and minimizing scar formation when used alongside antiviral treatment.⁷

The herpetic eye disease study (HEDS) has indicated that the long-term use of oral antivirals for prophylaxis can potentially reduce the risk of recurrent HSV keratitis.^{8–10}

In cases where significant scarring affects visual acuity, a penetrating keratoplasty can be considered as a treatment option once the HSV keratitis is in a quiescent stage.

The prognosis for HSV keratitis is generally favorable; however, it can vary significantly depending on the severity of the disease, the number of recurrences, and the timing of treatment.

MY LEARNING POINTS

Herpetic stromal keratitis is a common indication for corneal transplantation; however, this patient group carries a relatively high risk of graft failure. The management of herpetic keratitis through keratoplasty is challenging due to the lack of standardized diagnostic criteria and varying durations of follow-up. In this particular case, I faced a dilemma regarding the use of steroids. If no steroids were administered, the corneal edema would increase. However, there was concern about using topical steroids due to the risk of recurrence. Nonetheless, the graft was showing signs of rejection, necessitating the addition of oral steroids (Prednisolone). Thankfully, the patient has shown significant improvement, and she is currently attending regular follow-up appointments.

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