



## CASE REPORT

### HUMAN IMMUNODEFICIENCY VIRUS INFECTION IN A CHILD PRESENTING AS HERPES ZOSTER OPHTHALMICUS AND NON- HEALING KERATITIS

M Chaudhary<sup>1\*</sup>, RP Chaudhary<sup>2</sup>

<sup>1</sup> B.P. Koirala Lions Center for Ophthalmic Studies, Institute of Medicine, Maharajgunj Medical campus, Tribhuvan University, Kathmandu, Nepal.

<sup>2</sup> NAMS, Kanti Children's hospital, Maharajgunj, Kathmandu, Nepal

\*Correspondence to: Dr. Meenu Chaudhary, B.P. Koirala Lions Center for Ophthalmic Studies, Institute of Medicine, Maharajgunj Medical campus, Tribhuvan University, Kathmandu, Nepal. Email: [drmeenu67@gmail.com](mailto:drmeenu67@gmail.com)

#### ABSTRACT

Herpes Zoster is produced by reactivation of latent varicella zoster from the dorsal root ganglion of sensory nerves. It is common in older individuals and rarely described in Pediatric age group. Its occurrence in younger age should be viewed with suspicion. We describe an 11-year-old Nepali child who presented with herpes zoster ophthalmicus of right half of the forehead and a perforated corneal ulcer in the right eye. On investigations he was found to have been infected with human immunodeficiency virus (HIV). Patient responded well to systemic acyclovir. Thus, herpes zoster ophthalmicus in a young child should be viewed with suspicion.

**Key words:** Herpes zoster ophthalmicus (HZO), Human immunodeficiency virus (HIV), Perforated corneal ulcer, Varicella zoster virus (VZV).

**DOI:** <http://dx.doi.org/10.3126/jcmc.v6i4.16719>

#### INTRODUCTION

Herpes zoster is a dermatomal infection which occurs due to reactivation of the latent varicella zoster virus (VZV) and is usually a disease of the elderly.<sup>1</sup> Zoster has traditionally affected persons with more than 60 years of age.<sup>2</sup>

Herpes zoster ophthalmicus (HZO) is a potentially devastating visual disease with variable presentation caused by the re-activation of a latent infection of the trigeminal ganglion by the VZV.<sup>3</sup> HZO affects about 5-15% of patients who are infected with HIV.<sup>4</sup> Although, most persons developing clinical zoster are healthy, other predisposing factors include neoplasm, trauma, irradiation, immunosuppression, surgery, or debilitating systemic disease.

The risk of HZO is up to 15 times higher in HIV-positive than HIV-negative patients.<sup>5</sup> Hodge et al found the incidence of HZO in the HIV-positive population to be around 3.2 per 100 patient-years of follow-up.<sup>5</sup> The most common vision-affecting complications of HZO are corneal opacities due

to scarring, neovascularisation, neurotrophic or secondarily infected ulcers, the sequelae of uveitis (i.e. cataract and glaucoma), necrotising retinitis, posterior vascular occlusions and optic neuritis. The risk of ocular complications of HZO is 2-3 times higher in the HIV infected population than in the general population; however, the complication rate has declined slightly since the advent of highly active antiretroviral therapy (HAART).<sup>6</sup> HZO has been described as one of the presenting signs of HIV disease.<sup>7</sup>

Childhood herpes zoster is believed to be rare, though recent studies suggest increasing incidence in children.<sup>1</sup> Here, we report a child of 11 years age presenting with Herpes zoster Ophthalmicus (HZO) and was detected to be positive for Human Immunodeficiency Virus infection.

#### Case Report:

An 11-year-old male child presented with vesicular

eruptions involving the skin of the right half of the forehead and eyelids for 20 days accompanied by watering, pain, photophobia and blurring of vision in his right eye for last 4 days. He was treated symptomatically by local doctors in his home town. As his general condition did not improve, he presented to the eye OPD.

**Examination:** The boy was of average built, with multiple vesicles and pustules on an erythematous base present over the right upper eyelid and forehead with crusting at some places (Fig 1).



**Figure 1: Vesicular rashes and Scarring on Right half of face**

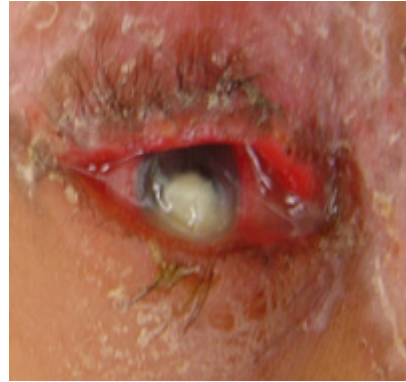
The lesions were localized to the distribution of first (ophthalmic) division of the right trigeminal nerve and also involved the tip of the nose (Hutchinson's sign).



**Figure 2: Nasociliary skin lesions (Hutchinson's sign) – on tip of nose**

The right upper eyelid was swollen, erythematous and tender; the palpebral conjunctiva was chemosed and congested. There was corneal ulcer involving the central part of the cornea with iris incarceration

in the center of the thinned out corneal ulcer. (Fig. 3)



**Figure 3 : Non healing corneal ulcer of right eye**

**Investigations:** Suspecting an immunocompromised state, the patient was tested for Human Immunodeficiency Virus, which was positive for HIV 1 & 2 Antibody Test – Reactive (ELISA)

The CD4 lymphocyte count was 405 cells/ mm<sup>3</sup>. Other routine investigations were within normal limits. Father was found positive for HIV. Mother had died few years back due to HIV. Corneal scraping revealed staphylococcus aureus infection. Hence, he was diagnosed to have HZO with perforated corneal ulcer with HIV infection.

**Treatment:** Oral Acyclovir 400mg 5 times a day was started immediately after presentation and continued for 7 days, to which he responded favorably. Reconstituted Cefazoline and atropine eye drops along with acyclovir eye ointment 3% and Chloramphenicol ointments were started in the right eye. He was referred to Voluntary counselling Testing (VCT). Antiretroviral therapy was started with tablet nevirapine 150mg twice daily, tablet zidovudine 120mg thrice daily and tablet lamivudine 75mg twice daily.

**Follow-up:** The perforated corneal ulcer healed by forming an adherent leucoma and scarring which was also seen in the area of lids. The child needs an optical keratoplasty which has been planned as per the availability of corneal tissue. The child has been discharged after 2 counselling session with the AIDS support group (VCT).

**DISCUSSION:** Primary varicella is usually a disease of childhood, whereas its reactivation infection, herpes zoster is encountered in the aged. The age adjusted incidence rate of herpes zoster is only 0.45 per 1000

persons in children below 14 years, but becomes as high as 4.5 per 1000 persons in those aged 75 years and above.<sup>8</sup>

Herpes zoster is caused by varicella-zoster virus (VZV) due to reactivation of the virus from dorsal root or cranial nerve ganglia, where it remains latent after a primary chicken pox or varicella infection. It is reactivated usually during immunocompromised state as in cases of advanced age, malignancy, prolonged steroid therapy and sometimes also with HIV infection.<sup>4,9</sup> Herpes zoster in the elderly is associated with loss of varicella-zoster virus (VZV) specific cellular immunity, whereas in chemotherapy, suppression of cellular immunity per se occurs, and there is viral destruction of T cells in HIV infected individuals.<sup>8</sup>

Historically, childhood herpes zoster was thought to be an indicator for an underlying malignancy, especially acute lymphatic leukemia, whereas recent studies have shown no increase in the incidence of malignancy in children with herpes zoster. Approximately 3% of the pediatric zoster cases occur in children with malignancies.<sup>10</sup> Rising incidence of herpes zoster in otherwise healthy children may be due to acquiring primary varicella infection in utero, or in infancy, wherein the immunity is not fully developed. Vaccination with live attenuated virus may also contribute. Tereda et al. state that the immunological status at the time of acquiring the primary infection is the most important determinant in childhood herpes zoster. A low level of lymphocytes, natural killer (NK) cells and cytokines are seen in infants, along with virus-specific immunoglobulins, all of which may result in an inability to maintain the latency of VZV, leading to early appearance of zoster in children.<sup>11</sup>

Herpes zoster occurs with higher frequency among persons who are seropositive for HIV than among those who are seronegative.<sup>9,2</sup> Studies in children infected with HIV have also shown a higher incidence of zoster than in general population.<sup>2</sup> Since herpes zoster may occur in HIV-infected persons who are otherwise asymptomatic, serological testing has been recommended in healthy persons with herpes zoster who are younger than 50 years of age.<sup>9</sup>

HZO occurs when the ophthalmic division of the trigeminal nerve is affected. A particularly high

complication rate is seen with ophthalmic zoster in HIV-positive patients. Affecting 7% of all cases of zoster in pre HIV era, ophthalmic zoster is complicated by ocular disease in 20% to 70% of patients with HIV infection.<sup>12</sup>

Though many studies have been done in adult HIV patients, so far there are no case reports of childhood HIV patients acquiring Herpes zoster ophthalmicus from Nepal. The child presenting to us had most probably developed HZO with viral keratitis which got secondarily infected and later on due to lack of timely treatment and immunocompromised status it perforated.

## CONCLUSION

Our observation thus stresses the need for screening of any child with Herpes Zoster Ophthalmicus for HIV. Our findings confirm that a HIV-positive patient with HZO may present with ocular involvement, ranging from mild keratitis or anterior uveitis to blinding disease like corneal perforation secondary to corneal ulceration. Thus, this case report emphasizes the need for evaluation of immune status, in pediatric patients presenting with HZO, which should be done to assess the need for anti retroviral treatment.

## REFERENCES

1. Prabhu S, Sripathi H, Gupta S, Prabhu M. Childhood herpes zoster: A clustering of ten cases. *Indian J Dermatol* 2009;54:62-4.
2. Nidhi Pandey, AK Chandrakar, S L Adile, et al. Human Immunodeficiency Virus Infection in a Child Presenting as Herpes Zoster Ophthalmicus. *J of Indian Med Assoc* 2007Apr;105(4):216-7.
3. M Van Dyk, D Meyer. Hutchinson's sign as a marker of ocular involvement in HIV positive patients with herpes zoster ophthalmicus. *S Afr Med J* 2010;100:172-174.
4. Dubey AK, Jaisankar TJ, Thappa DM. Clinical and morphological characteristics of herpes zoster in south India. *Indian J Dermatol* 2005;50:203-7.
5. Hodge WG, Seiff SR, Margolis TP. Ocular opportunistic infection incidences among patients who are HIV positive compared to

- patients who are HIV negative. *Ophthalmology* 1998;105(5):895-900.
6. Adepoji FG, Olawumi HO, Adehoya BJ. HIV seropositivity and related eye disease in Uth, Ilorin. *Nigr Postgrad Med J* 2007;14(2):163-165.
  7. Palexas GN, Welsh NH. Herpes zoster ophthalmicus: an early pointer to HIV positivity in young African patients. *Scand J Immunol Suppl* 1992;11:67-68.
  8. Kurlan JG, Connelly BL, Lucky AW. Herpes zoster in the first year of life following postnatal exposure to Varicella-zoster virus: Four case reports and a review of infantile herpes zoster. *Arch Dermatol* 2004;140:1268-72.
  9. Gnann J W Jr, Whitley RJ . Herpes zoster. *N Engl J Med* 2002;347:340-6.
  10. Janniger CK, Driano NA. Zoster. E-medicine article. Available from: <http://www.emedicine.com/ped/topic996.htm>
  11. Bhushan P, Sardana K, Mahajan S. Dermatomal vesicular eruption in an asymptomatic infant. *Dermatol Online J* 2005;11:26.
  12. Kar PK, Ramasastry CV. HIV prevalence in patients with herpes zoster. *Indian J Dermatol Venereol Leprol* 2003;69:116-9.