

# A Study of Clinico-Epidemiologic Profile of Herpes Zoster in Central India

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## ABSTRACT

### BACKGROUND

Herpes zoster is a viral infection which occurs as a result of reactivation of varicella zoster virus lying dormant in dorsal root and cranial nerve ganglia. The complications can be severe. The pattern and complications keep changing in the population due to various factors like immunosuppression and comorbidities. We planned to study the clinical characteristics, complications, and risk factors in patients of herpes zoster.

### METHODS

This was a prospective, hospital based, observational study involving 170 clinically diagnosed patients of herpes zoster. A detailed clinical evaluation regarding the demography, segment of involvement, pattern of lesions, risk factors, and complications was performed and recorded. Data was coded and entered in SPSS version 16. Qualitative data was expressed in proportions / percentage. Chi-square test and t - test were applied wherever applicable. A p - value of < 0.05 was considered statistically significant.

### RESULTS

Male to female ratio was 2.1 : 1. Maximum cases were seen in the age group of 51 - 60 years (22.9 %), followed by 31 - 40 and 61 - 70 (18.8 % each). Left side involvement was more common. Pain in the affected dermatome was the most common prodromal symptom. Fever and myalgia were the most commonly reported constitutional symptoms. Only 80 patients had past history of varicella. Thoracic dermatomes were the most commonly involved followed by cranial, cervical, lumbar and sacral dermatomes. Forty eight patients had associated risk factors for herpes zoster infection. Complications secondary to herpes zoster infection developed in 40 patients. Patients who developed complications had a significantly higher mean age than those who didn't.

### CONCLUSIONS

Herpes zoster was seen more commonly in males. Most commonly affected age group was 51 - 60 years. Thoracic dermatomes were most commonly involved. Risk factors were seen in 28.2 % patients. Complications were seen in 23.5 % patients including post herpetic neuralgia in 14.2 % patients. Patients of higher age group are at higher risk of complications.

### KEYWORDS

Herpes Zoster, Epidemiology, India

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**BACKGROUND**

Herpes zoster also known as shingles, is a viral disease which occurs as a result of reactivation of varicella zoster virus lying dormant in dorsal root and cranial nerve ganglia.<sup>1,2</sup> This concept was suggested by Garland in 1943. Dysfunction of cell mediated immunity and increasing age are well established risk factors for varicella zoster virus reactivation.<sup>2</sup> Other risk factors are psychological stress, diabetic mellitus, hypertension, old age, family history.<sup>3,4</sup> The present study was undertaken to find out the age, incidence, prevalence of prodromal symptoms, pattern of dermatomal involvement, association with HIV, other cutaneous disease and systemic disease.

We wanted to study the clinical characteristics, complications, and risk factors in patients of herpes zoster.

**METHODS**

This was a prospective, hospital based, observational study conducted from September 2018 to Jan 2020 in the Department of Dermatology and STD in Sri Aurobindo Institute of Medical College and Hospital. A total of 170 clinically diagnosed patients of herpes zoster attending our department in the study duration were enrolled in the study.

Clinical details of the patients were recorded in a pre - designed proforma. Patient's age, sex, occupation and address were noted. A detailed history regarding the prodromal symptoms, skin lesions, nature of pain, provocative factors, history of varicella, associated cutaneous disorders, systemic disease, HIV and HCV infection was recorded. Detailed cutaneous and systemic examination of the patients was conducted by a dermatologist. Disease characteristics including morphology of skin lesions, side of involvement, cutaneous dissemination, mucosal lesions, and signs of other systemic and cutaneous diseases were recorded.

Relevant investigations (if needed) were carried out. Patients were treated as per the standard protocol and they were assessed with regard to the course of disease, time taken for resolution of lesions and for persistent pain and other complications.

Data was coded and entered in SPSS version 16. Qualitative data was expressed in proportions / percentage. Chi-square test and t - test were applied wherever applicable. A p - value of < 0.05 was considered statistically significant.

**RESULTS**

The mean age of the study population was 47.4 ± 16.1 years. Out of total 170 cases, 115 (67.6 %) were males and 55 (32.4 %) were females. Male to female ratio was 2.1 : 1. Maximum number of cases were seen in the age group of 51 - 60 years (22.9 %), followed by 31 - 40 and 61 - 70

(18.8 % each). Only one case each belonged to less than 10 years of age and more than 80 years of age. Oldest patient was of 81 years age and the youngest patient was 9 years old (Table 1).

Left side involvement was more common, seen in 98 patients (57.6 %) (67 males and 31 females) than right side involvement, seen in 72 patients (42.4 %) (48 males and 24 females) (Table 2). Pain in the affected dermatome was the most common symptom present in 157 (92.3 %) patients. Pain associated with burning sensation was reported in 30 (17.6 %) patients and along with itching in 10 (5.8 %) patients. Out of 170 patients, 126 patients (74.1 %) had onset of pain less than 4 days before the onset of symptoms.

Constitutional symptoms were present in only 106 patients (63.4 %). Fever and myalgia (85 patients, 50.0 %) were the most commonly reported constitutional symptoms followed by headache (15 patients, 8.8 %), eye and earache in (3 patients each, 1.8 %). Among 170 patients, only 80 (47.1 %) patients had past history of varicella.

Age Group	Male	Female	Total No. of Cases (%)
1 - 10	1	0	1 (0.6)
11 - 20	7	1	8 (4.7)
21 - 30	11	5	16 (9.4)
31 - 40	23	9	32 (18.8)
41 - 50	20	8	28 (16.5)
51 - 60	25	14	39 (22.9)
61 - 70	21	11	32 (18.8)
71 - 80	7	6	13 (7.6)
81 - 90	0	1	1 (0.6)
<b>Total</b>	<b>115</b>	<b>55</b>	<b>170 (100)</b>

**Table 1. Age- and Sex-Wise Prevalence of herpes Zoster Cases**

Region	Sex		Side		Number of Cases (%)
	Male	Female	Right	Left	
Cranial	23	13	18	18	36 (21.2 %)
Cervical	15	6	10	11	21 (12.4 %)
Thoracic	71	29	40	60	100 (58.8 %)
Lumbar	9	8	7	10	17 (10.0 %)
Sacral	0	3	2	1	3 (1.8 %)
Cervico - thoracic	2	2	3	1	4 (2.3 %)
Thoraco - lumbar	0	1	1	0	1 (0.6 %)
Lumbo - sacral	1	1	1	1	2 (1.2 %)
<b>Total</b>	<b>115</b>	<b>55</b>	<b>72</b>	<b>98</b>	<b>170 (100 %)</b>

**Table 2. Segmental Distribution of herpes Zoster**

Risk Factor	Number of Patients (%)
Diabetes	13 (7.6 %)
Hypertension	12 (7.0 %)
Hypothyroidism	4 (2.3 %)
History of major surgeries	10 (5.8 %)
HIV	2 (1.1 %)
Psoriasis	2 (1.1 %)
Chronic alcoholic	14 (8.2 %)
HCV	3 (1.7 %)
Typhoid	5 (2.9 %)
Leprosy	2 (1.1 %)
Chemotherapy	1 (0.5 %)
<b>Total</b>	<b>68 (40 %)</b>

**Table 3. Prevalence of Risk Factors in the Study Subjects**

Thoracic dermatomes were the most commonly involved (100 patients, 58.8 %) followed by cranial (36 patients, 21.2 %), cervical (21 patients, 12.4 %), lumbar (17 patients, 10 %) and sacral dermatomes (3 patients, 1.8 %). Among cranial nerves, ophthalmic division was the most commonly involved (19 patients) followed by maxillary (11 patients)

and mandibular division (6 patients). Among cervical dermatomes, C5 was most commonly involved (5 patients) followed by C4, C6 and C8 (4 patients each). Among thoracic dermatomes, T4 was the most common dermatome involved (22 patients) followed by T3 (15 patients), T10 (14 patients), T2 (13 patients) and T5 dermatome (10 patients). In lumbar dermatomes, L4 was the most common dermatome involved (6 patients) followed by L2 and L3 (4 patients each). Three patients (1.7 %) had disseminated herpes.



**Figure 1.**  
**Ulceration Over the Chest Associated with herpes Zoster**



**Figure 2.**  
**herpes Zoster Affecting the L5 - S1 Dermatome with Disseminated Lesions**



**Figure 3.**  
**herpes Zoster Affecting Left T3 Dermatome**

Out of 170 patients, 48 patients (28.2 %) had associated risk factors for herpes zoster infection. Fourteen patients (8.2 %) were chronic alcoholic. Diabetes and hypertension were seen in 13 (7.6 %) and 12 (7.0 %) patients, respectively. Ten patients (5.8 %) had undergone major surgeries. Out of these, 40 patients had a single risk factor while 6 patients had 2 risk factors and 2 patients had 4 risk factors concomitantly (Table 3). Complications secondary to herpes zoster infection developed in 40 (23.5 %) patients. Post herpetic neuralgia was seen in 24 (14.2 %) patients. The other complications observed were secondary bacterial infections 11 (6.5 %), ulceration (1.2 %), scarring, and post inflammatory hypopigmentation (3.6 %). The mean age of patient who had complications was  $51.7 \pm 14.3$  years as compared to those who didn't have any complications (Mean age =  $46.0 \pm 16.4$  years,  $p = 0.04$ ). Out of the 48 patients who had associated risk factors, 16 (40 %) developed

complications, while the rest 32 patients didn't develop any complications, which was not statistically significant ( $p = 0.07$ ). In patients who had complications, Cranial, Cervical, Thoracic, Lumbar and Sacral involvement was present in 10, 4, 21, 4 and 1 case, respectively.

**DISCUSSION**

The study included a total of 170 patients of herpes zoster. Majority of patients (77 %) affected were in the age group of 31 to 70 years. Eighty five (50 %) patients were below the age of 50 years and 85 (50 %) were above 50 years This was similar to previously reported literature.<sup>1,3,5</sup> Males were more commonly affected than females (2.1 : 1) in our study, which is also similar to other studies from India.<sup>3,6</sup> Western literature however, has shown an equal distribution in male and females.<sup>7,8</sup> This can be explained by a large section of our patients being migrant labour which predominantly consists of males. Trauma and stress resulting from their occupational activity and high reporting may have led to the male preponderance in our setup.

Pain in the affected dermatome was present in 157 (92.3 %) patients. Pain was associated with burning in 30 (17.6 %) patients and with itching in 10 (5.8 %) patients. It was similar to the symptoms previously reported in literature.<sup>3,6,9</sup> Constitutional symptoms (63.4 %) reported were higher in this study as compared to the previous literature. In our study, left sided (57.6 %) dermatome was found to be more commonly involved as compared to right side. This was in contrast to study done by Chaudhary et al,<sup>6</sup> where there was no appreciable difference between right and left side involvement. In our study, 47.1 % patients had a history of varicella. It was higher than the previously reported figure of 14.7 % by Chaudhary et al.<sup>6</sup>

In our study, thoracic segment was the most commonly involved followed by Cranial, Cervical and lumbar segments. Similar segmental involvement has been reported by Latheef EN et al.<sup>3</sup> However, Chaudhary et al<sup>6</sup> reported thoracic segment to be most common followed by cervical, lumbosacral and cranial. Three patients had disseminated herpes. One of them had HIV and other two had history of major surgeries preceding the onset of herpes zoster lesions (pancreatectomy and mastectomy). In 60 % of patients, no high risk factors could be elicited. The common risk factors that were reported were chronic alcoholic, followed by diabetes, hypertension, post-surgical, and infections.<sup>10,11,12</sup> Depressed cell mediated immunity caused due to various risk factors has been implicated in the causation of herpes zoster.<sup>11</sup> Post herpetic neuralgia was seen in 24 (14.2 %) patients. The incidence was similar to previous literature (14.3 %).<sup>6</sup>

**CONCLUSIONS**

Herpes zoster was seen more commonly in males. Most commonly affected age group was 51 - 60 years. Thoracic

dermatomes were most commonly involved. Risk factors were seen in 28.2 % patients. Complications were seen in 23.5 % patients including post herpetic neuralgia in 14.2 % patients. Patients of higher age group are at higher risk of complications.

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