

A study of clinical profile and ophthalmological manifestations of herpes zoster ophthalmicus with HIV seropositivity in Northern Karnataka

Kikkeri Narayanshetty Naveen*, A.V. Pradeep**, Sharatchandra B Athanker*

* Department of Dermatology, SDM College of Medical Sciences and Hospital, Sattur, Dharwad, Karnataka, India

** Department of Ophthalmology, SDM College of Medical Sciences and Hospital, Sattur, Dharwad, Karnataka, India

Abstract

Objective To evaluate the clinical profile and ophthalmological manifestations of herpes zoster ophthalmicus and to identify HIV seropositivity in them.

Methods The study was a hospital based observational study. After obtaining an informed oral consent, all subjects in this study were submitted to a full history taking, general medical and dermatological examination, ophthalmological history and examination with slit lamp and dilated fundus examination.

Results A total number of 25 cases were studied. Majority of the patients (25%) were in the age group of 60-69 years. Mean age was 46.8 years. Male to female ratio was 2.1:1. Left side of the face was involved in 14 (56%) patients and right side in 11 (44%) patients. Majority of the patients (60%) presented within 5 days of the onset of the disease. Out of 25 patients, 1 patient was known HIV seropositive and 3 patients were newly detected as HIV seropositive. Fifteen cases (60.0%) presented with best corrected visual acuity (BCVA) of 20/20, N6. Lid edema ranging from mild to severe and conjunctival hyperemia was noted in 19 cases (76.0%) at presentation. Corneal involvement in the form of decreased or absent sensation was noted in 13 cases (52%), 3 cases had dendritic ulcer (1.2%), 3 patients had stromal keratitis (1.2%) and 1 case had punctuate keratopathy (0.4%).

Conclusion Our study outlines the varied clinical profile of herpes zoster ophthalmicus in north Karnataka. The higher incidence of lid edema is due to the application of mud over the lesions. Though low HIV seroprevalence is recorded in HZO patients, it is marginally high in young population. HZO may be taken as an indicator for HIV screening in younger population.

Keywords

Herpes zoster ophthalmicus, ocular, manifestation.

Introduction

Herpes zoster ophthalmicus (HZO) is the involvement of ophthalmic division of the trigeminal nerve. The eyes are involved in two-thirds of the case of HZO. Ocular complications include uveitis, keratitis, conjunctivitis, conjunctival edema (chemosis), ocular muscle palsies, scleritis, retinal vascular occlusion and ulceration, scarring and even necrosis of the lids.¹

Address for correspondence

Dr. Kikkeri Narayanshetty Naveen
Associate Professor,
Department of Dermatology, No 10, Skin OPD,
Sri Dharmasthala Manjunatheshwara College of
Medical Sciences & Hospital (SDMCMS&H),
Sattur, Dharwad – 580009
E-mail: naveenkn80@yahoo.com

The present study was undertaken to document the various clinical manifestations of HZO, identify the ophthalmic changes and to identify HIV seropositivity in them.

Methods

The study was a hospital-based observational study. All cases of herpes zoster ophthalmicus who attended dermatology OPD were studied from January 2012 to January 2014. After obtaining an informed oral consent, all subjects in this study were subjected to a detailed history and general medical and dermatological examination, ophthalmological history and examination with slit lamp and dilated fundus examination. Healed cases of HZO were not included in the study. Investigations like blood sugar, HIV serology were done in all patients.

Results

A total number of 25 cases were studied. Majority of the patients were in the age group of 60-69 years. Mean age was 46.8 years with youngest being 18 years and oldest being 75 years. Age distribution is shown in the **Table 1**. Male to female ratio was 2.1:1 with male preponderance. Most of the patients were farmers (36%) by occupation followed by housewives (20%).

Left side of the face was involved in 14 (56%) patients and right side in 11 (44%) patients. Maxillary division was involved in 4 (16%) patients and 1 (4%) patient presented with disseminated herpes zoster. Majority of the patients (60%) presented within 5 days of the onset of the disease, 28% patients presented between 6 to 9 days of onset and 12% patients presented after 10 days. Out of 25 patients, 1 (4%) patient was known HIV seropositive and 3 patients were newly detected as HIV

seropositive by ELISA test. Other systemic diseases associated were diabetes mellitus in 2 (8%) patients, diabetes with hypertension in 2 (8%) patients and hypotension in 1 (4%) patient.

Fifteen (60%) cases presented with best corrected visual acuity (BCVA) of 20/20, N6. Visual acuity was impaired in ten (40.0%) at presentation. Out of which 3 cases (12.0%) had visual acuity of less than 20/200. Decreased vision of less than 20/200 was due to stromal edema and dendritic ulcer (**Table 2**).

Lid edema ranging from mild to severe and conjunctival hyperemia was noted in 19 cases (76.0%) at presentation. Crusting of the eye lids were seen in three patients. 4 patients had vesicles over the eyelids. One patient had both loss of lashes and trichiasis.

Twelve patients (48%) had no corneal involvement at the presentation. Corneal involvement in the form of decreased or absent sensation was noted in 13 cases (52%), 3 (12%) cases had dendritic ulcer, 3 (12%) patients had stromal keratitis (1.2%) and 1 (4%) case had punctuate keratopathy. 10 (40%) patients had anterior uveitis at presentation and all cases of anterior uveitis had some form of corneal involvement. In all cases posterior segment was normal. Four cases (16.0%) had no ocular involvement at presentation. Ocular motility was normal in all the cases.

Table 1 Age wise distribution of cases (n=25).

Age group (years)	N (%)
11-19	1 (4)
20-29	4 (16)
30-39	4 (16)
40-49	5 (20)
50-59	4 (16)
60-69	6 (24)
70-79	1 (4)

Table 2 Ocular features of herpes zoster ophthalmicus and HIV status in the study population (n=25).

Case	Initial BCVA	Lid involvement	Corneal sensation	Anterior segment	Uveal inflammation	HIV status
1	20/20	Absent	Present		Absent	Negative
2	20/30	+	decreased		Present	Negative
3	20/20	+	Present		Absent	Positive
4	20/20	Absent	Present		Absent	Negative
5	20/40	+	Decreased	Stromal edema	Present	Negative
6	20/200	Absent	Decreased	Dendritic ulcer	Present	Positive
7	20/20	+	Decreased		Absent	Negative
8	20/20	Absent	Present		Absent	Negative
9	20/20	Absent	Present		Absent	Negative
10	20/40	+	Decreased	SPK	Present	Positive
11	20/20	+	Present		Absent	Negative
12	20/20	+	Present		Absent	Negative
13	20/20	+	Decreased		Absent	Negative
14	20/60	+	Decreased		Present	Negative
15	20/20	+	Present		Absent	Negative
16	20/20	+	Present		Absent	Negative
17	20/20	+	Present		Absent	Negative
18	20/80	+	decreased	Dendritic ulcer	Present	Negative
19	20/20	Absent	Present		Absent	Negative
20	20/40	+	decreased	Dendritic ulcer	Present	Positive
21	20/200	+	decreased	Stromal edema	Present	Negative
22	20/40	+	decreased		Present	Negative
23	20/20	+	Present		Absent	Negative
24	20/200	+	decreased	Stromal edema	Present	Negative
25	20/20	+	decreased		Absent	Negative

(BCVA= Best corrected visual acuity, SPK= subepithelial punctate keratitis)

Table 3 Comparison of complications in patients with herpes zoster ophthalmicus from Ethiopia, United States, Rwanda and India.

Complication	Country			
	Ethiopia (9) (n = 100)	United States (12) (n = 86)	Rwanda (13) (n = 19)	Our study (n = 25)
Eyelid involvement	25	12.8	...	76
Corneal involvement	65	52
Anterior uveitis	50	54.6	89	40
Extraocular muscle palsy	12	3	...	0

Discussion

Herpes zoster ophthalmicus is defined as HZ involvement of the ophthalmic division of the fifth cranial nerve. The ophthalmic division further divides into the nasociliary, frontal, and lacrimal branches, of which the frontal nerve is most commonly involved with HZO. Hutchinson's sign is defined as skin lesions at the tip, side, or root of the nose and is a strong predictor of ocular inflammation and corneal denervation in HZO, especially if both branches of the nasociliary nerve are involved.²

Complications associated with HZO usually involve skin and anterior segment of the eye but also the optic nerve, retina, and CNS. The reason of varied spectrum of severity among different individual is not clear, it may be related to the host immune response, virulence, or both. Deep dermis is involved in zoster in contrast to herpes simplex, which is limited to the epidermis. As the inflammation resolves, there may be lid complication like entropion, ectropion, residual ptosis, lid scarring and necrosis with loss of normal pigmentation. Conjunctival findings like hyperemia, petechial hemorrhages and papillary

or follicular reaction is seen. Episcleritis and scleritis may be seen which may progress toward the limbus, manifesting as limbal vasculitis and sclerokeratitis.³

Corneal complications of HZO are due to mechanism like inflammatory, immune reactions and vasculopathy. Punctate epithelial keratitis and pseudodendrites are early findings. Anterior stromal keratitis, lipid keratopathy and facet formation can occur. Endotheliitis can present with stromal edema and keratic precipitates with cell and flare. Interstitial keratitis results from long-term HZ corneal inflammation leading to corneal vascularization. Neurotrophic keratopathy and tear dysfunction leads to corneal surface disorders.⁴

Unilateral anterior uveitis with sectoral iris atrophy and no evidence of epithelial or stromal keratitis is a common presentation for herpetic uveitis. External ocular motor palsies involving third, fourth and sixth cranial nerves are frequent in acute HZO if carefully evaluated but are usually self limiting.⁵ Posterior segment complications of HZO include retinal perivasculitis, optic neuritis, acute retinal necrosis and progressive outer retinal necrosis.

The present study was a hospital-based observational study, which included 25 patients. Majority of the patients belonged to 60-69 years age group. This is in agreement with study done by Harding *et al.*⁶ Only one case was reported below 20 years supporting the similar findings of Harding *et al.*,⁶ Burgoon *et al.*,⁷ and De Moragas *et al.*⁸ (**Table 3**). No cases below 20 years have been recorded in above studies.⁶⁻⁸ Harding *et al.*⁶ proposed that infantile ophthalmic zoster is uncommon in the healthy population and the mechanism of infection in this age group is usually exposure to varicella-zoster virus *in utero* at the time of maternal chickenpox. In the present place, HZO is treated

traditionally in the temples by the application of anthill mud (kyavi) and complicated cases are referred to hospitals. This could explain the lack of young cases, as complications are less in them.

The male to female ratio was 2.1:1 which is similar to study done in Ethiopia.⁹ Harding *et al.*⁶ found a significant predominance of males among patients less than 60 years of age. A few studies have not shown a gender predilection.^{10,11} The higher rate of HZO among our male patients perhaps reflects the fact that males have better access to health care and report early.

Majority of the patients (60%) visited hospital within 5 days of onset of lesions. The intense pain in HZO might have made the patient to seek treatment early. Most of the patients were farmers and it merely reflects the occupation pattern in this part.

The prevalence of HIV seropositivity was 16% in the present study and is in agreement with study done in USA in 1993,¹² where 21% of the total number of patients were infected with HIV. HZO was found to be an early clinical marker of HIV infection especially in patients aged <45 years. The study in Ethiopia⁹ supported this finding which showed 95.3% of total population and 100% of patients aged <45 years were HIV seropositive, which was similar to a study in Rwanda.¹³ Even study in USA¹² showed 21% of the total number of patients and 56% of the patients aged <45 years were HIV infected. In our study 16% of total population and 20% of patients aged <45 years were HIV seropositive. The HIV seroprevalence in young adults is in agreement with other studies from India, which showed prevalence of 0%¹⁴ and 44%.¹⁵

The higher incidence of lid involvement noted in our patients is nearly three times that of patients in Ethiopian study.⁹ It may be because of using

mud application leading to bacterial superinfection and chemical toxicity causing severe eyelid disease.

The incidence of corneal involvement in our series (52%) was lesser than that observed in studies from the Ethiopia, which was 65%⁹; however, it was close to study from the United Kingdom (49%).¹⁶

Conclusion

Our study outlines the varied clinical profile of herpes zoster ophthalmicus in North Karnataka. The higher incidence of lid edema is due to the application of mud over the lesions. However early diagnosis and prompt treatment resulted in lesser complication. General population should be made aware of the potential complications of mud application. Though low HIV seroprevalence is recorded in HZO patients, it is marginally high in young population. HZO may be taken as an indicator for HIV screening in younger population.

References

1. Sterling JC. Viral infections. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rook's Textbook of Dermatology*. Oxford: Wiley-Blackwell; 2010. P. 33.25-27.
2. Liesegang TJ. Herpes zoster ophthalmicus - natural history, risk factors, clinical presentation, and morbidity. *Ophthalmology*. 2008;**115**:S3-S12.
3. Liesegang TJ. Corneal complications from herpes zoster ophthalmicus. *Ophthalmology*. 1985;**92**:316-24.
4. Zaal MJ, Volker-Dieben HJ, Wiensesen M, D'Amato J, Kijlstra A. Longitudinal analysis of varicella-zoster virus DNA on the ocular surface associated with herpes zoster ophthalmicus. *Am J Ophthalmol*. 2001;**131**:25-9.
5. Marsh RJ, Dullely B, Kelly V. External ocular motor palsies in ophthalmic zoster: a review. *Br J Ophthalmol*. 1977;**61**:677-82.
6. Harding SP, Lipton JR, Wells JC. Natural history of herpes zoster ophthalmicus: predictors of postherpetic neuralgia and ocular involvement. *Br J Ophthalmol*. 1987;**71**:353-8.
7. Burgoon CF, Burgoon JS, Baldrige GD. The natural history of herpes zoster. *JAMA*. 1957;**164**:265-9.
8. De Moragas JM, Kierland RR. The outcome of patients with herpes zoster ophthalmicus. *Arch Dermatol*. 1957;**75**:193-6.
9. Bayu S, Alemayehu W. Clinical Profile of Herpes zoster ophthalmicus in Ethiopians. *Clin Infect Dis*. 1997;**24**:1256-60.
10. Karabassi M, Raizman MB, Schuman JS. Herpes zoster ophthalmicus. *Surv Ophthalmol*. 1992;**36**:395-410.
11. Womack LW, Liesegang TJ. Complications of herpes zoster ophthalmicus. *Arch Ophthalmol*. 1983;**101**:42-5.
12. Selliti TP, Huang AJ, Schiffmann J, Davis JL. Association of herpes zoster ophthalmicus with AIDS and acute retinal necrosis. *Am J Ophthalmol*. 1993;**116**:297-301.
13. Kestelyn P, Stevens AM, Bakkers E, Rouvroy D, Van de Perre P. Severe herpes zoster ophthalmicus in young African adults: a marker for HTLV-III seropositivity. *Br J Ophthalmol*. 1987;**71**:806-9.
14. Sujatha V, Padmajothi MS, Ambika H, Sujatha C. Herpes zoster ophthalmicus: clinical profile in adults less than 30 years of age. *Our Dermatol Online*. 2012;**3**:5-8
15. Gupta N, Sachdev R, Sinha R, Titiyal JS, Tandon R. Herpes zoster ophthalmicus: Disease spectrum in young adults. *Middle East Afr J Ophthalmol*. 2011;**18**:178-82.
16. Marsh RJ, Copper M. Ophthalmic herpes zoster. *Eye*. 1993;**7**:350-70.