Section: DVL

Original Research Article

A CLINICOEPIDEMIOLOGICAL STUDY OF HERPES ZOSTER IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Abstract

Background: Herpes zoster (HZ), commonly known as shingles, results from the reactivation of the varicella-zoster virus (VZV) in sensory ganglia. Characterized by a painful, vesicular rash in a dermatomal distribution, its incidence increases with age and immunosuppression. Postherpetic neuralgia (PHN) is a frequent complication, along with various other systemic involvements. This study aims to characterize the demographic profile, clinical features, risk factors, and complications associated with HZ in a tertiary care hospital in South India. **Materials and Methods:** An observational analysis was conducted on 79 consecutive cases of HZ reported to the Department of Dermatology, Venereology, and Leprosy (DVL) at a tertiary care hospital in Machilipatnam from January 2023 to December 2023. Data were collected on demographics, clinical presentation, comorbidities, and outcomes. The patients were treated with acyclovir and followed for six weeks to monitor complications. Statistical analysis was performed using Microsoft Excel 2021. **Result:** The study found that 0.51% of the outpatient census (79/15,550) had HZ, with a slight male predominance (51.9% males, 48.1% females). The mean age was 53.9 years, with the highest incidence in the 60-69 age group (38%). Prodromal symptoms were present in 73.42% of cases. The thoracic dermatome was most commonly affected (43.04%), followed by cranial (16.46%) and lumbar (15.19%). Immunosuppression was noted in 49.4% of patients, with diabetes mellitus being the most prevalent comorbidity (34.2%). Complications occurred in 55.7% of cases, with PHN being the most common (41.7%). Hospitalization was required for 20.25% of patients, primarily those with severe symptoms or immunosuppression. A significant seasonal variation was noted, with most cases occurring between April and June. (60.76%). **Conclusion:** The study underscores the significant burden of HZ on older and immunosuppressed patients. It highlights the need for early diagnosis, effective management, and preventive measures such as vaccination to mitigate the incidence and complications of HZ.

INTRODUCTION

Herpes zoster (HZ), also known as shingles, is a localized disease caused by the reactivation of the dormant varicella zoster virus (VZV) in the dorsal root sensory ganglia.[1] The condition manifests as a vesicular eruption accompanied by neuropathic pain in a dermatomal distribution. Its incidence increases with age due to reduced immunity to VZV.[2] HZ risk factors include old age, surgery, sunburn, stress, immunosuppression, malignancies, and chronic diseases of the kidney and liver.[3] The most common complication of HZ is postherpetic neuralgia (PHN), followed by ocular, Ramsay Hunt syndrome, secondary bacterial infection, meningoencephalitis, motor paralysis, pneumonitis, and hepatitis.[4]

The incidence rate of HZ ranges between 3 and 5/1000 person-years in North America, Asia-Pacific, and Europe.[5] Few studies suggested that there was an increase in the incidence of HZ after the VZV vaccination program, but Leung et al,[6] and Hales et al,[7] concluded the increase in the incidence of HZ was not due to the varicella vaccination program. The new adjuvant recombinant subunit vaccine, marketed as Shingrix, has been introduced in India and is yet to be implemented into the national immunization schedule due to cost-effectiveness considerations.[8]

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A clinicoepidemiological study is needed to analyze the disease burden and temporal trends in South India. To our knowledge, very few studies that shed light on complications and hospitalization. This study aims to characterize the demographic profile, risk factors, complications, and hospitalization of patients with HZ.

MATERIALS AND METHODS

This study was conducted on all consecutive cases of HZ reported or referred to the Department of Dermatology Venereology and Leprosy (DVL), at a tertiary care hospital in Machilipatnam in South India, for one year, i.e., January 2023 to December 2023. The protocol of the study was reviewed and permissions from the concerned authorities were taken. The study was conducted as per the ethical guidelines and standards of the institute. After informed consent, a detailed history was taken in all cases as per predesigned proforma, regarding prodrome, complications, VZV/Shingrix vaccination status, systemic symptoms, comorbidities, and immunosuppression. The diagnosis was confirmed based on typical clinical findings and with a Tzanck smear in a few doubtful cases. Hemogram, blood sugar, urine examination, and viral markers were done in all patients. The patients were treated with acyclovir, either on an outpatient basis or hospitalized when presented with systemic symptoms. The patients were followed up for 6 weeks post-treatment for complications. The results were tabulated and analyzed using Microsoft Excel 2021 software.

RESULTS

A total of 79 cases were diagnosed with herpes zoster. The total DVL outpatient census for the study period was 15550, and a proportion of 0.51% of patients were diagnosed with HZ. Out of the 79 cases males were 41 (51.9%) and females were 38 (48.1%) with a male-to-female ratio of 1.08:1. The mean age at presentation for the total population was 53.9±13.54years (n=79), with males 55.75±13.2 years (n=41) and females 51.95±13.6 years (n=38). The youngest patient was 8 years old, whereas the oldest affected was 74. The highest number of cases 30 (38%) were seen in 60-69 years followed by 20 (25.3%) in the 50-59 years age group. [Table 1]

A prodrome before the eruption was seen in 73.42% (58, n=79) of patients, predominantly more in males 78.04% (32, n=41) when compared to females 68.4% (26,n=38), but not a statistically significant difference, with a p-value of 0.3331 (P >0.05).

The most commonly affected dermatome was the thoracic segment dermatome 43.04% (34) followed by cranial 13 (16.46%), lumbar 12 (15.19%), lumbosacral 8.87% (7), cervical 7.6% (6), sacral 6.3% (5), cervicothoracic 2.53% (2) respectively [Figure 1]. Multidermatomal involvement was seen in 26.6% (21) of patients and 67% (53) of patients gave a definite history of varicella. The eruption resolution period ranged from 7-15 days and it was prolonged to 20 days in case of underlying immunosuppression. A total of 20.25% (16) of patients required hospitalization and the hospital stay lasted for 5-7 days.

The majority of the cases were seen during summer 60.76% (48) between April and June month. Total immunosuppressed patients were 31 (49.4%, n=79) of which 17 (41.5%, n=41) were males and 14 (36.9%, n=38) were females who had uncontrolled diabetes mellitus (DM), HIV seropositive 8.86% (7) and on immunosuppressants medications. Comorbidities were seen in 47 patients of which DM 34.2% (27) was the most common disease followed by HTN 16.45% (13), post-surgical 5.06% (4), pulmonary TB 3.8% (3) and malignancy 2.53% (2).

Table 1: Age, Gender distribution, and clinical profile of Herpes Zoster

	Gender distribution		Clinical Symptoms		
Age group	**Female**	**Male**	**Prodromal symptoms**	**Post Herpetic Neuralgia(PHN)**	**Total**
0-9	1	0	1	0	1
10-19	0	1	1	1	1
20-29	1	2	2	2	3
30-39	5	1	4	3	6
40-49	5	4	7	3	9
50-59	10	10	14	8	20
60-69	13	17	22	11	30
70-80	3	6	7	5	9
Total	**38 (48.1%)**	**41 (51.9%)**	**58 (73.42%)**	**33 (41.8%)**	**79 (100%)**

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Figure 1: Herpes Zoster (Thoracic), Herpes Zoster Ophthalmicus, and Herpes Zoster(Lumbar)

Complications associated with HZ were seen in 55.7% (44) of total cases. The most common complication was PHN seen in 41.7% (33), followed by secondary bacterial infection at 13.92% (11), scarring at 12.7% (10), ocular involvement at 7.6% (6), and severe ulceration at 6.3% (5). PHN is less commonly seen in female patients 34.2 % (13, n=38) when compared to 48.78% (20, n=41) of male patients respectively, but this difference was not statistically significant, with a p-value of 0.1895(P >0.05). Sleep disturbance during eruption and with PHN was observed in 29% (23) of cases especially in the older age group of 60-69 and 70-79 years but there was no statistically significant difference between age groups and gender with a p-value> 0.01. There was no history of vaccination for varicella-zoster/varicella or HZ infection in the present study population.

DISCUSSION

This study provides a detailed analysis of HZ cases in a hospital-based outpatient setting, elucidating key demographic, clinical, and epidemiological aspects. A proportion of 0.51% (79) patients were diagnosed with HZ out of a total outpatient census of 15,550 which was consistent with Kumar Singh et al,[9] diagnosing 0.84% of HZ in patients attending the DVL department.

Gender Distribution and Clinical Presentation

A nearly equal male-to-female ratio was observed, with males slightly more affected than females (51.9% vs. 48.1%), resulting in a ratio of 1.08:1. This finding aligns with prior studies that have reported a slight male predominance in HZ cases, like Kumar Singh G et al,[9] Babu K et al,[10] and but it was not comparable with similar Indian studies done by Aggarwal SK et al,[11] and Sinha et al,[12] where there was significant male preponderance.

Age Distribution and Clinical Presentation

The mean age of presentation in our cohort was 53.9 years, with the highest incidence in the 60-69 years age group (38%), followed by the 50-59 years age group (25.3%). This trend is consistent with the age-related increase in HZ incidence reported in previous studies like Babu K et al,[10] and Sinha et al,[12] where older age groups, particularly those above 50 years, exhibit higher susceptibility due to waning cell-mediated immunity. Notably, the youngest patient in our study was 8 years old, indicating that while uncommon, HZ can affect children, especially those with compromised immune systems or previous varicella infection. However, a study done by Aggarwal SK et al,[11] had a younger age group of 21-30 years, as the study was done in a military-based hospital where male and younger populations dominated the sample.

Prodromal symptoms: The prevalence of prodromal symptoms in our study 73.42% is in line with findings from Aggarwal SK et al,[11] of 90% & Sinha et al,[12] of 75%, emphasizing the commonality of prodromal phases in HZ cases. This high rate of prodromal symptoms corroborates with other studies, which also report prodrome in a significant majority of HZ cases.

Dermatome Involvement: The thoracic dermatome was the most commonly affected region (43.04%), followed by cranial (16.46%), lumbar (15.19%), and other regions. This dermatome distribution mirrors the findings from other Indian studies done by 65% of Aggarwal SK et al,[11] 59.7% of Sinha et al,[12], and 60% of Chandrakala C et al,[13] where the thoracic region is frequently implicated due to its extensive surface area and dense sensory nerve network.

Immunosuppression and Comorbidities:

Immunosuppression was identified in nearly half of the patients (49.4%), with diabetes mellitus (DM) being the most common underlying condition (34.2%). Other notable comorbidities included hypertension (16.45%), HIV (8.86%), pulmonary tuberculosis (3.8%), and malignancy 2.53%. These findings highlight the established association between immunosuppression and an increased risk of HZ, with DM being a significant contributing factor due to its impact on immune function.

Complications and Outcomes:

Complications were present in 55.7% of the cases, with postherpetic neuralgia (PHN) being the most common (41.7%), followed by secondary bacterial infections (13.92%), scarring (12.7%), ocular involvement (7.6%), and severe ulceration (6.3%). PHN was more prevalent among males (48.78%) than females (34.2%), though this difference did not reach statistical significance. These findings were slightly lesser than the previous studies done by 63% of Aggarwal SK et al,[11] and 77.5% of Sinha et al,[12] which identify PHN as a frequent and debilitating complication of HZ, especially in older adults.

Hospitalization was necessary for 20.25% of the patients, predominantly those with severe symptoms or immunosuppression, with hospital stays averaging 5-7 days. This hospitalization rate reflects the spectrum of HZ severity, where more severe cases often require inpatient care for effective management.

Seasonal Variation

A notable seasonal variation was observed, with the majority of cases occurring during the summer months (60.76% between April and June). This

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suggests potential seasonal influences on HZ incidence, possibly related to increased UV exposure during summer months similar findings were observed by Sinha et al,[12] in 2023. However, further research is needed to elucidate the underlying factors contributing to this pattern.

Limitations and Future Directions

As our study was done in a single-center setting, it may affect the generalizability of the research findings. Future studies should aim to include larger, multi-center cohorts and investigate the molecular and immunological mechanisms underlying HZ, particularly concerning seasonal variation, age, gender differences, and the effect of vaccination on disease presentation and complications.

CONCLUSION

In conclusion, our study highlights the significant burden of HZ in an outpatient setting, emphasizing the importance of early recognition, appropriate management, and preventive strategies such as vaccination to reduce the incidence and complications of this condition.

REFERENCES

1. Gnann JW Jr, Whitley RJ. Clinical practice. Herpes zoster. N Engl J Med. 2002;347:340.
2. Oxman MN, Levin MJ, Johnson GR, et al. A vaccine to prevent herpes zoster and postherpetic neuralgia in older adults. N Engl J Med. 2005;352:2271-2284.
3. Gebo KA, Kalyani R, Moore RD, Polydefkis MJ. The incidence of, risk factors for, and sequelae of herpes zoster among HIV patients in the highly active antiretroviral therapy era. J Acquir Immune Defic Syndr. 2005;40:169.
4. Wollina U. Variations in herpes zoster manifestation.Indian J Med Res. 2017;145(3):294.
5. Kawai K, Gebremeskel BG, Acosta CJ Systematic review of incidence and complications of herpes zoster: towards a global perspective BMJ open 2014;4:e004833. doi: 10.1136/bmjopen-2014-004833
6. Leung J, Harpaz R, Molinari NA,et al. Herpes zoster incidence among insured persons in the United States, 1993–2006: evaluation of impact of varicella vaccination. Clin Infect Dis 2011;52:332–40
7. Hales CM, Harpaz R, Joesoef MR, et al. Examination of links between herpes zoster incidence and childhood varicella vaccination. Ann Intern Med 2013;159:739–45.
8. Pan CX, Lee MS, Nambudiri VE. Global herpes zoster incidence, burden of disease, and vaccine availability: a narrative review. Ther Adv Vaccines Immunother. 2022 Mar 21;10:25151355221084535. doi: 10.1177/25151355221084535. PMID: 35340552; PMCID: PMC8941701.
9. Singh, G., Mitra, D., Kumar, S., Raman, N., Das, P., & Sharma, P. (2022). A Clinico-Epidemiological Study of Cases of Herpes Zoster in a Tertiary Care Hospital. Journal of Skin and Stem Cell. https://doi.org/10.5812/jssc.122913.
10. Babu K, Mahendradas P, Sudheer B, Kawali A, Parameswarappa DC, Pal V, Philips M. Clinical profile of Herpes zoster ophthalmicus in a South Indian patient population. Ocul Immunol Inflamm. 2018;26:178–83. doi: 10.1080/09273948.2017.1381272.
11. Aggarwal SK, Radhakrishnan S. A clinico-epidemiological study of herpes zoster. Medical Journal Armed Forces India. 2015.
12. Sinha, R., Kumari, P., Pallavi, U., & Sarkar, S. (2023). Clinical and Epidemiological Profile of Herpes Zoster and Its Complications in a Tertiary Care Center of Bihar: A Prospective Study. Cureus, 15. https://doi.org/10.7759/cureus.43560.
13. Chandrakala C, Tharini GK: A clinical study on 100 cases of herpes zoster in a tertiary care hospital . Int J Sci Study. 2017, 5:138-43.

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