Demographic Profile, Clinical Pattern of Herpes Zoster Ophthalmicus in Dhulikhel Hospital: Our Experience

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ABSTRACT

Background

Herpes Zoster Ophthalmicus (HZO) results from the reactivation of the latent varicella zoster virus within the ophthalmic division of the trigeminal nerve. It leads to various ocular manifestations that can result into serious visual complications.

Objective

To assess the presentation, ocular complications, and predisposing factors of Herpes Zoster Ophthalmicus through comprehensive clinical and slit-lamp examinations.

Method

This hospital-based cross-sectional study included all consecutive, clinically diagnosed with Herpes Zoster Ophthalmicus in Department of Ophthalmology. A detailed history including comorbidities, ocular findings, and laboratory investigations was recorded. Assessments included visual acuity, ocular motility, slit-lamp examination, corneal sensation, intraocular pressure, and Hutchinson's sign were evaluated.

Result

Among 24 patients, the mean age was 59.67 ± 14.79 years. The 51–60-year age group was most affected (25%). Major risk factors were age > 50 years (70.83%) and diabetes mellitus (62.5%). Delayed presentation (> 72 hours) occurred in 62.5%. Visual acuity of 6/6–6/18 was seen in 66.7%. Common findings included eyelid involvement (41.7%), corneal involvement (SPK 41.67%, dendrites 25%).

Conclusion

Herpes Zoster Ophthalmicus presents with an extensive range of clinical findings, and late presentation and/or late initiation of treatment can lead to severe complications. Thus, prompt diagnosis and timely management are crucial to minimizing ocular morbidity thereby preserving vision.

KEY WORDS

Herpes Zoster Ophthalmicus (HZO), Hutchinson sign, Ocular manifestation

INTRODUCTION

Herpes zoster (HZ) results from reactivation of latent varicella-zoster virus (VZV), which persists within sensory ganglia, including the Gasserian ganglion. Herpes zoster ophthalmicus (HZO) occurs when VZV reactivates within the ophthalmic division (V1) of the trigeminal nerve and may occur with or without ocular involvement.[1]

The prevalence of HZO has been reported to range from 0.005% to 0.99%.[2] The annual incidence of herpes zoster is estimated at 1.2–3.4 cases per 1000 persons, and the risk increases substantially with advancing age, particularly after 50 years.[3-5] A population-based prospective study identified female sex as an independent risk factor for herpes zoster, particularly among individuals aged 25–64 years.[6]

Among the various dermatomes affected by HZ, thoracic involvement is the most common, followed by involvement of the ophthalmic division of the trigeminal nerve.[7] Within the ophthalmic division, the frontal branch is most frequently affected.[8] Approximately 50–72% of patients with periocular herpes zoster develop ocular involvement, which can lead to vision-threatening ocular complications.[3,7]

Patients with HZO may demonstrate a wide range of ocular manifestations, with corneal involvement being the most frequent, followed by conjunctivitis, keratitis, uveitis, and ocular cranial nerve palsies. Chronic ocular inflammation, permanent visual impairment, and post-herpetic neuralgia represent important long-term complications, although life-threatening cerebral complications are uncommon.[7]

Several factors increase the risk of varicella-zoster virus reactivation, including advanced age, immunocompromised states, malignancy, chemotherapy, and physical trauma.[4,7]

Patients with HZO typically experience a prodrome of headache, malaise, fever, and localized pain, burning, or paresthesia in the affected dermatome for several days before the onset of the characteristic skin lesions.[9] Although HZO typically presents with a unilateral vesicular rash following the ophthalmic dermatome, a minority of patients may present with isolated ocular involvement without obvious cutaneous lesions.[7]

Herpes zoster ophthalmicus may involve both the anterior and posterior segments of the eye, resulting in complications such as keratitis, uveitis, retinitis, optic neuropathy, ocular motor cranial nerve palsies, orbital apex syndrome, VZV-associated vasculopathy, and post-herpetic neuralgia.[10] Because HZO encompasses diverse ocular manifestations and potential for severe visual and neurological complications, early diagnosis and prompt initiation of appropriate therapy are essential to minimize morbidity and prevent long-term sequelae.[7]

METHODS

This cross-sectional hospital-based study included patients attending the ophthalmology outpatient department at Dhulikhel Hospital, who were clinically diagnosed with herpes zoster ophthalmicus (HZO). The study was conducted from 15 December 2022 to 30 June 2024. A standardized clinical proforma was used to document each patient's history, ocular findings, and laboratory investigations. Patients with uncertain diagnoses or healed cases of HZO were excluded. All participants underwent a complete ophthalmic evaluation, including adnexal assessment, ocular motility testing, Snellen best-corrected visual acuity (BCVA), slit-lamp biomicroscopy, corneal sensitivity testing, and fluorescein staining. Intraocular inflammation was graded using the Standardization of Uveitis Nomenclature (SUN) criteria. Goldmann applanation tonometry and funduscopic examination. Hutchinson's sign (HS), HZ lesions at the tip, side or root of the nose, was searched in all subjects. Laboratory investigations included blood glucose levels, HIV serology, and complete blood counts.

A written informed consent was taken from all the cases. The study was approved by the Kathmandu University School of Medical Sciences - Internal Ethics Review Committee (approval number: 214/22). Data entry and statistical analyses were performed using the SPSS software (IMB Corp. Version 26.0 Armonk, NY). Descriptive statistics, including frequencies and percentages, were computed, and the results were presented.

RESULTS

Among 24 patients evaluated in this study, the highest incidence of HZO was observed in 51–60 years age group, accounting for 25.0% of cases. The mean age of presentation was 59.67 ± 14.79 years, with ages ranging from 34 to 86 years. A majority of patients (17 cases; ~71%) were aged 50 years and above, highlighting the predilection of HZO for the elderly population.

Left-sided facial involvement was more commonly observed, occurring in 13 cases (54.2%), compared to 11 cases (45.8%) with right-sided involvement. No patient in the study demonstrated HIV seropositivity, malignancy, or history of trauma. Advancing age (> 50 years) emerged as the most frequent predisposing factor, present in 70.83% of cases, followed by diabetes mellitus, which was observed in 62.50% of patients.

Table 1. Predisposing factors associated with HZO

Predisposing factor	Frequency	Percentage
Age > 50 years	17	70.83
Diabetes mellitus	15	62.50
HIV seropositivity	0	00.0
Malignancy	0	00.0
Trauma	0	00.0

Hutchinson's sign was present in 10 cases (41.67%). The duration between onset of cutaneous lesions and presentation to medical care ranged from 1 to 15 days. 62.50% of the cases presented after more than 72 hours, indicating a delayed health-seeking behavior. Only 16.67% sought care within 25–48 hours of lesion onset, as depicted in table 2 below.

Table 2. Duration of medical attention since occurrence of lesion

Duration since lesion	Frequency	Percentage
25 to 48 hours	4	16.67
49 to 72 hours	5	20.83
> 73 hours	15	62.50
Total	24	100.00

Cutaneous rashes were the most common presenting symptom, as illustrated in bar-diagram (Fig. 1) below:

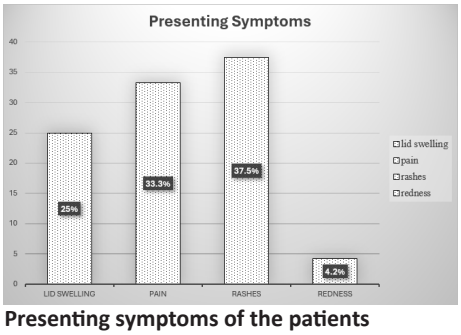

Figure 1. Presenting symptoms of the patients

The best corrected visual acuity (BCVA) at the time of presentation in the affected eye was as poor as hand movement (HM) in 2 of the cases (8.33%). A majority (66.7%) had relatively preserved vision (6/6 to 6/18). The visual acuity distribution is summarized in table 3.

Table 3. BCVA at presentation in the affected eye

BCVA affected eye	Frequency	Percentage
6/6 to 6/18	16	66.67
<6/18 to 6/60	3	12.50
<6/60 to 3/60	3	12.50
HM	2	8.33
Total	24	100.00

Following the detailed anterior segment examination with slit-lamp, the eyelids were the most frequently involved ocular structure accounted in all the patients. Blepharitis was the predominant lid manifestation, noted in 41.7% of cases, followed by lid edema in 29.2%. Conjunctival involvement was common, with conjunctival hyperemia observed in 66.7% of patients followed by chemosis in 16.67%. Rest examined patients had normal conjunctival findings.

Corneal involvement was present in the majority of cases, with superficial punctate keratitis (SPK) being the most common finding (41.67%), followed by dendritic lesions (25.00%). The cornea remained clear in 29.17% of patients, while 1 case had epithelial defect. Corneal sensation was found to be reduced in 15 cases (62.50%), while it remained intact in 37.50% of cases.

Anterior chamber inflammation, indicated by the presence of cells, was observed in 5 cases (20.83%). Of these, 2 cases (8.33%) exhibited Grade I cells, while 3 cases (12.50%) had Grade II cells. Nevertheless, episclera and sclera were involved in none of the cases.

Pupillary abnormalities were noted in 2 patients (8.33%), both of whom exhibited third nerve palsy, leading to a mid-dilated pupil and restriction of ocular movements on the affected side. The pattern and frequency of ocular structural involvement among patients with herpes zoster ophthalmicus (HZO) from this study are presented in table 4.

Table 4. Pattern of Ocular structural involvement among patients with HZO

Ocular structures involved	No of patients	Percentage
Lids	24	100
Conjunctiva	20	83.33
Cornea	17	70.83
Episclera and sclera	0	0
Uveal tract	5	20.83
Extraocular muscles	2	8.33

DISCUSSIONS

Herpes zoster ophthalmicus (HZO) represents reactivation of latent varicella-zoster virus (VZV) involving the ophthalmic division of the trigeminal nerve and is associated with a broad spectrum of ocular manifestations, ranging from eyelid and adnexal involvement to potentially sight-threatening corneal, uveal, and neuro-ophthalmic complications. The disease remains an important cause of ocular morbidity, particularly among older adults, and requires early recognition and prompt management to prevent vision-threatening sequelae.[10,11]

In the present study, the majority of patients were aged ≥ 50 years, with a mean age of 59.67 ± 14.79 years. The largest proportion of HZO cases occurred in the 51–60-year age group, which is comparable with previous reports.[12] This age-related predisposition is primarily attributed to progressive decline in cell-mediated immunity with advancing age, allowing reactivation of latent VZV within the sensory ganglia.[4] Similar age distributions have been reported by Shanthaveerappa et al., who also observed that the majority of HZO cases occurred in patients older than 50 years.[13]

Regarding gender distribution, previous studies have demonstrated variable findings. Malik et al. reported male predominance in childhood herpes zoster, whereas Puri et al. observed male predominance among patients with HZO.[14,15] Conversely, Kong et al. reported a higher incidence of HZO among females in a large population-based cohort.[16]

In the present study, an equal male-to-female distribution was observed. Differences in reported gender distribution may reflect variations in study population, healthcare-seeking behavior, and demographic characteristics rather than a consistent biological association. Opstelten et al. demonstrated that female sex was independently associated with an increased risk of herpes zoster in the general population.[6] These These findings suggest that although sex may influence herpes zoster susceptibility, gender alone may not consistently determine the clinical presentation of HZO.

Diabetes mellitus was the second most common systemic association in the present study, affecting 62.5% of patients. Diabetes mellitus has been recognized as an important systemic association with herpes zoster, possibly due to impaired cell-mediated immunity and increased susceptibility to VZV reactivation.[4,10] This association has also been demonstrated in a Nepalese hospital-based study, which identified diabetes as an important comorbidity among patients with herpes zoster.[17]

However, Bayu and Alemayehu reported HIV seropositivity in 95.3% of HZO patients in Ethiopia, highlighting the importance of considering underlying HIV infection in patients presenting with HZO, particularly in high-prevalence regions.[18] The difference between these findings may be explained by geographical variation, HIV prevalence, and differences in healthcare settings. In regions with a high burden of HIV infection, HZO may warrant evaluation for underlying immunodeficiency, as VZV reactivation is strongly associated with impaired cell-mediated immunity.[4,10]

HZO is characteristically unilateral because reactivation of latent VZV usually involves a single sensory dermatome within the ophthalmic division of the trigeminal nerve.[7] In the present study, all cases were unilateral, with left-sided involvement (54.2%) slightly exceeding right-sided involvement (45.8%). Previous studies have similarly reported unilateral involvement; however, no consistent evidence has demonstrated a preferential laterality.

Delayed presentation was observed in 62.5% of patients, reflecting potential barriers to early ophthalmic evaluation. Andrade et al. also reported delayed ophthalmic assessment among patients with HZO, highlighting the importance of early recognition and referral.[19] Delayed presentation in HZO may be related to inadequate awareness, delayed referral, and limited access to ophthalmic services. Early antiviral therapy, preferably initiated within 72 hours of rash onset, inhibits VZV replication, reduces the severity and duration of acute disease, and may decrease the risk or severity of post-herpetic neuralgia and ocular complications.[7,10]

Visual acuity was relatively preserved in most patients, with 66.7% achieving visual acuity between 6/6 and 6/18. Severe visual impairment, including hand movement perception, was observed in 8.3% of cases and was associated mainly with corneal involvement, uveitis, and neurological complications.[10] In the current study, cutaneous rash was the most common presenting complaint, whereas Puri et al. reported pain as the predominant symptom.[15] Differences in presenting symptoms may reflect variations in disease stage at presentation, severity of involvement, and individual symptom perception.

Anterior segment involvement is common in HZO, reflecting involvement of ocular structures supplied by the ophthalmic division of the trigeminal nerve.[7,13] In the present study, eyelid involvement was the most frequent manifestation, with blepharitis observed in 41.7% and lid edema in 29.2% of patients. Corneal involvement occurred in 66% of eyes, with superficial punctate keratitis being the most frequent finding (41.6%), followed by dendritic epithelial lesions (25%). Reduced corneal sensation was observed in 62.5% of cases. The high frequency of corneal involvement reflects the neurotropic characteristics of VZV and its tendency to affect corneal innervation, potentially resulting in neurotrophic keratopathy.[8,9]

Anterior uveitis was observed in 20.8% of patients. Hutchinson's sign was present in 41.7% of cases, indicating nasociliary nerve involvement and increased risk of ocular complications.[7] Neurological complications were uncommon; however, third cranial nerve palsy occurred in 8.3% of patients. Although orbital apex syndrome was not observed in this cohort, it has been reported as a severe neurological complication of HZO.[10]

Early recognition and timely management remain crucial in HZO to prevent irreversible visual morbidity. Prompt antiviral therapy, appropriate control of ocular inflammation, and close ophthalmic follow-up are essential components of care, as emphasized in previous reports.9

The results from this relatively small, single-center hospital-based study may not be generalizable to the larger population. Furthermore, the design was cross-sectional and there was no assessment of long-term visual outcomes or disease recurrence or post-herpetic neuralgia. In addition, the diagnosis of herpes zoster ophthalmicus was made clinically without virological confirmation which may have caused occasional misdiagnosis, especially in atypical presentations

CONCLUSION

This study highlights advancing age and diabetes mellitus as common systemic associations among patients with HZO. The high frequency of delayed presentation emphasizes the need for increased awareness, early recognition, and timely ophthalmic referral. The predominantly unilateral nature of the disease, along with frequent corneal and adnexal involvement, underscores the importance of comprehensive ocular evaluation and prompt initiation of appropriate therapy to reduce the risk of vision-threatening complications.

REFERENCES

1. Kanski JJ. Cornea, Chapter 5. In: Clinical Ophthalmology. 5th ed. Edinburgh: Butterworth Heinemann; 2003. p111–114.
2. Cifuentes-González C, Rojas-Carabali W, Fonseca-Mora MA, Mejia-Salgado G, Reyes-Guanes J, de-la-Torre A. Colombian Ocular Infectious Epidemiology Study (COIES): Herpes Zoster Ophthalmicus prevalence and sociodemographic characterization, 2015–9. *Int J Infect Dis*. 2022;116:27–33.
3. Arvin AM, Gershon AA, editors. Varicella-zoster virus: virology and clinical management. Cambridge University Press; 2000.
4. Thomas SL, Hall AJ. What does epidemiology tell us about risk factors for herpes zoster? *Lancet Infect Dis.* 2004;4(1):26-33.
5. Ragozzino MW, Melton LJ 3rd, Kurland LT, Chu CP, Perry HO. Population-based study of herpes zoster and its sequelae. *Medicine*. 1982;61(5):310–6.
6. Opstelten W, Van Essen GA, Schellevis F, Verheij TJ, Moons KG. Gender as an independent risk factor for herpes zoster: a population-based prospective study. *Ann Epidemiol*. 2006;16(9):692–5.
7. Liesegang TJ. Herpes zoster ophthalmicus. *Ophthalmology.* 2008;115(2 Suppl):S3-S12.
8. Liesegang TJ. Corneal complications from herpes zoster ophthalmicus. *Ophthalmology*. 1985;92(3):316–24.
9. Pavan-Langston D. Viral disease of the cornea and external eye. In: Albert DM, Jakobiec FA, editors. Principles and Practice of Ophthalmology. Philadelphia: WB Saunders; 2000. p. 846-93.
10. Litt J, Cunningham AL, Arnalich-Montiel F, Parikh R. Herpes zoster ophthalmicus: presentation, complications, treatment, and prevention. *Infect Dis Ther.* 2024;13(7):1439-59. doi:10.1007/s40121-024-00990-7.
11. Catron T, Hern HG. Herpes zoster ophthalmicus. *West J Emerg Med*. 2008;9(3):174–6.
12. Ghaznawi N, Virdi A, Dayan A, Hammersmith KM, Rapuano CJ, Laibson PR, et al. Herpes zoster ophthalmicus: comparison of disease in patients 60 years and older versus younger than 60 years. *Ophthalmology*. 2011;118(11):2242–50.
13. Shanthaveerappa P, Parappallil RJ. The clinical profile and ocular manifestations of herpes zoster ophthalmicus – a hospital based study. *Int J Ophthalmol Vis Sci.* 2019;4(1):19–23.
14. Malik LM, Azfar NA, Khan AR, Hussain I, Jahangir M. Herpes zoster in children. *J Pak Assoc Dermatol.* 2013;23(3):267–71.
15. Puri LR, Shrestha GB, Shah DN, Chaudhary M, Thakur A. Ocular manifestations in herpes zoster ophthalmicus. *Nepal J Ophthalmol.* 2011;3(2):165–71.
16. Kong CL, Thompson RR, Porco TC, Kim E, Acharya NR. Incidence rate of herpes zoster ophthalmicus: a retrospective cohort study from 1994 through 2018. *Ophthalmology.* 2020;127(3):324-30.
17. Ranjit S, Lama L, Karki A, Shrestha R. A hospital based study on association of herpes zoster with diabetes mellitus. *Med Phoenix.* 2021;6(2):35-39. doi:10.3126/medphoenix.v6i2.36815.
18. Bayu S, Alemayehu W. Clinical profile of herpes zoster ophthalmicus in Ethiopians. *Clin Infect Dis.* 1997;24(6):1256–60.
19. Andrade FMX, Bezerra FM, Santos MSD, Araujo MEXS. Perfil clínico e achados oftalmológicos no herpes zoster oftálmico. *Rev Bras Oftalmol.* 2019;78(3):170-4. doi:10.5935/0034-7280.20190122.