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Original Article

A Clinical Study on 100 Cases of Herpes Zoster in a Tertiary Care Hospital

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Abstract

Introduction: Herpes zoster is caused by varicella zoster virus (VZV), occurs as a result of reactivation of the dormant virus in sensory root ganglia. Most often VZV reactivates in the settings of relative immunologic compromise, as occurs with aging, or following disease such as HIV or various therapies, such as steroids, cancer chemotherapy, organ transplantation, and irradiation.

Aim of the Study: The study of herpes zoster was undertaken to find out the age and sex incidence, prevalence of prodromal symptoms, provocative factors, pattern of dermatomal involvement, prevalence of constitutional symptoms, association with HIV, other cutaneous diseases and systemic diseases, duration of time taken for resolution of lesions, and the prevalence of complications.

Materials and Methods: This study was conducted on 100 cases of herpes zoster. Patient's age, sex, occupation, and address were noted. A detailed history regarding the prodromal symptoms, skin lesions, nature of pain, duration of illness at the time of presentation, provocative factors, and history of chicken pox were recorded. Morphology of skin lesions, the side of involvement, cutaneous dissemination, mucosal lesions, and motor palsy associated with zoster were recorded. Associated cutaneous diseases, systemic diseases, and HIV infection were noted. The time taken for complete resolution of lesions and the complications were also noted.

Observation and Results: Out of 100 cases, 72 were males and 28 were females and the sex ratio was 2.5:1. Age wise distribution showed that 73 cases were below the age of 50 and 27 were above the age of 50 years. Prodromal symptoms were present in 85% and absent in 15% cases. Constitutional symptoms were present in 77% and 23% cases were not had any constitutional symptoms. Thoracic dermatome was the most common dermatome involved (60%) followed by cranial nerve zoster 14%, lumbar 13%, cervical 12%, and sacral dermatome 1% case. Most cases (85%) showed complete resolution of lesions between 10 and 21 days (2–3 weeks). Postherpetic neuralgia (PHN) was the most common complication observed in herpes zoster patients.

Conclusion: More than two-third (73%) of cases of zoster occurred in individuals below the age of 50 years. The prevalence of zoster was more in the younger age group when compared to elderly people. Male preponderance was found with the sex ratio of 2.5:1. Thoracic dermatome was the most common segment involved, and sacral was the least common dermatome affected. HIV infection was the most common provocative factor in 16% of total cases. The most common systemic diseases noted with zoster were diabetes mellitus and hypertension. Duration of time taken for resolution or healing of the lesions ranged from 2 to 4 weeks. PHN was the most common complication observed in our cases. The other complications noted were secondary bacterial infection, scarring, and motor palsy (facial palsy).

Key words: Dermatome, Herpes zoster, Postherpetic neuralgia, Varicella zoster virus

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INTRODUCTION

Herpes zoster is also called as 'shingles' and the name is derived from a latin word 'cingulus' meanings 'girdle'. Herpes zoster is caused by varicella zoster virus (VZV), occurs as a result of reactivation of the dormant virus in sensory root ganglia following varicella. This concept was suggested by

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Garland in 1943. In 1958, Waller and colleagues established that there were neither biologic nor immunologic differences between the viral agents isolated from patients with chicken pox and Herpes zoster. Tyzzer described the histopathological descriptions of skin lesions resulting from VZV infections and noted the appearance of intranuclear inclusions and multinucleated giant cells. Cytodiagnosis of herpes zoster by smear taken from the base of a blister revealing multinucleated giant cells was introduced by Tzanck in 1947.

Hope-Simpson was the first to recognize the importance of the immune system in controlling the manifestations of zoster. He postulated that zoster resulted when humoral immunity to VZV wanes in years and decades after Varicella. Later, the importance of declining cellular rather than humoral immunity to VZV was recognized in the pathogenesis of zoster. Most often VZV reactivates in the settings of relative immunologic compromise, as occurs with ageing, or following disease such as HIV or various therapies, such as steroids, cancer chemotherapy, organ transplantation, and irradiation.

Aim of the Study

The study of herpes zoster was undertaken to find out the age incidence, sex incidence, prevalence of prodromal symptoms, provocative factors, prevalence of constitutional symptoms, pattern of dermatomal involvement, association with HIV, other cutaneous diseases and systemic diseases, duration of time taken for resolution of lesions, and the prevalence of complications.

MATERIALS AND METHODS

This study was conducted on 100 cases of herpes zoster in a tertiary care hospital in South India. All cases of herpes zoster attending skin outpatient department and referred cases of zoster from other departments were studied.

Patient's age, sex, occupation, and address were noted. A detailed history regarding the prodromal symptoms, skin lesions, nature of pain, provocative factors, and history of varicella were taken. Associated cutaneous diseases, systemic diseases, and HIV infection were recorded.

Each patient underwent detailed general and systemic examinations. Morphology of skin lesions, the side of involvement, cutaneous dissemination, mucosal lesions, motor palsy associated with zoster, other systemic and cutaneous diseases were recorded.

A set of laboratory investigation consisting of complete hemogram, blood sugar, renal function test, urine analysis, enzyme-linked immunosorbent assay for HIV antibody was done in all cases.

Patients were treated with oral acyclovir, and they were assessed with regard to the course of the disease, time is taken for resolution of lesions and for persistent pain and other complications.

OBSERVATION AND RESULTS

Out of 100 cases, 72 were males and 28 were females and the sex ratio was 2.5:1. Age wise distribution showed that 73 cases were below the age of 50 and 27 were above the age of 50 years. Maximum number of cases were seen between the age group of 41–50 years (25%) and 21–30 years (24%) which was followed by 31–40 years (14%) and 61–70 years (14%). Minimum number of cases was observed in the age group of 1–10 years (1%), 71–80 years (1%), and 81–90 years (1%). The youngest was 9 years and oldest was 81 years of age [Table 1].

Prodromal symptoms were present in 85 cases (85%) and absent in 15 (15%) cases. Among the 85 cases, pain in the dermatome was the most common symptom in the pre-eruptive stage [Table 2].

Constitutional symptoms were present in 77 cases (77%) and 23 (23%) cases were not had any constitutional symptoms. Fever was the most common constitutional symptom present in 45 (58.44%) cases. Other constitutional symptoms noted were myalgia 18 (23.37%), headache 12 (15.58%), and joint pain in 2 (2.59%) cases.

Table 1: Age- and sex-wise prevalence of herpes zoster cases

Age group	Male	Female	Total number of cases (%)
1–10	Nil	1	1 (1)
11–20	6	3	9 (9)
21–30	17	8	25 (25)
31–40	12	2	14 (14)
41–50	18	6	24 (24)
51–60	6	5	11 (11)
61–70	11	3	14 (14)
71–80	1	-	1 (1)
81–90	1	-	1 (1)
Total	72	28	100

Table 2: Prevalence of signs and symptoms in pre-eruptive stage

Signs and symptoms	Total number of cases (%)
Pain in the dermatome	65 (76.47)
Burning sensation	10 (11.76)
Itching	4 (4.70)
Tingling, numbness, paresthesia	4 (4.70)
Erythema	2 (2.35)
Total cases	85

Out of 100 cases, 90% gave definite history of occurrence of varicella in the past. The remaining 10% of cases were not aware of the occurrence of chicken pox in their childhood period.

The most common morphological pattern of lesion seen was grouped vesicles in a dermatomal distribution in 97 (97%) cases. The remaining 3 (3%) cases had crusting and erosion in dermatomal pattern [Figure 1]. Thoracic dermatome was the most common dermatome involved (60%) followed by cranial nerve zoster 14% of cases, lumbar 13% of cases, cervical 12% of cases, and sacral dermatome 1 (1%) case [Figure 2]. The pattern of dermatome involvement was almost similar in both sexes. The distribution of lesions was more on the left side (52%) when compared to the right side (48%).

Figure 1: (a) Herpes zoster involving maxillary division of trigeminal nerve, (b) herpes zoster ophthalmicus with Hutchinson's sign, (c) necrotic ulcer in HIV positive case, (d) cervical dermatome involvement, (e) sacral dermatome zoster, (f) thoracic dermatomal zoster

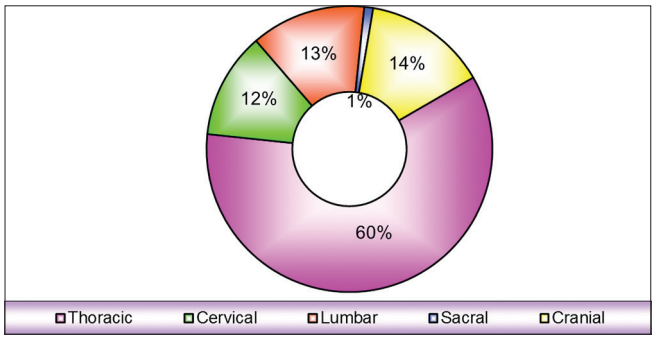

Figure 2: Pattern of dermatome involvement

Figure 3: (a) Complication of zoster with scarring, (b) keloid formation after zoster, (c) secondary bacterial infection and ulceration in zoster, (d and e) herpes zoster with dissemination, (f) herpes zoster oticus with facial palsy

Out of 100 cases, 97% of cases had involvement of single dermatome, and 1% of case had multidermatomal involvement, and the remaining 2% of cases had cutaneous dissemination in addition to the classical dermatomal distribution [Figure 3d and e]. Among the 2 cases with cutaneous dissemination, 1 case was a HIV positive patient.

In our study population, 36 cases had provocative factors for development of herpes zoster. Among the 36 cases, 16 cases (44.4%) were having HIV infection, 7 cases (19.4%) were associated with diabetes and 6 cases (16.6%) were on steroid therapy for systemic lupus erythematosus (SLE) (3 cases), bronchial asthma (2 cases), and lepra reaction (1 case). The other provocative factors are illustrated in Table 3.

Cutaneous diseases seen in association with herpes zoster were acne (1 case), seborrhoeic dermatitis (2 cases), tinea versicolor (2 cases), Hansen's disease (1 case), insect bite allergy (2 cases), wart (1 case), cellulitis (1 case), oral candidiasis (1 case), tinea cruris (1 case), and intertrigo (1 case).

Diabetes (7 cases) and hypertension (6 cases) were the most common systemic diseases seen in association with herpes zoster. Other systemic diseases seen with herpes zoster were SLE (3 cases), bronchial asthma (2 cases), tuberculosis (1 case), hepatitis B (1 case), and chronic renal failure (1 case).

In this study, 16 cases were found to be HIV positive. Among the 16 HIV positive cases, 14 were males and 2 were females. In these 16 cases, 10 patients were already diagnosed as HIV positive and 6 cases were screened and turned out to be positive after the occurrence of zoster.

Table 3: Prevalence of provocative factors

Provocative factors	Male	Female	Total (%)
HIV	14	2	16 (44.4)
Physical stress (parturition)	0	1	1 (2.7)
Diabetes	6	1	7 (19.4)
Renal transplantation	1	0	1 (2.7)
Steroid therapy	3	3	6 (16.6)
Pulmonary tuberculosis	1	0	1 (2.7)
Pregnancy	0	1	1 (2.7)
Radiotherapy	0	2	2 (5.5)
Malignancy (prostate cancer)	1	0	1 (2.7)
Total	26	10	36

Following treatment with oral acyclovir, most cases (85%) showed complete resolution of lesions between 10 and 21 days (2–3 weeks) and the remaining 15% cases showed resolution after the 3rd week [Table 4].

Postherpetic neuralgia (PHN) was the most common complication in 19 cases (47.5%) [Figure 4]. Among the 19 cases of PHN, 14 were male and 5 cases were female. The highest prevalence of PHN (36.8%) was noted in the age group of 61–70 years which was followed by 31.5% in the age group of 41–50 years and 15.7% in the age group of 51–60 years. Minimum number of cases with PHN were observed in the groups of 10–20 years (5.3%), 21–30 years of age (5.3%), and 81–90 years (5.3%) [Table 5]. Out of 19 cases of PHN, 4 cases had spasmodic shooting pain, 2 cases had allodynia, and the remaining 13 cases had burning type of pain.

Table 4: Resolution time of zoster lesions

Duration	Number of cases (%)
10–14 days (2nd week)	35 (35)
15–21 days (3rd week)	50 (50)
22–28 days (4th week)	14 (14)
29 days and above (5th week and above)	1 (1)

Table 5: Age group wise occurrence of PHN

Age (years)	Male	Female	Total (%)
10–20	0	1	1 (5.3)
21–30	1	0	1 (5.3)
31–40	0	0	0
41–50	4	2	6 (31.5)
51–60	3	0	3 (15.7)
61–70	5	2	7 (36.8)
71–80	0	0	0
81–90	1	0	1 (5.3)
Total	14	5	19 (100)

PHN: Postherpetic neuralgia

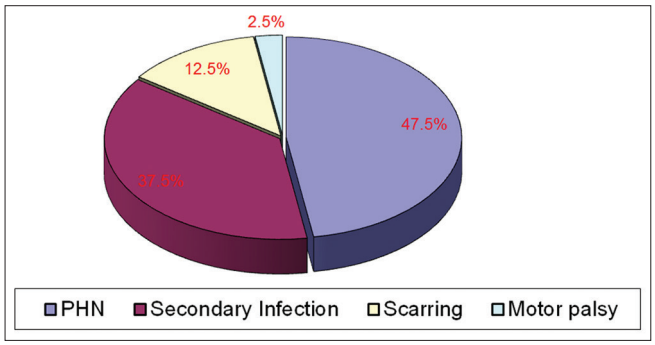

Figure 4: Prevalence of complications

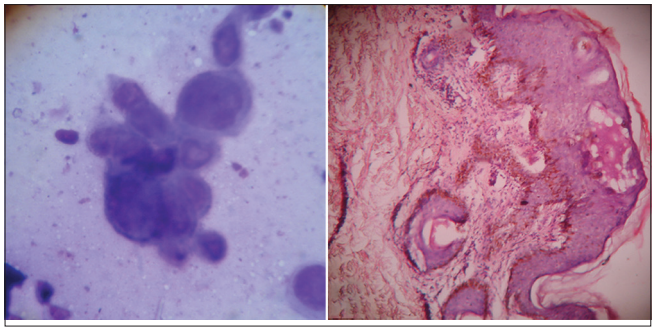

Figure 5: (a) Tzanck smear from a zoster lesion showing multinucleated giant epithelial cell, (b) skin biopsy showing intraepidermal blister formation with ballooning degeneration (H and E, ×10)

Other complications observed were secondary bacterial infection in 15 cases (37.5%) [Figure 3c], scarring in 5 cases (12.5%) [Figure 3a], of which 1 case had keloid [Figure 3b], and facial palsy was seen in one case (2.5%) of Ramsay Hunt Syndrome with underlying prostatic carcinoma [Figure 3f]. Recurrence of herpes zoster and systemic complications were not observed in our study population.

Tzanck smear from the vesicle showed multinucleated giant epithelial cell [Figure 5a]. Skin biopsy was done in a case of zoster showed intraepidermal vesicle with reticular degeneration and ballooning degeneration in the epidermis. The dermis showed marked inflammatory infiltrate around the blood vessels and upper dermis [Figure 5b].

DISCUSSION

Herpes zoster is common among immunocompromised persons, so the elderly are at particular risk because immunocompetence declines with age. Whitley[1] reported that zoster affects 20% of general population during their lifetime, especially in elderly. This study of 100 patients with herpes zoster revealed that the majority of the patients affected were adults in the second (25%), third (14%), and fourth (24%) decades. More than two-thirds (73%) of the reported cases occurred in individuals below the age of 50 and the remaining (27%) affected cases were above 50 years of age. This is in contrast to the observation made earlier in other studies wherein more than two-third of cases wherein the age group of above 50 years with the highest incidence among individuals in the sixth to eighth decades of life.[2] Total number of cases in childhood and adolescence age group were 10 cases.

In this study male: Female ratio was 2.5:1 which is in contrast with the western studies where female predominance have been reported.[3,4]

Prodromal symptoms were in a higher rate (85%) in this study. In majority of cases, pain in the dermatome was the most common symptom in the pre-eruptive stage. This is in contrast to the lower incidence of prodromal symptoms in various other studies.[5]

Constitutional symptoms were noted in 77% of cases in our study population, and majority of cases were in younger age group which is in contrast to a South Indian study by Pavithran and Abdul Latheef[5] where more number of patients with constitutional symptoms were in elderly age group. Fever was the most common constitutional symptom observed in this study.

About 90% of the study population had varicella in the past, and 10% of cases were not aware of the occurrence of varicella. A study was conducted by Yawn *et al.* showed that people who had chicken pox have 30% risk of acquiring herpes zoster in their lifetime.[6]

In this study, 97% of cases had classical herpes zoster in dermatomal pattern[2] and 3% of cases had crusting and erosions along the dermatome. Thoracic dermatome was the most common dermatome involved (60%) in this study followed by cranial nerve involvement (14%) which is similar to the study by Pavithran and Abdul Latheef.[5] The other frequently involved dermatomes were lumbar dermatome in 13%, cervical (12%) in accordance with the literature reports.[7] The least common dermatome involved was sacral segment (1%).

Out of 100 cases, 97% of cases had involvement of single dermatome and 1% of case had multidermatomal involvement, and the remaining 2% of cases had cutaneous dissemination. Disseminated herpes zoster is defined as the presence of more than 20 vesicles away from the primary dermatome and adjacent dermatome. Among the 2 cases of disseminated zoster, 1 was associated with HIV infection. In a study conducted by Gebo *et al.*, none of the cases of disseminated zoster were associated with HIV infection.[8] Literature says that the prevalence of cutaneous dissemination was 40% in HIV positive cases with zoster.[9] Multidermatomal zoster case with Ramsay Hunt Syndrome was associated with malignancy in our study.

Among the 100 cases, 36 cases were having one or more provocative factors. Out of 36 cases, the most common risk factor seen was HIV infection in 16 cases (44.4%) followed by diabetes in 7 cases (19.4%), steroid therapy in 6 cases (16.6%), and radiotherapy 2 cases (5.5%).

Malignancy, tuberculosis, renal transplantation, physical stress of parturition and pregnancy were also noted as provocative factors with 1 case in each. Depressed cell-medicated immunity associated with most of the above-mentioned conditions, as described in literature[10] could be the possible factor for the development of zoster.

Cutaneous diseases seen in association with herpes zoster were acne, seborrhoeic dermatitis, tinea versicolor, Hansen's disease, insect bite allergy, wart, cellulitis, oral candidiasis, tinea cruris, and intertrigo. The association of zoster with these skin diseases may be coincidental.

Systemic diseases seen in association with herpes zoster were diabetes mellitus 7 cases, hypertension 6 cases, SLE 3 cases, bronchial asthma 2 cases, tuberculosis 1 case, hepatitis B infection 1 case, and chronic renal failure 1 case. Immunosuppression associated with diabetes, tuberculosis and steroid therapy of SLE and bronchial asthma could have triggered zoster in these cases.

In this study, 16% of cases were HIV seropositive which is higher than the study by Kar and Ramasastry[11] where it was 9.5%. Among the 16% of cases of HIV positivity, 10% cases developed herpes zoster during the course of HIV infection and herpes zoster was the initial manifestation of HIV infection in 6% cases. Herpes zoster is an important indicator of HIV infection[12] as it has been included in HIV Stage 2 marker in the WHO staging. Extensive tissue necrosis and secondary bacterial infection were seen in HIV positive individuals with herpes zoster in our study.

Period of time taken for resolution or healing of the lesions in most of the cases ranged from 2 to 4 weeks as described in literature.[5] PHN was the most common complication noted in 19 patients (47.5%) followed by secondary bacterial infection in 15 cases (37.5%), scarring in 5 cases (12.5%), and motor zoster (facial palsy) in 1 case (2.5%). PHN is the most common complication reported in the literature.[5] In accordance with the literature reports,[5] the incidence of PHN increased with increasing age in this study. The complications were maximum in those cases came for treatment late in the course of the disease.

CONCLUSION

In this study population, herpes zoster mainly occurred in second, third, and fourth decades of life. More than two-third (73%) of cases occurred in individuals below the age of 50 years. Male preponderance was found with the sex ratio of 2.5:1. Prodromal symptoms were present in 85% of patients and pain in the dermatome was the most common prodromal symptom noted. Thoracic dermatome was the most common segment involved, and sacral was the least common dermatome affected in the cases studied. HIV infection was the most common provocative factor in 16% of total cases. Out of this, 10% of cases were already diagnosed as HIV positive and developed herpes zoster during the course of HIV disease and herpes zoster was the initial manifestation of HIV infection in 6% of cases. This indicates the importance of HIV testing in patients presenting with herpes zoster, especially with

necrotic ulceration, dissemination and in the younger age group patients. Steroid therapy given for certain systemic disorders and decreased cell-mediated immunity acted as a triggering factor for herpes zoster in some cases. The most common systemic diseases noted with zoster were diabetes mellitus, hypertension and the association of zoster with hypertension was considered coincidental. Duration of time taken for resolution of the lesions ranged from 2 to 4 weeks. PHN was the most common complication observed in our cases, and the incidence of PHN increased with increasing age. The other complications noted were secondary bacterial infection, scarring and motor palsy (facial palsy) along with herpes zoster. The prevalence of zoster was more in the younger age group when compared to elderly people in this study. From our study, we conclude that HIV screening should be done in all cases of herpes zoster and the antiviral therapy should be initiated as early as possible to reduce complications herpes zoster.

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