

Childhood herpes zoster: a study from tertiary center

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Abstract *Objective* To document clinical features of herpes zoster in children.

Methods Thirty children with herpes zoster were included in the study. Detailed history and thorough clinical examination was done in all patients. Tzanck smear was prepared from the floor of vesicle. Blood was collected for complete blood count, human immunodeficiency virus (HIV) serology, anti-VZV IgM and IgG antibodies. After parental consent skin biopsy was taken and sent for histopathology.

Results Of 30 children, 18 (60%) were boys and 12 (40%) were girls. Most of the patients were immunocompetent and only 3 patients were immunocompromised. Past history of varicella was noted in 13 (43.3%) patients. Only 5 (16.6%) patients had received VZV immunization. Thoracic dermatomes were more commonly involved in 17 (56.7%) patients followed by lumbar in 6 (20%), cervical in 5 (16.7%), cranial in 1 (3.3%) and sacral in 1 (3.3%) patient. Most of the children were asymptomatic and only 4 (13.3%) patients had noticed zoster associated pain.

Conclusion Most of the children with herpes zoster were immunocompetent. Thoracic dermatomes were more frequently involved. The disease is generally mild with fewer complications.

Key words

Children, immunocompetent, herpes zoster.

Introduction

Herpes zoster (HZ) results from reactivation of a latent infection by varicella-zoster virus (VZV). VZV is present in dormant form in sensory ganglia after varicella infection. It usually occurs due to decline in specific cell-mediated immunity against VZV. It is most often seen in old age and immunocompromised patients. However, it may also occur in children.¹

During the past decades, HZ has been identified

with increasing frequency in apparently immunocompetent children.² HZ in immunocompetent children typically has a benign course with mild constitutional symptoms.¹ Till today only few studies have been conducted in India on childhood herpes zoster.

Methods

It was a hospital-based cross-sectional study conducted in department of Dermatology, Venereology and Leprosy of Employee State Insurance Corporation (ESIC) hospital, Kalaburagi, Karnataka. The study was conducted between the period of February 2013 to February 2016. Study approval was taken from institutional ethical committee. Thirty

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children with herpes zoster aged < 16 years were included in the study. Detailed history was taken from all patients specially emphasizing on duration of lesions, prodromal symptoms, associated pain, precipitating factors, past history of varicella and VZV immunization. Detailed cutaneous examination was done which included site of the lesions, morphology of the lesions, dermatome involved and disseminated lesions if any. Tzanck smear was prepared for demonstration of multinucleated giant cells. After parental consent, 4mm skin biopsy was taken and sent for histopathology. All slides were examined under light microscopy. Blood samples were collected for complete blood count, HIV serology, anti-VZV IgM and IgG antibodies.

Results

Thirty children with herpes zoster were included in the study. Out of these, 18 (60%) were boys and 12 (40%) were girls. Patients' age ranged from 9 months to 15 years and majority i.e. 12 (40%) were between the age group of 5-10 years (**Table 1**). Most of the children were immunocompetent, only 3 patients were immunocompromised of which 2 were infected with HIV and 1 patient was receiving long-term corticosteroid therapy. Definite history of previous varicella infection was noted in 13 (43.3%) patients. Only 5 (16.7%) patients had received VZV immunization. Most of the patients (63.3%) were asymptomatic. Itching and burning sensations were noticed in 7 (23.3%) and 4 (13.3%) patients, respectively.

All patients had unilateral involvement. Left-sided dermatomes were involved in 17 (56.7%) patients compared to right-sided dermatomes in 13 (43.3%) patients. Thoracic dermatomes were

Table 1 Age distribution of study subjects

Age (years)	N (%)
<1	1 (3.3%)
1-5	9 (30%)
5-10	12 (40%)
10-16	8 (26.7%)

Table 2 Dermatome involvement in the study group.

Dermatome involvement	N (%)
Cranial	1 (3.3%)
Cervical	5 (16.7%)
Thoracic	17 (56.7%)
Lumbar	6 (20%)
Sacral	1 (3.3%)



Figure 1 Grouped vesicles involving T6-T8 dermatomes.



Figure 2 Grouped vesicles over L4-L5 dermatomes.

more frequently involved in 17 (56.6%) patients (**Figure 1**) followed by lumbar 6 (20%), (**Figure 2**), cervical 5 (16.6%), cranial 1 (3.3%) and sacral 1 (3.3%), (**Table 2**). In all patients multiple grouped vesicles were noted. One patient with HIV infection had hemorrhagic vesicles. None of the patients had disseminated lesions or multi-dermatomal involvement. Zoster

associated pain was noticed in 4 (13.3%) patients.

All patients underwent serological testing. Two patients were found to be HIV positive. Anti-VZV IgG antibody was noted in all patients but none of the patients showed anti-VZV IgM antibody. Only 8 patients had undergone skin biopsy. Histopathological examination showed intraepidermal split with ballooning degeneration of epidermis with lymphocytic inflammatory infiltrate in the dermis.

Discussion

Herpes zoster (HZ) occurs due to reactivation of a latent infection of VZV present in the dorsal root sensory ganglia. It is most commonly encountered in elderly and immunocompromised patients.^{1,2,3} The annual incidence of HZ in children aged < 9 years has been found to be as low as 0.74 per 1000, compared to 10.1 per 1000 in 80-89 years.⁴ Around 2% of infants who have intrauterine exposure to varicella develop zoster in infancy or early childhood.⁵

HZ in normal children has been attributed to immaturity of the immune system when varicella is acquired *in utero* or in early childhood. Maternal varicella infection during the second trimester of pregnancy and varicella during the first year of life are two recognized risk factors for childhood HZ. Probably these two conditions do not lead to long-lasting anti-VZV immunity.⁶

HZ in children typically has a benign course with mild constitutional symptoms such as fever, headache and regional lymphadenitis.⁷ The mean duration being 1-3 weeks. In some patients lesional pruritus and/or pain may be present.² The incidence of postherpetic neuralgia is negligible in children. During the past

decades, HZ has been identified with increasing frequency in apparently immunocompetent children.²

Present study showed male preponderance 18/30 (60%). This finding is similar to the study by Malik *et al.*³ and Vora *et al.*¹ but in contrast with Prabhu *et al.*² The mean age of the patients was 7 years compared to 8.2 years and 9.2 years in studies by Malik *et al.*³ and Vora *et al.*¹, respectively. In 10% of patients evidence of immunosuppression was noticed. Vora *et al.*¹ and Malik *et al.*³ noted immunosuppression in 2.94% and 16.65%, respectively. In our study definitive previous history of varicella was noticed in 13 (43.3%) patients whereas Malik *et al.*³ and Vora *et al.*¹ noticed 30% and 55.95% of patients, respectively.

Left-sided preponderance was noticed in our study which is similar to Vora *et al.*¹ study and Malik *et al.*³ study. Thoracic dermatomes were more commonly involved i.e. in 17 (56.6%) patients followed by lumbar 6 (20%). Similar findings were noticed in other studies.^{1,3,8} Leung *et al.*⁹ noted predilection of cervical and sacral dermatomes.

Out of 30 patients only 8 patients had undergone skin biopsy which showed intraepidermal split with ballooning degeneration of epidermis and lymphocytic inflammatory infiltrates in the dermis. All patients showed anti-VZV IgG antibody but none of the patient showed anti-VZV IgM antibody which indicates past infection of VZV.

Diagnosis of childhood HZ can usually be made on clinical grounds.¹⁰ But distinguishing it from zosteriform herpes simplex virus infection may be difficult.¹¹ Direct fluorescent monoclonal antibody test, viral culture and polymerase chain reaction are helpful in differentiating these two conditions.^{1,3,12} As these facilities were not

available in our institution and thus, they formed limitations of our study. Other differential diagnosis includes bullous impetigo and bullous insect bite reaction.^{1,3}

There is no consensus on treatment of zoster in healthy children as the disease in children is generally uncomplicated.¹² Antiviral treatment is needed in immunocompromised children, zoster involving the first branch of the trigeminal nerve and if associated with any systemic involvement.¹² Systemic acyclovir forms first-line therapy, which is given at a dose of 20-40 mg/kg body weight, four times a day.²

Conclusion

Increasing incidence of herpes zoster is observed in immunocompetent children. It is generally mild and of short duration. Thoracic dermatomes are most commonly involved. Viral culture and direct fluorescent monoclonal antibody test helps in differentiating it from zosteriform herpes simplex.

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