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A CLINICAL STUDY OF HERPES ZOSTER OPHTHALMICUS

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ABSTRACT Introduction: HZO occurs due to reactivation of the latent VZV in the gasserian ganglion when there is decrease in the VZV-specific cell mediated immunity. The virus spreads to the ophthalmic division of the trigeminal nerve and affects the skin of the forehead, lids ,nose and eyes. It can affect nearly 20% of the world population presenting with severe acute neuralgia ,skin rash and ocular signs such as keratitis ,conjunctivitis ,uveitis and lid lesions. Early diagnosis of the condition and prompt treatment with antiviral drugs is necessary to prevent ocular complications and vision loss. Aim: To study the predisposing factors ,modes of presentation ,ocular manifestations of HZO and the ocular complications after treatment with antiviral therapy. Materials & Methods: A prospective study conducted on 20 patients diagnosed with herpes zoster who attended the OPD in the department of Ophthalmology at MVJ medical college, Hoskote, Bengaluru from July 2022 to September 2022. A thorough clinical examination of the anterior segment will be done using slit lamp biomicroscope. Results: In this 20 patients with HZO which were studied , ocular involvement was seen in 15(75%) patients. Old age was the most common predisposing factor with maximum number of 9(45%) cases seen in the age group of 51-60 years. Cornea was the most common ocular structure involved with keratitis seen in 13(65%) patients. PHN was seen in 7(35%) patients. Conclusion: The ocular complications of HZO are more predominant among 50 years and above and PHN is the most common complication. Antiviral therapy such as Acyclovir,Valcyclovir ,Famcyclovir are effective in preventing ocular complications if given within 72 hours of onset of rash.

KEYWORDS : Herpes zoster ophthalmicus(HZO), Varicella zoster virus(VZV), postherpetic neuralgia(PHN).

INTRODUCTION

Herpes Zoster Ophthalmicus (HZO) is caused by the Varicella Zoster virus (VZV) that belongs to the subfamily of Herpes virus group and causes Chickenpox. It is a DNA virus that is neurotrophic in nature and produces acidophilic intranuclear inclusion bodies(1).The virus remains dormant in the gasserian ganglion to where it travels in a retrograde manner from the dorsal root and cranial nerve sensory ganglia after an episode of chickenpox(2).The dormant virus gets activated when the VZV-specific cell mediated immunity has decreased. The virus travels through the ophthalmic division of the trigeminal nerve. Herpes zoster virus multiplies in the nerve cells and sheds the virus from the cells which are carried down by the axons to the skin supplied by that ganglion. It manifests as a painful, unilateral dermatomal rash of macules, papules and secondary bacterial infection leading to pustules and scabs. Haemorrhagic skin ulcerations can occur due to occlusive ischemic vasculitis(3). The supraorbital, supratrochlear and infratrochlear branches are mostly involved and frequently the nasal branch and rarely the infraorbital branch may also be involved(4). The ocular involvement can cause keratitis (nummular and disciform), mucopurulent or follicular conjunctivitis, anterior uveitis. And sometimes vision threatening complications like panuveitis, oculomotor nerve palsies, papillitis , retrobulbar neuritis, optic neuritis , acute retinal necrosis and progressive outer retinal necrosis (PORN) can occur(7).Re-exposure to VZV virus via contact with chickenpox or by vaccination may reinforce immunity and protect against development of herpes zoster(2).

MATERIALS AND METHODS

A prospective, cross-sectional study was done which included 20 patients attending the ophthalmology OPD with Herpes zoster from June 2022 to September 2022(12 males and 8 females). The patients with similar clinical profile with conditions like bacterial conjunctivitis, acute angle closure glaucoma, corneal ulcer were excluded from the study. The patients were thoroughly evaluated with proper history including history of chickenpox infection,vaccination history and history of any potential immunocompromised state (HIV/AIDS, systemic chemotherapy for malignancies or any immunosuppressive therapy).All patients underwent a thorough ocular examination which included visual acuity from Snellen's chart, slit lamp examination with fluorescein staining, corneal sensitivity, extra ocular movements and fundoscopy with Indirect ophthalmoscope. Investigations like HIV serology, blood sugar and complete hemogram were done.

The patients were treated with oral Valacyclovir 1g 3 times daily for 7 days along with systemic nonsteroidal anti inflammatory drugs like diclofenac and ibuprofen and tablet Gabapentin 300mg bd was given for 1 week to reduce post herpetic neuralgia.(7). Systemic corticosteroids are given to reduce the severity of acute signs.Patients with ocular involvement were treated with oral Acyclovir 800mg 5 times daily for 7 to 10 days along with Acyclovir 3% ointment 5 times a day, cycloplegic (homatropine 2%) and antibotic (tobramycin 0.3% or moxifloxacin 0.5%) eyedrops. Patients with uveitis also received topical steroid eyedrops that was tapered(6).In patients with increased IOP, Timolol maleate (0.5%) eyedrops was used twice daily along with oral Acetazolamide 250mg 3 times/ day for 3 days(5). Immunocompromised patients were treated with Acyclovir 10mg/Kg body weight IV every 8 hours for 7 days along with other topical medications.

RESULTS

Out of 20 patients with HZO, 12 males (60%) and 8 females(40%) were present. The most common age group to be affected was from 51 - 60 years with 9 patients (45%). Most patients presented between 3 to 5 days of onset of rash (11).

Table 1 Gender distribution of patients with HZO

Gender	Number	Total
Male	12	60%
Female	8	40%
Total	20	

Table 2 Age distribution of patients with HZO

Age group	Number	Percentage
21 - 30	1	5%
31 - 40	1	5%
41 - 50	2	10%
51 - 60	9	45%
61 - 70	4	20%
71 - 80	3	15%

Table 3 Distribution based on the day of presentation

Day of presentation	Number
< 72 hours	7
3 - 5 days	11
> 5 days	2

The most common predisposing factor was found to be age > 50 years which was seen in 16 patients (80%).

Table 4 predisposing factors in HZO patients

Predisposing factor	Number	Percentage
Age > 50 years	16	80%
HIV	1	5%
Diabetes mellitus	2	10%
Immunosuppressive therapy	2	10%

The most common presenting symptoms were acute neuralgia and skin lesions which were present in 20 (100%) of the patients.

Table 5 Presenting symptoms of HZO patients

Presenting symptoms	Number	Percentage
Acute Neuralgia	20	100%
Skin Lesions	20	100%
Watering	8	40%
Lid Swelling	5	25%
Dimunition of vision	7	35%

Ocular involvement was seen in 15 patients (75%).

Table 6 Ocular involvement in herpes zoster

Ocular involvement	Number	Percentage
Present	15	75%
Absent	5	25%

Of the 15 patients with ocular involvement, cornea was the most common structure to be involved seen in 13(65%) patients.

Table 7 Ocular structures involved

Ocular structure	Number	Percentage
Lids	10	50%
Conjunctiva	11	55%
Cornea	13	65%
Episclera & Sclera	5	25%
Uveal tract	4	20%
Secondary glaucoma	3	15%
Extra ocular muscles	0	0%

The most common ocular complication was Post Herpetic Neuralgia (PHN) which was seen in 7 patients (35%).

Table 8 The incidence of Ocular Complications

Ocular complication	Number	Percentage
Post herpetic neuralgia	7	35%
Lid scarring	3	15%
Follicular conjunctivitis	2	10%
Punctate epithelial keratitis	5	25%
Microdendritic epithelial ulcer	1	5%
Nummular keratitis	1	5%
Disciform keratitis	1	5%
Uveitis	4	20%
Secondary glaucoma	3	15%

DISCUSSION

In a recent study conducted on 38 patients by Jyoti N Sanganal et al[7], the maximum incidence was in males(58%) and in the age group of 50 to 80 years(35%). This study showed a similar trend where most people affected by HZO were above 50 years of age which is due to the decrease in the cell mediated immunity in old age making it the most common predisposing factor and males (60%) were affected more than females (40%). In this study, 18 patients (90%) of them were previously infected with chickenpox i.e.Varicella zoster virus, similar to the study conducted by Prachee et al[6] where out of 46 patients,43(93.47%) had past history of chickenpox. Most of the patients (11) presented within 3 -5 days of the onset of the rash. Patients who presented within 72 hours (7) had better results with lesser ocular complications.As stated by previous studies done by Anitha et al[5]and Prachee et al[6], antiviral therapy started within 72 hours of onset of skin rash helps in preventing serious ocular complications in HZO patients.

The other common predisposing factors were diabetes seen in 2 patients (10%) followed by immunocompromised states like HIV seen in 1 patient (5%) in the age group 31- 40 years and immunosuppressive therapy (prolonged course of steroids) in 2 patients (10%). As stated by previous studies, this study also shows that HZO is an early marker of HIV infection in patients < 45 years of age.

All patients had complaints of acute neuralgia and skin lesions which was similar to previous study conducted by Prachee Nagrale et al [6] and another study by Jyoti et al[7]which showed that all patients had presenting complaints of acute neuralgia and skin lesions.Other presenting symptoms were watering seen in 8 patients (40%), lid swelling seen in 5 patients (25%) and dimunition of vision seen in 7 patients (35%).In this study, Ocular involvement of Herpes Zoster was seen in 15 patients (75%). In the study conducted by Prachee et al [6], ocular involvement was seen in (37) 80.43% patients and a study by Jyoti et al[7] ocular involvement was seen in 30 patients(80%).The presence of Hutchinson's sign implies ocular involvement but does not correlate the severity of nasal rash with that of ocular complications[2].In this study ,the most common ocular structure involved was cornea seen in 13 patients (65%) followed by conjunctiva seen in 11 patients (55%) and lids were involved in 10 patients (50%). This was similar to a study conducted by Anitha .S Maiya et al[5] on 27 patients where corneal involvement was the most common seen in 62.5% of the cases but the second most common structure to be involved was uveal tract in 37.5% cases.

The most common ocular complication was Post herpetic neuralgia (PHN)which was seen in 7 patients (35%). This was similar to the study conducted by Jyoti et al[7] which showed PHN was the most common complication noted after 1 month in 40% of the patients. PHN was more common in patients who had developed conjunctivitis , keratitis or uveitis. Punctate epithelial keratitis was seen in 5 patients (25%) and microdendritic epithelial ulcer was seen in 1 patient (5%). Nummular keratitis was observed in 1 patient (5%) and Disciform keratitis was seen in 1 patient (5%), 2 patients had follicular conjunctivitis(10%). Other complications like Uveitis was observed in 4 patients (20%) and secondary glaucoma was developed by 3 patients (15%).

Systemic/Topical steroids used for treatment of stromal keratitis, uveitis, scleritis and episcleritis have no effect on the incidence or severity of PHN. Zoster vaccine recombinant (Shingrix) has shown to help in prevention of herpes zoster and its complications like PHN with a long lasting immune response than live vaccine (Zostavax)[3]. Varicella zoster immunoglobulin can be administered to immunocompromised children and pregnant women exposed to VZV ideally within 96 hours of exposure to prevent the dissemination of the disease. However, it can be given upto 10 days following exposure for maximal efficacy[8].

CONCLUSION

Antiviral therapy like Acyclovir, Valcyclovir, Famcyclovir are the mainstay of therapy for Herpes Zoster Ophthalmicus (HZO). In this study,7 patients who had reported within 72 hours of the onset of the rash, were started with antiviral therapy had recovered with better results and lesser ocular complications. Antiviral therapy started within 72 hours of onset of skin rash helps in reducing the viral shedding, severity of the disease and preventing serious ocular complications.

HZO is more predominant among 50 years and above and Post herpetic neuralgia (PHN) is found to be the most common complication of HZO. The use of Zoster vaccine recombinant in adults 50 years and older may help in reducing the incidence, severity and complications of herpes zoster like PHN.

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