Original Research Article

Cutaneous and Ocular Menifestations of Herpes Zoster Opthalmicus: A Hospital Based Study

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Abstract

Background: Herpes Zoster Ophthalmicus (HZO) occurs due to reactivation of latent varicella zoster virus within the gasserian ganglion involving the ophthalmic division of the trigeminal nerve. HZO often has a chronic course with significant ocular morbidity as eye is considered potentially serious of all sites of herpes zoster owing to its delicate nature**. AIM:** A hospital-based epidemiology study to describe skin and ocular changes in herpes zoster ophthalmicus (HZO), its prevalence and risk factors. **Material and Methods:** A Retrospective analysis of patients seen in the ESICMC,KALABURGI from September 2019 to September 2021 with a clinical diagnosis of HZO. They were subjected to a detailed general and ocular examination and were treated medically with close follow **Results:** A total 38 patients with HZO were included in the study. Which is 10% of the total cases of herpes zoster. The mean age of onset(23-80) was 65. Most patients were immune competent (83%) and presented on day 2 day 5 of illness. Male had more prevalence than females . Majority had initial presentation of vesicles, (70)%followed by pain. Eye manifestation was observed in 68% of the individual. Conjunctiva (60%) was the most common ocular structure involved followed by Cornea (45%). Anterior uveitis (20%) was complicated by hemorrhagic uveitis and orbital apex syndrome with total external ophthalmoplegia. Post herpetic neuralgia was the commonest complication seen . **Conclusions:** This study highlights the prevalence of HZO, presentation,risk factors, course of the disease and its ocular involment. .The potential manifestations of HZO are myriad. Development of serious inflammatory complications was associated with delay in therapy. Hence timely diagnosis and management are critical in limiting ocular morbidity.

Keywords: Herpes Zoster Ophthalmicus (HZO), Acyclovir , Orbital Apex Syndrome, Post Herpetic Neuralgia.

Introduction

HZO is caused by the human herpesvirus[1], belonging to the family - Herpesviridae. The virus causes varicella, reactivation of the this latent virus in neurosensory ganglia cuases herpes zoster which multiplies in the nerve cells, and sheds virus from the cells that are carried down the axons to the skin served by that ganglion. Classically, HZO begins with flu-like symptoms including fever, myalgia, and malaise for approximately one week[2].Typically, patients then develop a painful unilateral dermatomal rash of macules, papules and pustules along the branches of trigeminal nerve: frontal, lacrimal and nasocilliary[3]. The rash may involve the tip of the nose or nasal ridge, known as Hutchinson sign .The nasociliary fibers, innervate the tip of nose and also serve the conjunctiva, cornea, sclera, iris, and choroid. Hutchinson sign is associated with an increased risk of HZO. The absence of this sign does not rule out disease, however, as up to 30% of patients with HZ but without Hutchinson sign will develop HZO. HZO accounts for 10–25% of all herpes zoster cases[4,5]. Up to 20% of the population will have HZ at some time in life.Most of the complications of HZO are due to the viral multiplication in the eye and the inflammation produced within the eye rather than direct invasion of the eye structures[6]. The most often involved nerve is frontal branch of the ophthalmic division of trigeminal nerve. Patients having herpes zoster opthlmicus, 50-72% of them will have ocular involvement and develop moderate to severe degree of visual loss[7]. Herpes zoster ophthalmicus may affect all the ophthalmic structures, In addition to the characteristic dermatologic findings, which occur in up to 50% of patients who do not receive antiviral treatment. Depending on the severity of infection, patients may develop significant ptosis secondary to edema, resulting in inability to close the eyelid and dry eye. Most common ocular complaints include redness of eye, excessive tearing, blurred vision eye pain, , photophobia, and sometimes also decreased visual acuity. The most common ocular presentations include mucopurulent conjunctivitis, anterior uveitis, and keratitis (nummular and disciform)[8]. Episcleritis and chemosis are often seen in acute disease, as well.But most severe eye-threatening complications are panuveitis, acute retinal necrosis (ARN) and progressive outer retinal necrosis (PORN) as well[8].

Table 1:Table showing Clinical manifestations of HZO

1.	Conjunctivitis
2.	Episcleritis,
3.	Superficial keratitis (punctate keratitis, dendritic keratitis)
4.	Secondary inflammation or alteration of autoimmune mechanism Stromal keratitis
5.	Scleritis
6.	Uveitis
7.	Neurotrophic keratitis

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Herpes zoster ophthalmicus (HZO) is more common in people with diminished cell mediated immunity Various risk factors have been identified in predisposition to development of HZO, which includes , age over 50-years-old , immunocompromised patients (HIV, autoimmune diseases on long term corticosteroids and or other immunosuppressants, organ or bone marrow transplant, or on chemotherapy treatment)[6] · Other chronic diseases, certain acute illnesses, and any physical and emotional stressors can also predispose HZO. Other risk factors include sex (F>M), white ethnicity, mechanical trauma, psychologic stress, organ transplant recipients and exposure to infected individuals[9]. The risk of herpes zoster is 15 times greater in men with HIV than in men without HIV[10]. All the mentioned risk factors cause decrease in the T cell mediated immunity.Timely diagnosis and prompt antiviral treatment are critical in reducing visual morbidity[11], and this was the case in our patients who received systemic and topical acyclovir and topical prednisolone acetate 1% eye drops.Systemic steroids have been used by some authors to reduce the long-term incidence of postherpetic neuralgia or ocular complications[11]. However, the risk associated with secondary infection and delayed viral clearance may outweigh steroid benefits in mildly affected patients[12].

Antiviral medications remain the primary therapy, mainly useful in preventing ocular involvement when begun within 72 hours after the onset of the rash[4]. Timely diagnosis and management of HZO are critical in limiting visual morbidity[13].

Methods

Study Population

Inclusion Criteria: Inclusion Criteria: HZO was diagnosed based on clinical symptoms and signs.

Exclusion Criteria

Other causes presenting with similar clinical profile like, HSV keratitis HSV dermatitis Other viral or bacterial conjunctivitis, Allergic conjunctivitis, Exposure conjunctivitis/keratitis Acute angle-closure glaucoma, Corneal ulcer, Corneal abrasion, Impetigo, Cellulitis, Insect bites, Contact dermatitis, Secondary cataract, traumatic cataract, complicated cataract, and known cases of glaucoma were excluded from the study.

Materials and methods

Retrospective study of patients attending dermatology and opthalmology OPD from september 2019 to september 2021 with a clinical diagnosis of HZO, describsed as vesicular rash along with pain in the V1 dermatome .The study was conducted in accordance to the principles of the Declaration of Helsinki and after approval of institution ethics committee.Females and males of age group of 16 -80 years were included in the study. Patients were split into two groups based on whether signs of ocular involvement were present or absent within 30 days of initial presentation of V1 rash (HZO with versus without eye involvement).Demographic data included age and gender. Day & type of presentation (pain, vesicles, eye manifestations, systemic symptoms) of illness to opd was considered. The patient's immune status at the time of initial presentation of HZ was assessed and patients were categorized immunocompromised if they had HIV/AIDS, patients on systemic chemotherapy for malignancies, any active hematological malignancies, chronic kidney disease, and/or were on any type of immunosuppressive drug therapy. If on long time corticosteroids at a dosage equivalent to 10 mg or greater of prednisone daily. If none of the conditions were documented at the time of or during the year prior to the HZ eye diagnosis, the patient was assumed to be immunocompetent. A detailed ophthalmic examination was done which included slit lamp, corneal sensitivity and flourescin testing along withb Snellen charting for visual loss. Investigations like blood sugar, HIV serology and complete hemogram were done in all patients. All patients were treated medically. The patients were treated with oral valcivir 1 gram 3times/day for 7 days and systemic non-steroidal anti-inflammatory drugs like Diclofenac or Ibuprofen. The skin lesions were treated with calamine lotion and topical antibiotic ointment. Patients with only conjunctivitis were treated with topical antibiotic eye drops& Cycloplegics. Patients with uveitis received topical steroids and topical Cycloplegics that were tapered according to the clinical response. Patients were followed up based on the severity of involvement and also response to treatment.

Statistical Analysis: A period prevalence was calculated by dividing (1) the number of patients with HZ involving any dermatome; (2) the number of patients with HZ involving the ophthalmic dermatome (HZO); and (3) those with HZO and ocular complications, by the total number of patients seen over the study period. Frequencies were calculated for the various manifestations of HZO and compared using Chi-squared tests; means were compared with two-sample t-tests.

Results

The clinical data of 38 patients presenting with features of HZO were evaluated. In this study, it was found that the maximum incidence of HZO was in males, the age group of 50-80 years (35%). The age distribution is shown in table1& 2. Males (58%) dominated this study with M:F ratio of 1. 3 .The most common predisposing factor for the development of HZO was age more than 50 years (60%).6 patients were immunocompromised in that ,out of 6,1 was HIV seropositive and 1 was diabetic rest were on steroid use. Skin lesions and acute neuralgia were the most common presenting symptoms which were present in all of the patients studied (100%). Ocular involvement was seen in 30 patients (80%). The conjunctiva stood out as the most common ocular structure involved (75% of cases) followed by the cornea (in 56% cases). Anterior uveitis was seen in 7 patients of which 1 presented with hemorrhagic uveitis with hypopyon. The ocular structures involved are summarized in table 8. Post herpetic neuralgia (40%) was the most common complication noted at 1 month follow up while 16 patients (35%) recovered without any sequelae.

Table 2: Gender distribution of HZO Cases

Gender	Number
Male	22
Female	16
Total	38

Table 3: Age Distribution of HZO Cases

Age Group(In Yrs)	Number
16-30	6
30-60	10
50-80	22
TOTAL	38

Table 4: Immune Status Distribution of HZO Cases

Immune Status	Number
Immunosupressed	6
Immunocompetent	32

Table 5: Table Showing Day of Presentation in HZO Cases

Day of Presentation	Number
<2 Days	6
2-5 Days	28

>5 Days	4
Total	38

Table 6: Showing Side of the Face Involved in HZO Cases

Side involved	Number of patients
Left	15
Right	23

Table 7: Showing Percentage of Presenting Symptoms in HZO Cases

Presenting Symptoms	NUMBER
Pain	8
Vesicles	30
Eye Manifestation	00
Systemic Symptoms	00

Table 8: Showing Ocular Structures Involved in HZO Patients

Sr. no	Ocular structures involved	No of patients	Percentage
1	Lids	13	34%
2	Conjunctiva	22	58%
3	Cornea	12	31%
4	Episclera and sclera	3	8%
5	Uveal tract	7	18%
6	Secondary glaucoma	8	21%
7	Lens	4	10%

Table 9: Showing Ocular Complications Seen in HZO Patients

Sr.no	Ocular structures involved	No of patients	Percentage
1	Post herpetic neuralgia	12	32%
2	Lid scarring	3	7%
3	Follicular conjunctivitis	4	10%
4	Punctate epithelial keratitis	2	5%
5	Disciform keratitis	3	7%
6	Dendritic ulcer	1	2%
7	Secondary glaucoma	3	7%
8	Persistent synechiae with corneal vascularization	1	2%

Table 10: Showing Post Herpetic Cutaneous Scarring Seen in HZO Patients

Post herpetic cutaneous scarring	No of patients
Yes	12
No	26

Fig.1: Picture showing earliest presentation of HZO showing of grouped vesicles,macules and papules

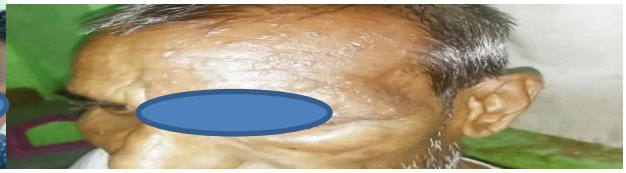

Fig. 2: Picture showing earliest presentation of HZO showing grouped vesicles in elderly male

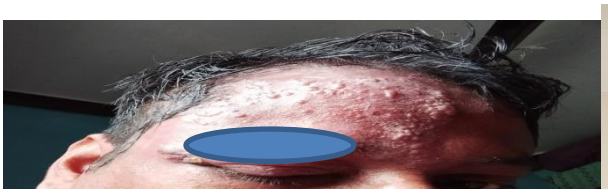

Fig. 3: Picture showing earliest presentation of HZO showing grouped vesicles in young male with HIV

FIG. 4: Picture showing earliest presentation of HZO showing grouped vesicles in old aged female with diabetes

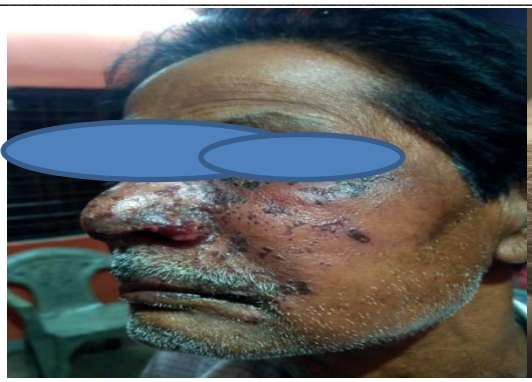

Fig. 5: Picture showing crusting and scab formation in case of HZO

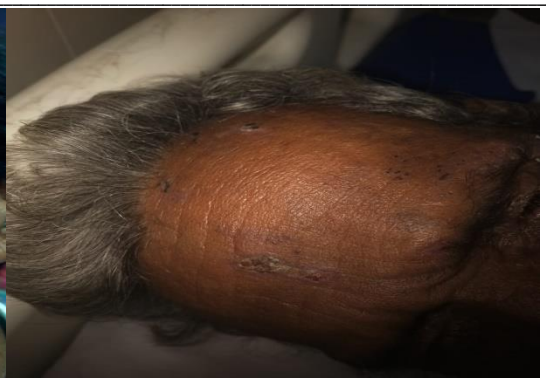

Fig. 6: Picture showing crusting and scab formation in case of HZO

Discussion

HZO is a debilitating ocular pathology leading to visual loss , post herpetic neuralgia and socioeconomic disability. To summarize, in our study we found 38 of the total herpes zoster patients attending our OPD had herpes zoster opthalmicus, which is 10% of the total herpes zoster patients[3], similar to the study found. We also observed that HZO occurred frequently in the fifth to sixth decade of life (55%), suggesting old age predisposes to HZO. A recent case series also reports that HZO affects individuals with similar age group, the most common decade of onset between age 50 and 59 years[14] Increased age has been associated with a decrease in cell-mediated immunity, which is a crucial factor to avoid reactivation of the latent varicella zoster virus. Male had more prevalence than females which was similar to Malik et al[15]. study and study from Ethiopia[16] in contrast to Prabhu et al.[17] study which showed female preponderance.Most of the patients presenyed to us in day 2-day 5 of the illness.. Early intervention and management had better results compared to those presented later[2].Although HZ is more common and severe in immunocompromised people, 83% of people with HZ are not immunocompromised,[2] as was seen in the majority of cases in our study. HZO is an early clinical marker of HIV infection especially in patients with age <45years. The study in Ethiopia[16] supported this finding which showed 95.3% of total population and 100% of patients aged <45 years were HIV seropositive. But in the present study,only one of the patients were tested positive for HIV infection. In the present study, ocular involvement was seen in 16 patients (80%) which was similar to Liesengang et al[5] study.Eye involvment was common in older age group compared to the younger group of patients. Bilateral presentation, a feature of disseminated zoster was not seen in this study. Among the various ocular structures involved, conjunctival involvement (60%) was the most common in the form of conjunctivitis followed by cornea (57%). Corneal involvement in the form of absent or reduced sensation was noted in 6 patients (37%), 5 patients had punctate epithelial keratitis (31%), 2 had stromal keratitis (12.5%) and 1 had pseudodentrite formation (6%). This was lesser than that observed in studies from the Ethiopia and Liesegang et al which were both 65% but was close to study from the United Kingdom (49%)[18]. The prevalence of ophthalmoplegia was reported as 3.5-10.1% in the two large HZO case series in the literature[19,20]. Post herpetic neuralgia (30%) was the commonest complication noted at 1 month follow up followed by lid scarring (25%) which was comparable to study from Ethiopia[16]. It was observed that patients having keratitis, conjunctivitis, or uveitis had risk of developing PHN more when compared with patients not having these ocular features. It was observed that 9 patients with HZO (45%) in whom oral Acyclovir was started within 72 hours of onset of skin rash recovered completely. This correlates with prospective controlled clinical trials which have reported a beneficial effect of Acyclovir on ocular complications of HZO

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