



A PROSPECTIVE STUDY ON OCULAR MANIFESTATIONS AND VISUAL OUTCOMES IN HERPES ZOSTER OPHTHALMICUS AT A TERTIARY CARE HOSPITAL IN SOUTHERN INDIA.

Ophthalmology

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ABSTRACT

Aim – The study aims to document the various ocular symptoms and complications associated with herpes zoster ophthalmicus (HZO) and to assess the visual outcome after 2 months following HZO in the studied population at a tertiary care centre in southern India. **Materials And Methods**- Thirty cases diagnosed and treated for HZO for a period of one year were included in this study. Patients demographics, clinical presentations, systemic comorbidities were recorded. All patients underwent a complete evaluation including best corrected visual acuity assessment, detailed anterior and posterior segment examination, intraocular pressure measurement, fluorescein staining and corneal sensitivity testing. Patients were managed according to the severity of symptoms and were followed up for a period of 2 months to record the visual prognosis.

Results – In this prospective study mean age of the patients was 44.5 years. Twenty patients were < 50 years and 10 patients belonged to > 50 years age group. The associated risk factors were diabetes mellitus (63%), long term corticosteroid therapy (17%), HIV positive (13%) and long term immunosuppressant therapy (7%). Posterior uveitis, nerve palsy, neurotrophic keratitis and optic neuritis were common manifestations in over-50 age group, whereas keratitis, anterior uveitis, and conjunctivitis were more common in those under 50 years of age. After a two-month follow-up, visual outcome was better in the younger group, with more patients improving to 6/6 -6/9. Among younger patients 10 % had BCVA 6/18-6/36 and epithelial and stromal keratitis were independent risk factors for visual loss after resolution of HZO. None of the patients included in the study had received zoster vaccination previously. Four patients (13%) experienced postherpetic neuralgia and were treated with second line analgesics.

Conclusion – This study shows that age and risk factors significantly impact visual outcomes in HZO. While younger patients tend to have better prognosis, older patients with more risk factors, are prone to severe complications like posterior uveitis and neurotrophic keratitis. Timely intervention is crucial to minimize symptoms and adverse outcomes.

KEYWORDS

Herpes zoster ophthalmicus, Ocular manifestations, Visual outcome, Postherpetic neuralgia, Epidemiology, Keratitis, Keratouveitis.

INTRODUCTION

Varicella, commonly known as chickenpox, is an infection caused by the varicella-zoster virus (VZV), characterized by a widespread vesicular rash. After the initial infection, the VZV remains dormant in the neurosensory ganglia for years. When reactivated, this latent virus causes herpes zoster ophthalmicus (HZO), also known as shingles, which presents as painful vesicular rashes confined to one side of the face along the skin innervated by the ophthalmic branch of the trigeminal nerve.⁽¹⁾ Around 20-30% of individuals who have had varicella go on to develop herpes zoster, with approximately 10-20% of these cases involving HZO. Reactivation of the virus typically occurs due to weakened cell-mediated immunity, often linked to aging, immunosuppression, trauma, or psychological stress.⁽¹¹⁾ HZO is associated with both ocular and systemic complications, including keratitis, uveitis, glaucoma, stroke, and depression, often due to postherpetic neuralgia.⁽⁵⁻⁸⁾ Early detection and appropriate management of ocular complications in HZO are crucial in preventing or minimizing potential vision loss.

This study aims to explore the ocular manifestations and visual outcomes in patients treated for HZO at a tertiary care center in southern India.

Aim

The study aims to document the various ocular symptoms and complications associated with herpes zoster ophthalmicus (HZO) and to assess the visual outcome after 2 months following HZO in the studied population at a tertiary care centre in southern India.

Methodology

This was a prospective, observational, cross-sectional study conducted at a tertiary care centre. The study included 30 patients who visited the ophthalmology and dermatology outpatient departments and were diagnosed with herpes zoster ophthalmicus (HZO) over a one-year period. Ethical approval was obtained from the Institutional Ethics Committee, and informed consent, along with a detailed history, was

collected for each patient. Information on age, gender, occupation, primary complaints, and any systemic comorbidities was recorded. Additionally, the presence of risk factors such as diabetes, HIV, tuberculosis, or immunosuppressive treatments was documented.

All participants underwent a comprehensive ophthalmic evaluation, which included adnexal examination, assessment of extraocular movements, Snellen best corrected visual acuity (BCVA), slit-lamp examination of the anterior segment, and dilated fundus examination using a +90 D lens and indirect ophthalmoscopy. Tests such as fluorescein staining, intraocular pressure (IOP) measurement using non-contact tonometry, and corneal sensitivity testing were also performed. Corneal sensitivity was graded as normal, reduced, or absent.

Anterior uveitis was graded according to the Standardization of Uveitis Nomenclature (SUN) working group criteria. Ocular manifestations were defined as any eye condition secondary to HZO. Elevated intraocular pressure (IOP) was defined as ≥ 22 mmHg. The type, onset, duration, and course of uveitis were classified using the SUN criteria. The presence or absence of postherpetic neuralgia (PHN) was also noted, with PHN defined as persistent pain or use of pain medication for ocular symptoms documented at least three months after the onset of HZO.

All patients were treated with acyclovir, either as an eye ointment applied five times daily or orally (800 mg) five times a day for 1–2 weeks as required. Additional treatments such as topical corticosteroids, cycloplegics, topical antibiotics, topical beta-blockers, oral carbonic anhydrase inhibitors, and analgesics were prescribed when necessary. After the initial visit, patients were followed up for two months with check-ups at the 1st, 2nd, 4th, 6th, and 8th weeks, and visual prognosis was recorded at each visit.

Statistics

For statistical analysis, the data were entered into a computer database and analyzed using SPSS version 14.0.

RESULTS

This prospective study presents the epidemiological and clinical data of thirty patients diagnosed and treated for HZO at a tertiary care centre in Southern India. Mean age of the patients in our study was 44.5 years. Out of the total 30 cases, there were 22 (73%) males and 8 (27%) females. 20 patients were < 50 years and 10 patients belonged to > 50 years age group. 27 and 3 patients had unilateral and bilateral involvement, respectively. (Table 1)

Out of total 30 cases associated risk factors were diabetes mellitus (63%), long term corticosteroid therapy (17%), immunosuppressive therapy (7%) and four patients (13%) were HIV positive. (Table 2) Ocular manifestations included adnexal involvement in form of lid involvement (60%) and conjunctivitis (37%). 16 patients had corneal hypoesthesia.

Thirteen patients had corneal involvement in the form of epithelial keratitis (17%) and stromal keratitis (27%). Out of 30 cases, 12 (40%) patients had isolated anterior uveitis, 3 (10%) with posterior uveitis and 7 (23%) patients had keratouveitis. Other ocular manifestations included IOP elevation (30%), posterior synechiae (17%), Hutchinson's sign (17%), iris atrophy (20%), oculomotor nerve palsy (7%), neurotrophic keratopathy (7%) and optic neuritis (3%). (Table 3) Cases were treated with acyclovir eye ointment or oral acyclovir or combination according to the severity of symptoms. There were 4 (13%) patients with postherpetic neuralgia, who required second-line analgesics (amitriptyline and gabapentin) for pain control and were managed by physician. (Table 4)

Table 1: Demographic characteristics of patients with HZO.

	Number of patients (n=30)	Percentage (%)
Age		
Mean age	45.5 years	
Intervals		
< 50 years	20	67 %
>50 years	10	33 %
Gender		
Male	22	73 %
Female	8	27 %
Laterality		
Unilateral	27	90 %
Bilateral	3	10 %

Table 2: Distribution of patients according to associated risk factors.

	No of cases	Percentage
Diabetes mellitus	19	63 %
HIV	4	13 %
Immunosuppressive medications	2	7 %
Long term corticosteroid therapy	5	17 %

Table 3: Distribution of various ocular manifestations in patients with HZO.

Ocular Manifestations	No of cases	Percentage (%)
Lid involvement	18	60 %
Conjunctivitis	11	37 %
Corneal hypoesthesia	16	53 %
Keratitis		
Epithelial keratitis	5	17 %
Stromal keratitis	8	27 %
Isolated Anterior uveitis	12	40 %
Keratouveitis	7	23 %
Posterior uveitis	1	3 %
Iris atrophy	6	20 %
Posterior synechiae	5	17 %
IOP elevation	3	30 %
Neurotrophic keratopathy	2	7 %
Oculomotor nerve palsy	2	7 %
Optic neuritis	1	3 %
Hutchinson's sign	5	17 %

Table 4: Treatment profile of patients with HZO.

	No of cases	Percentage (%)
Topical antiviral eye ointment	20	67 %
Oral antiviral drugs	15	50 %
Topical steroid	10	33 %
Topical cycloplegics	13	43 %
Topical antibiotics	16	53 %
IOP- lowering medications	9	30 %

Table 5: Visual outcome in patients with HZO at the end of 2 months.

	Best corrected visual acuity						
	6/6	6/9	6/12	6/18	6/24	6/36	6/60
Age							
< 50	5 (17%)	7 (23%)	5 (17%)	2 (7%)	-	1 (3%)	-
>50 years	1 (3%)	3 (10%)	3 (10%)	-	1 (3%)	1 (3%)	1 (3%)

DISCUSSION

This study included 30 cases of herpes zoster ophthalmicus (HZO), which were examined for various ocular involvements. Among the 30 patients, males were more commonly affected than females, consistent with findings from a study by Dubey et al⁽¹⁷⁾ in South India. The average age of presentation in patients with HZO was 44.5 years, similar to the results of a study by Sehgal et al⁽²⁾. In our cohort, lid involvement was the most common manifestation (60%), followed by keratitis (44%), anterior uveitis (40%), and conjunctivitis (37%) across both the under-50 and over-50 age groups (figure 1). Posterior uveitis, nerve palsy, neurotrophic keratitis and optic neuritis were more prevalent in the over-50 age group, whereas keratitis, anterior uveitis, and conjunctivitis were more common in those under 50. (Figure 1) After a two-month follow-up, visual outcome was better in the younger group, with more patients improving to 6/6 -6/9. Early treatment (within 72 hours of onset) led to better visual outcomes. However, visual prognosis was generally worse in older patients, often linked to persistent corneal haze or scarring from epithelial and stromal keratitis after the disease resolved. Risk factors for poor visual outcomes, as previously reported, include increasing age, a positive Hutchinson's sign, absent corneal sensation, corneal epithelial lesions, and uveitis.⁽¹⁰⁾ In our study, diabetic patients had worse visual outcomes, followed by HIV-positive patients, at the two-month follow-up. Although aging is a well-known risk factor for the development of herpes zoster due to declining cell-mediated immunity against the varicella zoster virus, younger patients were more affected by HZO in our study, and older patients had more associated risk factors.

Earlier studies document a 13.3% to 20.9% prevalence of postherpetic neuralgia in HZO, and four patients (13%) in our study experienced this complication. Advanced age, severe initial rashes, ocular involvement, and neuralgia have been identified as risk factors for postherpetic neuralgia.⁽⁶⁾ The zoster vaccine, shown to reduce the incidence of herpes zoster by 51.3% and postherpetic neuralgia by 66.5%, as demonstrated by The Shingles Prevention Study Group and it is recommended for all immunocompetent individuals aged 60 years and older, according to the Centers for Disease Control and Prevention.⁽¹²⁾

CONCLUSION

This study shows that age and risk factors play an important role in visual outcomes. Younger patients, though presenting more frequently with HZO, have better visual outcomes. Amongst the older groups, risk factors are more prevalent, and they present with more debilitating complications like posterior uveitis and neurotrophic keratitis. The need for prompt and timely management is stressed to shorten symptom duration and unfavorable visual outcomes.



Figure 1: (A) dendritic ulcer. (B) Interstitial keratitis. (C) Vesicular rash showing skin and adnexal involvement. (D) Nummular keratitis.

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