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HERPES ZOSTER IN CHILDREN: A CLINICO-EPIDEMIOLOGICAL STUDY OVER 4 YEARS AT A TERTIARY CENTER IN GUJARAT

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ABSTRACT

Introduction: Earlier considered a rare disease, childhood herpes zoster is showing an increasing incidence. This study was conducted to study the clinical features of herpes zoster (HZ) in children below 12 years of age along with immune suppression status.

Materials and Methods: The study was carried out in the Department of Dermatology at a Tertiary Care Centre in Gujarat for 4 years. Children aged ≤12 years with a diagnosis of HZ were enrolled in a predesigned pro forma. Diagnosis was mainly clinical with use of Tzanck smears in difficult cases. ELISA for HIV was done in all cases.

Results: Total of 51 children aged ≤12 years were enrolled in the study. Male predominance was seen. The mean age was 8.74 years. 72.5% patients had localized dermatomal involvement and dissemination was not seen. Majority of patients (51%) did not have any preceding symptoms. Prior exposure to varicella was present in only 19 (37.3%) cases. Evidence of immunosuppression on history, clinical examination, and investigations was present in 11(21.5%).

Conclusion: Although childhood HZ is increasing, atypical presentations and dissemination are rare. Immunosuppression does not play a major role in these patients. We conclude that HZ in children follows a relatively benign course as compared to adults.

Key Words: Childhood, herpes zoster, immunosuppression

INTRODUCTION

Herpes zoster (HZ) is an exanthem caused by reactivation of varicella zoster virus acquired previously. It occurs in a dermatomal pattern and is usually unilateral. .The primary varicella infection i.e. chickenpox is usually a childhood disease whereas herpes zoster is seen mostly in adults. Although HZ is a source of morbidity in adults in form of postherpetic neuralgia[1], in children it is believed to be relatively mild.[2] Earlier considered a rare disease, childhood herpes zoster is showing an increasing incidence.[3] It is frequently seen in immune compromised children as in patients HIV or on chemotherapy.[4] Recent reports show an increase in the number of cases in immunocompetent children also.[5]

The present study was done to study the clinical profile of herpes zoster occurring in children below 12 years of age presenting at a tertiary care unit. To the best of our knowledge no such epidemiological study has yet been reported from Gujarat.

METHODS AND MATERIAL

The data for this study was collected in the Department of Dermatology, AMC MET Medical College, Ahmedabad over a period of four years from March 2012 till February 2016. A total of 51 children below 12 years of age, presenting with a clini-

cal diagnosis of herpes zoster were enrolled. After obtaining an informed consent from the parents, all information was recorded on a preset pro forma. Those who were unwilling to enroll in the study were excluded. A detailed history including past history of chickenpox, both in the patient and in other family members was noted. History pertaining to any form of immunosuppression was also noted. Clinical examination to determine the dermatome involved, any evidence of dissemination, secondary infection and any other manifestation of immunosuppression was carried out. The diagnosis was mainly on clinical basis; however, in the doubtful cases Tzanck smear was done.[6] Hematological investigations including ELISA for HIV was done in all cases. All the children were started on acyclovir tablets, with a dosage of 20mg/kg body weight, four times a day (up to a maximum dose of 800mg four times daily), for one week. Supportive measures included topical antibacterial cream, oral antibiotics and paracetamol.

RESULTS

A total of 51 patients were enrolled in the study. 16 patients refused to participate in the study. There were 28 (54.9%) males and 23 (45.1%) females. Mean age was 8.74 years with the youngest patient being 5 years old. 31(60.8%) patients had thoracic dermatomal involvement followed by 3(6%) patients having cranial involvement in form of ophthalmic division of trigeminal nerve. There was one patient each of cervical, lumbar and sacral dermatomal involvement. 14(27.5%) patients had two adjacent dermatomes involved. None of the patient showed dissemination. The involvement was right-sided in 23(45.1%) and left sided in 28(54.9%) patients. Secondary infection was present in 17 (33.3%) patients at the time of presentation. Most of the patients (51%) did not have any preceding symptoms. 14(27.5%) patients reported burning sensation prior to eruption of lesions. Only 8(15.7%) patients had pain which was mild in all cases. Other complains included fever in 2(3.9%) and pruritus in 1(1.9%) patient. Out of the 51 patients, 32 (62.7%) gave no history of previous chickenpox in patient or family member or close contact. Only 19 (37.3%) patients had a positive past history of chickenpox. Out of the 19 patients previously exposed to varicella, 6 patients were exposed below 2 years of age. None of the children had been immunized against varicella. Majority of the patients i.e. 40 (78.5%) showed no evidence of immunosuppression on history, examination and investigations. Out of the 11 patients with immunosuppression, 4 were on long term steroids for associated medical conditions, 4 children had tuberculosis (2 cases of pulmonary and 2 of abdominal).Three patients had positive HIV ELISA with CD4 counts more than 500 in each patient. Only 37 patients came back for follow up after the prescribed antiviral course. Post inflammatory hypopigmentation was the only sequelae seen in these cases. The results have been summarized in Table 1.

Table 1: Clinico-epidemiological profile of the study cases

Patient Characteristics	Patients (%)
Sex	
Male	28 (54.9)
Female	23 (45.1)
Dermatome involved	
Cranial	3 (6)
Cervical	1 (1.9)
Thoracic	31 (60.8)
Lumbar	1 (1.9)
Sacral	1 (1.9)
Two dermatomes	17 (27.5)
Side	
Left	28 (54.9)
Right	23 (45.1)
Secondary infection	17 (33.3)
Preceding symptoms	
None	26 (51)
Burning	14 (27.5)
Pain	8 (15.7)
Fever	2 (3.9)
Pruritus	1 (1.9)
Previous history of chicken pox	
Yes	19 (37.3)
No	32 (62.7)
Immunosuppression	11 (21.6)
Steroid	4 (36.4)
Tuberculosis	4 (36.4)
HIV	3 (27.2)

DISCUSSION

Primary varicella-zoster infection is usually a disease of childhood in the form of chickenpox. Herpes zoster results from reactivation of the varicella virus dormant in the dorsal root ganglia. This mostly occurs in the elderly and is associated with loss of varicella-zoster virus specific cellular immunity.[7] Loss of cellular immunity is responsible for occurrence of herpes zoster both in patients on chemotherapy and in HIV infected individuals.[8] 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 and above.[9] Historically, it was thought that childhood herpes zoster was harbinger of an underlying malignancy, especially acute lymphatic leukemia, but recent studies found no such correlation. Approximately only 3% of the zoster cases occur in children with malignancies.[10] The rise in the incidence of herpes zoster in healthy

children may be a result of acquiring primary varicella infection *in utero*, or in infancy, when the immunity is not fully developed. Vaccination with live attenuated virus may also contribute. Terada *et al*. suggested the importance of the immunological status of the child at the time of acquiring primary infection. They believed it to be the most important determinant in childhood zoster.[11] Infants have a low level of both acquired and innate immunity which may result in an inability to maintain the latency of VZV, leading to early appearance of zoster in children.[12] The diagnosis of herpes zoster is usually clinical. A close differential is bullous insect bite reaction. In doubtful cases, the diagnosis can be confirmed by making a Tzanck smear preparation from the scrapings from the floor of the vesicles, which will reveal multinucleated giant cells on direct microscopy. Other tests like direct fluorescent monoclonal antibody test, serum specific IgM by indirect fluorescent antibody method or viral cultures are more definitive.[13]

Previously herpes zoster was thought to be an affliction of the elderly, but it is increasingly being seen in the younger age groups. A number of authors have studied its epidemiological and patterns in the pediatric population.[2,3,4,5,14,15] Out of our 51 patients there was a male predominance i.e. 54.9% and the mean age was 8.74 years which was consistent with other studies.[4,15,16] Our youngest patient was 5 years old, but studies have found even infants being affected with herpes zoster.[12,15] In infants, low levels of lymphocytes, natural killer and cytokines, along with virus specific immunoglobulin result in early appearance of zoster.[11] Only 37.3% of our patients had history of varicella exposure in the past and more than half i.e. 21.5% were exposed around 4 years of age. This may be due to the fact the many children start their schooling around this age and are exposed to a whole new spectrum of population. Terada et al. have shown that healthy immunocompetent children who had chicken pox in infancy remained positive for VZV for the longest period as determined by PCR reaction.[17] None of our patients was exposed in infancy. None of the mothers gave history of chickenpox or zoster during pregnancy. However, in literature, in 69% of infantile herpes zoster cases, the initial event could be traced to maternal varicella during pregnancy.[18,19]

Majority of our patients (78.5%) showed no evidence of immunosuppression on history, examination and investigations as has been seen by Lamees Mahmood Malik et al[15] also. Ideally in childhood herpes zoster, all the tests of cellular and humoral immunity should be done to rule out undetected concurrent immunosuppression. Due to limitation of resources we were not able to perform these tests. Out of the 11 patients who had an immunocompromised state, 4 patients had iatrogenic immunosuppression. They were on long term low to high dose of steroids for various underlying medical conditions. 4 children suffered from tuberculosis and 3 were detected to be HIV reactive. The children who were HIV reactive did not have any other features of immunocompromised state. Lower number of immunosuppressed patients in our study could be because of the fact that the study population consisted of general dermatology OPD cases where more sick pediatric patients are not seen. Similar findings have been reported by other authors also.[15] Generally, childhood zoster is both milder and shorter in duration than the adult variety.[20] Preceding symptoms which have been reported include pruritus, pain, burning, fever and lymphadenopathy.[15] Majority of our patients did not have any preliminary symptom. Localized burning was the most common complaint in 27.5% patients. A study from Pakistan had reported pruritus affecting 52% of their patients and found it to be the most common symptom. In our study , however, only 1 patient(1.9%) complained of pruritus. Thoracic dermatome was most commonly involved (60.8%) which is consistent with other studies.[3,4,5,15,16] Dissemination in immunocompetent children has been reported in studies[3,15], but we did not have any such case. Involvement of more than two dermatomes was seen in 14(27.5%) patients, out of which four were immunosuppressed. Incidence of postherpetic neuralgia is reported to be very rare in childhood cases.[5,15,21] As none of the patients followed up after clearing of vesicles, we could not study the incidence of post herpetic neuralgia. Progressive primary varicella, where persistent new lesion formation and visceral dissemination is seen, may occur in HIV infected patients and may be life threatening.[22] Loss of follow up of the patients prevented us from studying this phenomenon.

Loss of follow up and unavailability of specific tests for cellular and humoral tests were the limitations of our study.

CONCLUSION

Earlier thought be a bane of elderly, nowadays herpes zoster is increasingly being observed in children. Immunosuppression does not play as big a role in occurrence of zoster in children, as it does in other viral diseases. Compared to adults, the disease is generally mild and of shorter duration.

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