



ORIGINAL RESEARCH PAPER

Dermatology

A CLINICO- EPIDEMIOLOGICAL STUDY OF HERPES ZOSTER AT A TERTIARY CARE TEACHING HOSPITAL OF SOUTH RAJASTHAN

KEY WORDS: Herpes zoster, epidemiological determinants, clinical profile.

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ABSTRACT

Introduction: Herpes zoster is caused by reactivation of latent varicella zoster virus. The incidence of zoster increases with age. It is characterized by prodromal pain and grouped vesicles in unilateral dermatome.
Aims: To study the clinical presentation and the epidemiological determinants of herpes zoster in South Rajasthan.
Methods: This was an observational, descriptive and cross-sectional study. It included 265 consecutive patients with herpes zoster attending the Dermatology outpatient department at a tertiary care hospital of South Rajasthan from March 2019 to October 2019. Detailed history, thorough physical examinations and relevant investigations were done.
Results: Out of 265 patients enrolled 159 were males and 106 were females; M:F ratio was 1.5:1. The disease maximally affected 5th decade of life. Thoracic dermatome (47.5 %) was the most common dermatome involved. About half of patients had prodromal symptoms with dermatomal pain (30.7%) as the most common symptom. One hundred forty two patients had burning type of pain. Around half of the patients had moderate intensity of pain. Eighty two patients gave history of varicella in past. Predisposing factors could be traced in 100/265 (37.7%) patients; old age in 68 (25.7%) and diabetes in 25 (9.4%) patients were the. Sixty eight patients (25.7%) had co-morbidities, the most common being hypertension (12.5%) followed by diabetes (9.4%). One hundred twenty two cases (46%) had complications, most common being secondary pyoderma (34.7%).
Conclusion: Herpes zoster commonly occurred in middle age group with male predominance. Thoracic dermatome was most frequently involved dermatome. Old age, diabetes and immunosuppression were major risk factors for development of herpes zoster.

INTRODUCTION

Herpes zoster (HZ), commonly known as shingles is a localized viral disease, characterized by unilateral radicular pain and a vesicular eruption that is generally limited to the dermatome innervated by a single spinal or cranial sensory ganglion. The lesions are characterized by grouped vesicles on an erythematous base. It occurs as a result of reactivation of varicella zoster virus (VZV) that had persisted in latent form within sensory ganglion following an earlier episode of varicella.^[1]

Varicella-zoster virus is an exclusively human DNA virus, hence, also known as human (alpha) herpes virus -3, whose primary infection in the human produces chicken pox (varicella).^[2]

During varicella infection, VZV passes from skin lesions into cutaneous sensory nerve endings and ascends up the sensory fibers to the sensory ganglia where it remains in latent stage.^[3] In latency, the virus persists in a noninfectious form, with intermittent periods of reactivation and shedding.

Antigen-specific T cells are believed to be the principal gatekeepers of latent VZV. Conditions in which cellular responses are lost or diminished by immunosuppression pose a risk for reactivation of VZV and recurrent disease manifestation as herpes zoster.^[4,5,6] The biologic mechanisms that underlie the transition from latency to active viral replication are unknown.^[7]

On reactivation, it travels back along the sensory afferents to the skin associated with hematogenous dissemination. Depending upon the rapidity of immune response, the presentation may vary from absence of clinical lesions, to typical zoster, scattered vesicles, zoster sine herpette or disseminated zoster.^[8]

The risk factors for reactivation of VZV are old age, stress, diabetes immunocompromised states like HIV infection, leukemia, lymphoma and usage of cancer chemotherapy medications and radiotherapy.^[9]

AIMS AND OBJECTIVES

To study the clinical presentation and the epidemiological determinants of herpes zoster in South Rajasthan.

MATERIAL AND METHODS

All patients attending skin outpatient & inpatient department of Maharana Bhupal Hospital, Udaipur with herpes zoster were included in the study. An informed consent was obtained from all the participants.

Diagnosis was established by history, clinical examination and confirmed by Tzanck smear as and when required. A predesigned proforma recorded the information about the patient and his disease characteristics.

Approval for study was obtained from Institutional Ethics Committee.

STUDY DESIGN

Observational, descriptive, cross-sectional study

STUDY DURATION

March 2019 to October 2019 (8 months)

OBSERVATIONS AND RESULTS

The clinico-epidemiological study conducted at the department of Dermatology, Maharana Bhupal Government Hospital, Udaipur during March 2019 to October 2019 included 265 patients of herpes zoster with following demographic and clinical findings.

Table 1: Age and gender distribution of patients (n=265)

Age group	Male(No.)	Female(No.)	Total(No.)	Total(%)
<10	1	3	4	1.5
10-20	14	3	17	6.4
21-30	26	11	37	14.0
31-40	25	12	37	14.0
41-50	28	27	55	20.8
51-60	33	30	63	23.8
61-70	16	15	31	11.7
71-80	15	3	18	6.8
81-90	1	2	3	1.1
Total	159	106	265	100

Eighty two patients (30.9%) gave history of from varicella in past while (42/265;15.8%) patients denied history of varicella. Over half of the patients (141/265;53.2%) were, however, unaware of past episode of varicella

In the index study, maximum number of cases (48.7%) presented between day 4 to 7 of appearance of their lesions. One hundred forty patients (52.8%) had prodromal symptoms.

Table 2: Type of Prodromal symptoms

Prodromal symptom	Male (No.)	Female (No.)	Total (No.)	Total (%)
Pain	40	44	84	30.7
Burning	17	11	28	10.6
Fever	4	6	10	3.8
Headache	5	5	10	3.8
Itching	7	3	10	3.8
Other*	3	2	5	1.9
Body ache	1	1	2	0.8
Loss of appetite	2	0	2	0.8
More than 1 symptom	4	7	11	4.2

*Include foreign body sensation in eye, watering of eye, swelling of nose, pin-prick sensation

Dermatomal pain (84/265;30.7%) and burning sensation (28/265;10.6%) were major symptoms (Table 2). One hundred & four of 265 cases (39.3%) patients had appearance of lesions, 1 to 3 days after prodromal symptom. Majority (251/265;94.7%) of patients had single dermatomal involvement.

Table 3: Dermatomal involvement

Dermatome	Male(No.)	Female(No.)	Total(No.)	Total(%)
Thoracic	72	54	126	47.5
Cervical	34	18	52	19.6
Lumbar	28	22	50	18.9
Cranial	25	16	41	15.5
Sacral	6	4	10	3.8
*More than 1 dermatome	7	10	17	6.4

*3 patients had disseminated lesions

Thoracic dermatome was the most common dermatome involved (47.5%), followed by cervical (19.6%), lumbar (18.9%), cranial (15.5%) and sacral (3.8%). Some (6.4%) patients had more than 1 dermatomal involvement (Table 3).



Figure 1: Vesiculo-bullous lesion(Thoracic dermatome)

Out of 265 patients, 142 (53.6%) patients had burning type of pain while 20.8% and 18.5% patients reported dull ache and throbbing pain respectively. Ten patients (3.8%) had no pain. Mucosal affection was seen in 26 (9.8%) patients. Ocular mucosa was most commonly involved (3.8%)



Figure 2: Oral mucosa involvement

Predisposing factors could be traced in 100/265 (37.7%) patients.

Table 4: Type of predisposing factor

Predisposing factor	Male (No.)	Female (No.)	Total (No.)	Total (%)
Old age	35	33	68	25.7
Diabetes	14	11	25	9.4
HIV	2	7	9	3.4
Steroid & other immunosuppressive agent	5	2	7	2.6
Malignancy	1	0	1	0.4
Pulmonary TB	0	1	1	0.4
More than 1	1	0	1	0.4

Old age was considered as predisposing factor in 68 (25.7%) and diabetes in 25 (9.4%) patients (Table 4). Out of 265 patients, around a quarter (68;25.7%) had co-morbidities. The most common comorbidity was hypertension (12.5%) followed by diabetes (9.4%).

Out of 265 cases, 122 cases (46%) had complications.

Table 5: Cutaneous complication

Complication	Male (No.)	Female (No.)	Total (No.)	Total (%)
Secondary pyoderma	52	40	92	34.7
Ulceration	8	6	14	5.3
Cutaneous Dissemination	3	6	9	3.4
crusting	5	3	8	3
Scarring	4	1	5	1.9
Hypopigmentation	1	2	3	1.1
Hyperpigmentation	2	1	3	1.1
Haemorrhage	1	1	2	0.8
Necrosis	0	1	1	0.4
*More than 1 cutaneous complication	9	6	15	5.7

*Some patients had more than 1 complication

The most common cutaneous complication was secondary pyoderma (34.7%), followed by ulceration (5.3%) (Table 5).



Figure 3: Hypertrophic scar over left side back(Thoracic dermatome)

Neural complications were present in 7/265(2.6%) cases.

Four patients presented late with skin lesions like scarring

and pain after 1 month of appearance of lesion and 3 patients (1.1%) had Ramsey-Hunt syndrome .

DISCUSSION

The study of 265 patients of herpes zoster revealed that maximum number of cases belonged to the age group of 51-60 years (23.8%), followed by 41-50 years (20.8%). This is in accordance with a study by **Degreeef et al**^[10] in which also the majority of patients were in the age group of 51-60 years. In another study by **Rachana et al**^[11] also majority of patients were in the age group of 51-70 years Differing observations have been made on gender affection in herpes zoster. A male preponderance was seen in our study with sex ratio of 1.5:1. This is in accordance with some other studies,^[88,86,94] but in contrast to an Indian study by **Rachana et al**^[11] which showed a female preponderance.

Herpes zoster is a secondary infection with varicella zoster virus, the primary being varicella. In our study 82 patients (30.9%) gave history of chicken pox in the past, a finding similar to the studies by **Vora et al**^[12] and **Sehgal et al**^[13] in which past history of chicken pox was reported in 22.67% & 23.5% respectively. However it was lesser in the studies by **Nigam et al**^[14] and **Abdul et al**^[15] who reported past history of varicella in 66% & 63.4% respectively. **Paudel et al**^[16] however reported much lesser (10%), occurrence of chicken pox in past. This difference may be due to differing geographical and racial factors affecting the epidemiology of varicella & herpes zoster.

Herpes zoster generally occurs once in life time, but recurrences can rarely be seen. In our study only 3 patients (1.1%) had history of recurrence of herpes zoster. A higher (6.41%) rate of recurrence has been reported in a Japanese study by **Shiraki et al**^[17]

Patients in herpes zoster generally present early due to intense pain in the lesions. In our study 100 patients (37.3%) presented between 1 to 3 day of appearance of their lesions; similar to that in a study by **Rachana et al**^[11] in which 44% patient presented within 72 hours.

The disease is often preceded by prodromal symptoms like fever, headache, bodyaches. This was seen in 140 (52.8%) cases; similar to a study by **Paudel et al**^[16] who reported that 50% patients had prodromal symptoms.

The most common prodromal symptom reported in our study was dermatomal pain (31.7%) followed by burning sensation (10.6%). In a study by **Paudel et al**,^[16] the most common prodromal symptom was burning sensation (28%), followed by dermatomal pain.

Herpes zoster usually involves single dermatome. Few lesions may, however, be seen affecting contiguous dermatome also. In our study, single dermatome was involved in 94.7% patients while multiple and disseminated involvement was noted in 5.28% and 1.13% respectively, a finding similar to **Vora et al**^[12] who reported multiple and disseminated disease in 2.3% and 0.72% respectively.

Most studies^[13,16] have reported thoracic to be the commonest affected dermatome followed by cervical. This study, also thoracic dermatome was the most common dermatome involved (47.5%), followed by cervical (19.6%), lumbar (18.9%) and other segments. **Rachana et al**^[11] and **Abdul et al**,^[15] however, reported second most common dermatome involvement as lumbar (30.6%) and cranial (28.2%) respectively.

Herpes zoster is associated with significant neuralgia of varying intensity. In our study, burning pain was the most common type of pain (54.6%), followed by dull-ache, as in study by **Dubey et al**^[18] who reported burning pain to be the

most common (41.12%) symptom. **Sehgal et al**^[13] reported that pricking pain was most common type of pain seen in 37.77% patients.

Herpes zoster generally occurs in setting of immunosuppression like old age, HIV positivity and immunosuppressive drugs. In our study, 100 (37.7%) cases had predisposing factors similar to study by **Babamahmoodi et al**^[19] who also reported predisposing factors in 40.9% patients. **Aggarwal et al**^[20] and **Paudel et al**^[16] reported predisposing factors, only in 6% and 12% respectively.

In this study, old age was the most common predisposing factor (68/265;27.7%), followed by diabetes (9.4%), HIV (3.4%), steroid & immunosuppressive agent (2.6%) and malignancy (0.7%). In contrast, **Babamahmoodi et al**^[19] reported diabetes (19.7%) to be the most common predisposing factor, followed by malignancy (11.4%), immunosuppressive agent (5.3%) and HIV (2.3%).

In the index study, 68 (25.7%) patients had comorbidities; the most common of which was hypertension (33/265;12.5%), followed by diabetes (25/265;9.4%) and hypothyroidism (11/265;4.2%). **Babamahmoodi et al**^[19] and **Rachana et al**^[11] however, reported diabetes as the most common comorbidities noted in 19.7% and 21% respectively.

In our study, 122 (46%) cases had complications. Secondary pyoderma was the most common complication, followed by ulceration (11.5%), cutaneous dissemination (3.4%), pigmentary disturbance (2.2%) and scarring (1.9%).

Neural symptoms are prominent in herpes zoster and may occur before the lesion appear or associated with lesion (zoster associated neuralgia) or after the lesions have subsided (post-herpetic neuralgia). Cranial nerve involvement, most commonly facial nerve, may sometime be seen.

In this study, 4(1.5%) cases reported with crusting & scar at the site of involved dermatome and associated post herpetic neuralgia (PHN). Because our study did not involve follow up, the exact prevalence of PHN could not be ascertained as it was not a prospective study.

CONCLUSION

Herpes zoster commonly occurred in middle age group with male predominance. Majority of patients presented with dermatomal pain and burning sensation as prodromal symptoms. Thoracic dermatome was most frequently involve dermatome, followed by cervical. Old age, diabetes and immunosuppression were major risk factor for developing of herpes zoster. Majority of patient presented with secondary bacterial infection.

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