Case Report

Herpes Zoster Ophthalmicus and Limbal Ischemia in A Patient with History of Ocular Graft-Versus-Host Disease

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Abstract

Purpose: To report a rare complication of herpes zoster ophthalmicus (HZO).

Methods: A 27-year-old man with a history of graft-versus-host disease (GVHD) presented with pain and redness in his left eye along with vesicular eruptions on the same side of the forehead from 40 days earlier.

Results: In this case report, we present a case of HZO with severe limbal ischemia in a patient with ocular GVHD. The patient was administered with intensive topical preservative-free lubrication, topical preservative-free antibiotics, topical autologous serum 20%, topical non-preservative steroid (methylprednisolone 1%), and oral valacyclovir 1 g twice daily. The patient underwent amniotic membrane patch surgery on bulbar conjunctiva and cornea, lateral tarsorrhaphy, and punctal occlusion for the left eye.

Conclusion: In this report, severe and extensive limbal ischemia caused by herpes zoster virus in an immunocompromised patient is reported.

Keywords: Graft-versus-host disease, Herpes zoster ophthalmicus, Limbal ischemia

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Introduction

Ocular graft-versus-host disease (GVHD) can cause many ocular surface problems such as dry eye syndrome, mucopurulent and pseudomembranous conjunctivitis, corneal ulcer, corneal thinning and melting, but limbal ischemia has not been reported.[1-3] Similarly, herpes zoster ophthalmicus (HZO) can involve any ocular tissue, including eyelid vesicles, follicular conjunctivitis, epithelial and stromal keratitis, corneal endothelitis, neurotrophic keratitis, episcleritis and scleritis, anterior uveitis, retinitis, and optic neuritis.[4,5] Ischemia from occlusive vasculitis had been shown to play a pivotal role in different manifestations of HZO, including acute retinal necrosis, sclerokeratitis, and orbital apex syndrome, but extensive limbal ischemia has not been reported.[6,7] In this case report, we present a case of HZO with severe limbal ischemia in a patient with ocular GVHD.

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Case Report

A 27-year-old man presented with pain and redness in his left eye along with vesicular eruptions on the same side of the forehead from 40 days earlier. He was diagnosed with left HZO and administered oral valacyclovir 1 g three times a day. After a few days, pain and redness exacerbated, and mucoid discharge and decreased vision were added to previous symptoms. He had a history of dry eye in both eyes due to GVHD after bone marrow transplantation for acute lymphoblastic leukemia 3 years earlier. He was on oral prednisolone 15 mg/day and methotrexate 7.5 mg/week. Written informed consent was obtained from the patient.

Slit-lamp examination revealed severe conjunctival injection, mucoid discharge, inferior symblepharon, extensive bulbar and tarsal conjunctival epithelial defect, corneal epithelial defect, and near 360° limbal ischemia in his left eye [Figure 1]. Scars

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of healed vesicles could also be seen on the left forehead. In his right eye, only mild conjunctival injection, mild diffuse punctate epithelial erosion, and abnormal Schirmer, which could be attributed to chronic GVHD dry eye was evident [Figure 1]. No conjunctival scarring or symblepharon was detected. Best corrected visual acuity was OD: 7/10, and OS: Finger counting was 1 m. Anterior chamber, lens, and posterior segment examinations were normal.

The patient was administered with intensive topical preservative-free lubrication, topical preservative-free antibiotics, topical autologous serum 20%, and topical non-preservative steroid (methylprednisolone 1%) four times per day for 3 months, which was then gradually tapered to two times per day for the entire follow-up period. Oral valacyclovir 1 g twice daily was continued for 3 months. About 2 weeks after initial medical treatment, the patient underwent amniotic membrane patch surgery on bulbar conjunctiva and cornea (one layer of amniotic graft was placed on the corneal epithelial defect [epithelium side down] secured with fibrin glue, and another layer of amniotic membrane patch [epithelium side up] was placed on the entire cornea and limbus secured with 10-0 continues nylon suture 4 mm posterior to limbus), lateral tarsorrhaphy, and punctal occlusion for the left eye.

Limbal ischemia and conjunctival inflammation improved significantly 20 days after starting the treatment, and limbus was completely vascularized. Epithelial defects decreased in size but became persistent in superior bulbar conjunctiva and cornea [Figure 2].

A second and third amniotic membrane patch procedure was performed 2 and 3 months after, which was successful in promoting superior conjunctival and corneal epithelialization. Corneal haziness increased, but the ocular surface was fully vascularized and epithelialized 4 months after treatment [Figure 2]. Follow-up examination 18 months after treatment shows complete vascularized and epithelialized ocular surface without signs of inflammation [Figure 3]. The visual acuity of the left eye 18 months after treatment was hand motion.

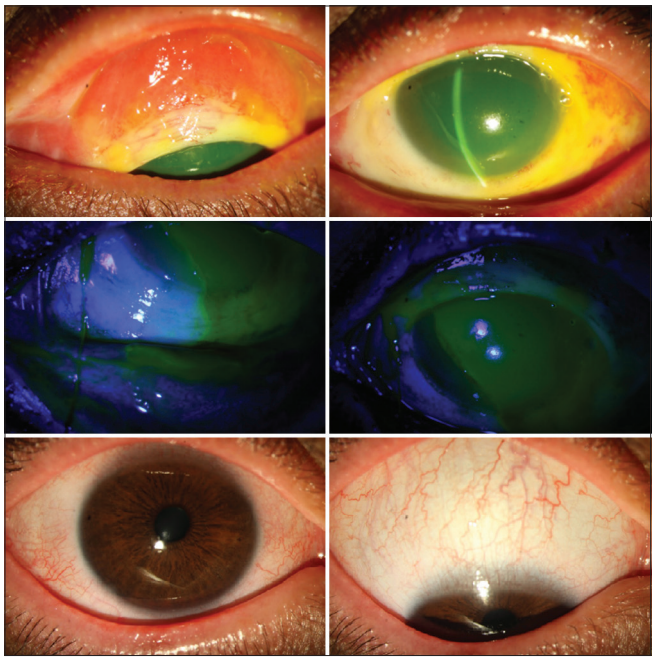

Figure 1: Left eye at presentation showing extensive limbal ischemia (top row) and large corneal and conjunctival epithelial defects (middle row). Right eye at presentation (bottom row)

Discussion

The ocular surface disease is relatively common in patients with chronic GVHD.[8] Ocular GVHD can cause dry eye syndrome, mucopurulent and pseudomembranous conjunctivitis, subconjunctival fibrosis and symblepharon, corneal ulcer, corneal thinning, and melting.[1-3] As mentioned, inflammation from this systemic condition can cause bilateral dry eye symptoms and corneal and conjunctival epithelial damage, but limbal stem cell deficiency and ischemia are rare. Due to highly asymmetric involvement of two eyes of our patient and severe limbal damage in the left eye, it is very unlikely that ocular GVHD is the only cause.

HZO can involve any ocular tissue from eyelid skin to the optic nerve with a different frequency of involvement.[4] This disease is usually unilateral. The most common type of ocular involvement in HZO is keratitis (epithelial and stromal keratitis, corneal endothelitis, and neurotrophic keratitis), anterior uveitis, and conjunctivitis.[4,5] Other ocular involvements include episcleritis and scleritis, posterior uveitis and retinitis, and optic neuritis.[4]

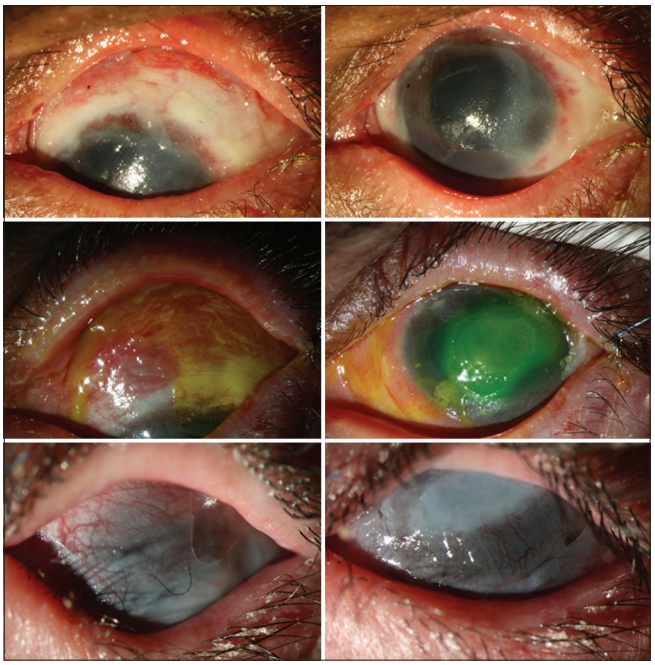

Figure 2: Left eye 20 days after treatment (top row) showing partial vascularization of limbal area, 3 months after treatment (middle row) showing complete vascularization of limbus and a significant decrease in epithelial defect size, and 4 months after treatment (bottom row) showing complete healing of epithelial defect, corneal vascularization due to limbal stem cell deficiency, central opacity in the amniotic membrane patch

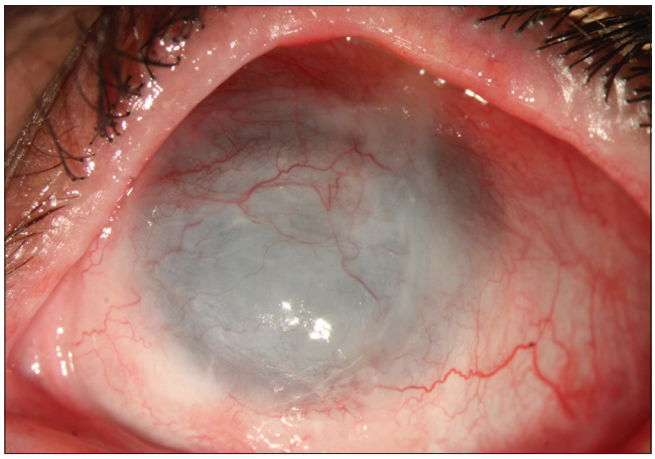

Figure 3: Left eye 18 months after treatment showing complete ocular surface vascularization and epithelialization without inflammation

Reduced corneal sensation is also seen in many patients with HZO.

Most patients with HZO infection are immunocompetent, but HZO is more prevalent in immunocompromised people and may be more severe and recurrent in these conditions although the latter has not been proven in all epidemiologic studies.[5,6,9,10] In addition, immunocompromised patients have a higher risk of systemic dissemination and systemic complications, like systemic vasculitis and stroke.[9]

In rare conditions, HZO can cause limbal vasculitis and ischemia that could progress to sclerokeratitis.[11] Anterior segment ischemia has also been reported as a rare complication of herpes simplex virus and herpes zoster virus.[12,13] It seems that vasculitis causes vascular occlusion and several ischemic damages.[6,7] There are few case reports of such ischemic damages after HZO infection.[13-16] Kestelyn *et al*. reported anterior segment and limbal ischemia as a complication of HZO infection in human immunodeficiency virus-positive patient.[13] Amanat *et al*. reported acute phthisis as a complication of HZO infection due to possible ciliary body ischemic necrosis.[14] Ahmed *et al*. reported a patient with scleromalacia after HZO infection that causes spontaneous intraocular lens extrusion.[15] Although rare, the most possible mechanism of damage to limbal vessels and subsequent limbal ischemia in our patient is occlusive limbal vasculitis caused by HZO infection predisposed by compromised immunity and ocular surface damage due to GVHD. Gungor *et al*. reported a patient with necrotizing scleritis and limbal vasculitis following primary herpes zoster infection,[16] but extensive limbal ischemia due to HZO infection in immunocompromised patients as the case in our patient has not been reported. In addition to vasculitis (either cell-mediated or immune-complex-mediated) as an important mechanism of ocular damage in HZO infection, other possible mechanisms such as a direct invasion of herpes zoster virus have also been reported.[6,15,17]

In conclusion, this case report shows that HZO infection in an immunocompromised patient can cause atypical presentation with severe limbal ischemia. Despite medical and multiple surgical treatments and complete epithelialization of the ocular surface without signs of inflammation, the visual outcome of our patient was poor.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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