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A CLINICO-EPIDEMIOLOGICAL STUDY OF PATIENTS WITH HERPES ZOSTER IN A TERTIARY CARE CENTRE, CHENNAI

Dermatology

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ABSTRACT

Background: Herpes zoster (HZ), caused by the reactivation of the varicella-zoster virus (VZV), is a significant public health concern, particularly in older adults and immunocompromised individuals. This study aimed to analyze the clinical and epidemiological patterns of HZ in patients attending a tertiary care center in Chennai, India. **Methods:** A prospective observational study was conducted over a one year period in the Dermatology, Venereology, and Leprosy (DVL) outpatient department (OPD) at ACS Medical College and Hospital, Chennai. A total of 46 patients aged 18 years and above diagnosed with HZ were included. Data on demographic characteristics, clinical features, comorbidities, complications, and treatment outcomes were collected. Diagnostic confirmation was performed using Tzanck smear, and statistical analysis was performed using SPSS Version 26.0. **Results:** Demographics: The majority of patients (56.5%) were aged 50 years and above, with a slight male predominance (54.3%). Most patients (67.4%) were from urban areas. Clinical Features: The thoracic dermatome was most commonly affected (43.5%), and 78.3% of patients reported moderate to severe pain. Comorbidities: Diabetes mellitus (21.7%) and hypertension (19.6%) were prevalent. Complications: Postherpetic neuralgia (15.2%), secondary bacterial infections (6.5%), and ophthalmic complications (4.3%) were observed. Treatment Outcomes: All patients received antiviral therapy within 72 hours, with 89.1% requiring analgesics. The average healing time was 3.5 weeks. Diagnostic Findings: The Tzanck smear was positive for multinucleated giant cells in 91.3% of cases. **Conclusion:** This study highlights the significant burden of HZ, particularly in older adults and individuals with comorbidities. Early diagnosis, prompt antiviral therapy, and effective pain management are crucial for improving outcomes. The findings underscore the importance of vaccination and a multidisciplinary approach to manage HZ in tertiary care settings.

KEYWORDS

Herpes Zoster, Varicella-Zoster virus, Postherpetic Neuralgia, Antiviral therapy

INTRODUCTION

Herpes zoster (HZ), commonly known as shingles, is a viral infection caused by the reactivation of the varicella-zoster virus (VZV), which initially causes chickenpox. Following primary infection, VZV remains dormant in the dorsal root ganglia and can reactivate later in life, particularly in individuals with weakened immune systems or advancing age (1). The condition is characterized by a painful vesicular rash, typically localized to a specific dermatome. While HZ can affect individuals of all ages, its incidence increases significantly with age, particularly in those over 50 years old (2). The disease is associated with significant morbidity, including postherpetic neuralgia (PHN), a debilitating complication characterized by persistent pain lasting months to years after the rash has resolved (3).

The global burden of HZ is substantial, with an estimated 1.7 million cases annually in the United States alone (4). The risk of HZ increases with age, with approximately 50% of individuals living to 85 years expected to experience at least one episode (5). Immunocompromised individuals, such as those with HIV, cancer, or undergoing immunosuppressive therapy, are at an even higher risk (1). The introduction of the HZ vaccine has reduced the incidence of the disease, but it remains a significant public health concern, particularly in regions with limited access to vaccination (2).

Antiviral therapy, when initiated within 72 hours of rash onset, has been shown to reduce the severity and duration of acute symptoms and may decrease the risk of PHN (3). However, the effectiveness of treatment is highly dependent on early diagnosis and intervention. Despite the availability of effective treatments, HZ continues to pose challenges in clinical management, particularly in tertiary care settings where patients often present with advanced disease or complications (4).

Understanding the clinico-epidemiological profile of HZ is crucial for optimizing patient care and resource allocation in tertiary care centers. While several studies have explored the clinical manifestations and outcomes of HZ in various populations, there is a paucity of data from tertiary care centers in Chennai, India (5). This study aims to fill this gap by analyzing the clinical and epidemiological patterns of HZ in patients attending the Dermatology, Venereology, and Leprosy (DVL) outpatient department (OPD) at ACS Medical College and Hospital, Chennai. By identifying the demographic characteristics, clinical features, and complications associated with HZ in this population, the study will provide valuable insights that can inform local clinical practice and public health strategies (5).

AIM

The aim of this study is to analyze the clinical and epidemiological patterns of Herpes Zoster (HZ) in patients attending the Dermatology, Venereology, and Leprosy (DVL) outpatient department (OPD) at a tertiary care center in Chennai, India. The study seeks to provide a comprehensive understanding of the disease profile, including its demographic distribution, clinical manifestations, and associated complications, to improve patient management and inform public health strategies.

Objectives

1. To assess the demographic characteristics of patients diagnosed with Herpes Zoster, including age, sex, and residential distribution.
2. To evaluate the clinical features of Herpes Zoster, such as the distribution of lesions, duration of symptoms, and associated pain severity.
3. To identify the prevalence of comorbidities among Herpes Zoster patients, including immunocompromised conditions such as diabetes, HIV, or cancer.
4. To document the complications associated with Herpes Zoster, particularly postherpetic neuralgia (PHN), and their impact on patient quality of life.
5. To analyze the treatment outcomes of Herpes Zoster patients, including the effectiveness of antiviral therapy and the need for additional pain management interventions.

MATERIALS AND METHODS

Study Design: This was a prospective observational study conducted over a period of one year in the Department of Dermatology, Venereology, and Leprosy (DVL) at ACS Medical College and Hospital, Chennai. The study aimed to analyze the clinical and epidemiological patterns of Herpes Zoster (HZ) in patients attending the outpatient department (OPD).

Study Location: The study was conducted in the DVL OPD of ACS Medical College and Hospital, a tertiary care center in Chennai, India. The hospital serves a large and diverse population, providing an adequate sample size for the study.

Study Duration: The study was conducted over a period of 12 months, from 15TH Dec 2024- 15th Dec 2025

Sample Size: The minimum sample size required for the study was calculated to be 46 patients, based on the prevalence of Herpes Zoster in similar studies and statistical considerations for observational studies.

Inclusion Criteria

1. Patients aged 18 years and above diagnosed with Herpes Zoster.
2. Both male and female patients were included.
3. Patients who were willing to attend follow-up visits at the 4th and 8th weeks.

Exclusion Criteria

1. Patients below 18 years of age were excluded.
2. Patients who were unwilling to provide consent or participate in follow-up visits were excluded.

Methodology:

Patient Recruitment: Patients diagnosed with Herpes Zoster in the DVL OPD were recruited for the study after obtaining informed consent. A detailed explanation of the study objectives, procedures, and potential risks was provided to each participant.

Data Collection: Demographic Data: Information on age, sex, residence, and occupation was collected from each patient. Clinical Data: A detailed clinical history was obtained, including the duration of symptoms, distribution of lesions, and associated pain severity. Comorbidities: The presence of any underlying conditions such as diabetes, hypertension, HIV, or immunosuppressive therapy was recorded. Physical Examination: A thorough physical examination was conducted to document the extent and severity of the rash, including the dermatomes involved.

Diagnostic Procedures: Tzanck Smear: A Tzanck smear was taken from the vesicular lesions to confirm the diagnosis of Herpes Zoster.

Treatment: Patients were treated according to standard protocols, including antiviral therapy (e.g., Acyclovir (800mg 5 times/day for 1 week), valacyclovir (1g 3 times/day for 1 week) and analgesics for pain management. Additional treatments were provided based on the presence of complications or comorbidities.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using SPSS Version 26.0. Descriptive statistics were used to summarize demographic and clinical characteristics. Inferential statistics, such as chi-square tests and t-tests, were used to assess associations between variables. A p-value of <0.05 was considered statistically significant.

Ethical Considerations: The study protocol was approved by the Institutional Ethical Committee of ACS Medical College and Hospital, Chennai. Written informed consent was obtained from all participants before their inclusion in the study. Confidentiality of patient data was maintained throughout the study.

RESULTS

The study analyzed the clinical and epidemiological patterns of Herpes Zoster (HZ) in 46 patients attending the Dermatology, Venereology, and Leprosy (DVL) outpatient department (OPD) at ACS Medical College and Hospital, Chennai. The results are presented below, along with a summary table for clarity.

DEMOGRAPHIC CHARACTERISTICS:

Age Distribution: The majority of patients (56.5%) were aged 50 years and above, with the highest prevalence in the 60–69 years age group (26.1%). Sex Distribution: Males accounted for 54.3% of the study population, while females made up 45.7%. Residence: Most patients (67.4%) were from urban areas, while 32.6% were from rural areas

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Table 1. Demographic Characteristics

Parameter	Category	Number of Patients (n=46)	Percentage (%)
Age Distribution	18–39 years	8	17.4%
	40–49 years	12	26.1%
	50–59 years	10	21.7%
	60–69 years	12	26.1%
	≥70 years	4	8.7%
Sex Distribution	Male	25	54.3%
	Female	21	45.7%
Residence	Urban	31	67.4%
	Rural	15	32.6%

CLINICAL FEATURES:

Dermatomal Distribution: The most commonly affected dermatome was the thoracic region (43.5%), followed by the cervical region (26.1%). Pain Severity: Moderate to severe pain was reported by 78.3% of patients at the time of presentation. Duration of Symptoms: The average duration of symptoms before seeking medical attention was 4.2 days.

Table 2. Clinical Features

Parameter	Category	Number of Patients (n=46)	Percentage (%)
Dermatomal Distribution	Thoracic	20	43.5%
	Cervical	12	26.1%
	Lumbar	8	17.4%
	Sacral	4	8.7%
	Ophthalmic	2	4.3%
Pain Severity	Mild	10	21.7%
	Moderate	22	47.8%
	Severe	14	30.4%

COMORBIDITIES:

Diabetes Mellitus: Present in 21.7% of patients. Hypertension: Present in 19.6% of patients. Immunocompromised Conditions: 8.7% of patients had underlying immunocompromised conditions, such as HIV or cancer.

Table 3. Comorbidities

Comorbidities	Number of Patients (n=46)	Percentage (%)
Diabetes Mellitus	10	21.7%
Hypertension	9	19.6%
Immunocompromised	4	8.7%

COMPLICATIONS:

Postherpetic Neuralgia (PHN): PHN was observed in 15.2% of patients during follow-up visits. Secondary Bacterial Infection: Occurred in 6.5% of patients. Ophthalmic Complications: 4.3% of patients with ophthalmic involvement developed complications such as keratitis.

Table 4. Complications

Complications	Number of Patients (n=46)	Percentage (%)
Postherpetic Neuralgia	7	15.2%
Secondary Bacterial Infection	3	6.5%
Ophthalmic Complications	2	4.3%

MANAGEMENT AND TREATMENT OUTCOMES:

Antiviral Therapy: All patients received antiviral therapy (acyclovir or valacyclovir) within 72 hours of symptom onset. Pain Management: Analgesics were prescribed to 89.1% of patients, with 10.9% requiring additional pain management interventions. Healing Time: The average time for complete healing of lesions was 3.5 weeks.

Table 5. Treatment Outcomes

Complications	Number of Patients (n=46)	Percentage (%)
Antiviral Therapy	46	100%
Analgesics Prescribed	41	89.1%
Additional Pain Management	5	10.9%
Average Healing Time	3.5 weeks	-

Acyclovir was the most commonly prescribed antiviral. Valacyclovir was used in patients with better compliance. Most patients required analgesics for pain relief. A small subset required stronger pain management (e.g., gabapentin).

Table 6. Management Of Lesions

Outcome Parameter	Category	Number of Patients (n=46)	Percentage (%)
Antiviral Therapy	Acyclovir	32	69.6%
	Valacyclovir	14	30.4%
Pain Management	Analgesics prescribed	41	89.1%
	Additional pain interventions	5	10.9%

Followup:

Patients with early treatment and no complications healed faster. Average healing time for most patients. Was 3-4 weeks. Delayed healing was observed in patients with comorbidities or complications.

Table 7. Healing Time

Healing time	Number of Patients (n=46)	Percentage (%)
<3 weeks	18	39.1%
3–4 weeks	22	47.8%
>4 weeks	6	13.0%

Diagnostic Accuracy: The Tzanck smear was positive for multinucleated giant cells in 91.3% of cases, confirming the diagnosis of Herpes Zoster. The remaining 8.7% of cases were false negatives, likely due to improper sampling or early/late-stage lesions. Cell Types: Multinucleated giant cells, a hallmark of herpesvirus infections, were observed in the majority of cases. Acantholytic cells and inflammatory cells (lymphocytes and neutrophils) were also commonly seen, reflecting the inflammatory nature of the disease. Background Findings: Cellular debris was present in 87% of cases, indicating tissue damage. Erythrocytes were observed in 54.3% of cases, suggesting minor bleeding or vascular involvement. Eosinophils were seen in 17.4% of cases, possibly indicating secondary allergic or inflammatory reactions.

Table 8: Tzanck Smear Findings In Herpes Zoster Patients

Tzanck Smear Findings	Number of Patients (n=46)	Percentage (%)
Positive for Multinucleated Giant Cells	42	91.3%
Negative for Multinucleated Giant Cells	4	8.7%
Cell Types Observed		
- Multinucleated Giant Cells	42	91.3%
- Acantholytic Cells	12	26.1%
- Inflammatory Cells (Lymphocytes, Neutrophils)	38	82.6%
Background Findings		
- Cellular Debris	40	87.0%
- Erythrocytes	25	54.3%
- Eosinophils	8	17.4%

DISCUSSION

Herpes Zoster (HZ), commonly known as shingles, is a significant public health concern, particularly among the elderly and immunocompromised. This study analyzed the clinical and epidemiological patterns of HZ among patients attending the Dermatology, Venereology, and Leprosy (DVL) OPD at ACS Medical College and Hospital, Chennai, providing insights into the demographic distribution, clinical features, comorbidities, complications, and treatment outcomes.

Most patients (56.5%) were aged 50 years and above, with the highest prevalence in the 60–69-year age group (26.1%), consistent with global data linking increased incidence with age-related decline in cell-mediated immunity (6). A slight male predominance (54.3%) was observed, similar to other studies, possibly due to immune or lifestyle differences (7). The predominance of urban patients (67.4%) likely reflects better healthcare access and awareness.

The thoracic dermatome was most commonly affected (43.5%), followed by the cervical region (26.1%), which agrees with literature attributing this pattern to the high density of sensory ganglia in the thoracic area (8). Moderate to severe pain was reported by 78.3% of patients, highlighting HZ's morbidity and the need for early medical attention. The mean delay of 4.2 days before seeking care emphasizes the importance of public awareness for timely diagnosis and treatment. Common comorbidities included diabetes mellitus (21.7%) and hypertension (19.6%), both known to impair immune response and increase susceptibility to viral reactivation (9). About 8.7% of patients were immunocompromised (HIV/cancer), underscoring the need for a holistic approach to management. Postherpetic neuralgia (PHN) was the most frequent complication (15.2%), followed by secondary bacterial infection (6.5%) and ophthalmic involvement (4.3%). PHN, which increases with age and severe acute pain, contributes substantially to long-term morbidity (10).

All patients received antiviral therapy (acyclovir or valacyclovir) within 72 hours of onset, as recommended by current guidelines (11). Acyclovir was more commonly used (69.6%), while valacyclovir ensured better compliance (30.4%). Analgesics were prescribed in 89.1% of cases, with 10.9% requiring adjuncts such as gabapentin. The average healing time was 3.5 weeks, and delayed healing (>4 weeks) was mainly seen in patients with comorbidities or complications.

The Tzanck smear was positive for multinucleated giant cells in 91.3% of cases, confirming the diagnosis. False negatives (8.7%) likely resulted from inadequate sampling or lesion stage. Additional cytologic findings such as inflammatory cells, cellular debris, and erythrocytes reflected the inflammatory and destructive nature of HZ lesions, demonstrating the utility of the Tzanck smear in resource-limited settings.

These findings are consistent with previous studies, including those by Yawn et al. (12), who reported similar age patterns and dermatome involvement. The higher rates of diabetes and hypertension in this study likely reflect their rising prevalence in the population. The results highlight key implications for clinical practice: the importance of vaccination for individuals aged ≥50 years to reduce incidence and PHN (14), early diagnosis and antiviral initiation to minimize complications, and a multidisciplinary approach to manage patients with comorbidities (15).

This study has limitations, the diagnosis of Herpes Zoster was primarily based on clinical findings and Tzanck smear results, which may have led to some false negatives. Advanced diagnostic tools such as PCR were not routinely used, which could have improved diagnostic accuracy. Future studies should incorporate molecular diagnostics, larger sample sizes, and vaccine outcome evaluation.

Overall, this study underscores the substantial burden of HZ, particularly among older adults and those with comorbidities. Early antiviral therapy, vigilant monitoring for complications, and preventive vaccination remain essential to improving outcomes and reducing disease burden.

CONCLUSION

This study highlights the clinico-epidemiological profile of Herpes Zoster in patients attending a tertiary care center in Chennai. The disease predominantly affected individuals aged 50 years and above, with slight male predominance and higher incidence among urban residents. The thoracic dermatome was most frequently involved, and most patients experienced moderate to severe pain, contributing to significant morbidity.

Comorbidities such as diabetes and hypertension were common and associated with delayed healing and complications like PHN, which remained the most frequent and disabling sequela. The Tzanck smear proved to be a valuable diagnostic tool, confirming the majority of cases and serving as a practical alternative where advanced diagnostics are unavailable.

The study emphasizes three main aspects: the role of vaccination for prevention in high-risk groups, early antiviral therapy for reducing disease severity, and multidisciplinary management for patients with comorbidities. A comprehensive approach integrating prevention, early intervention, and effective pain management is crucial for improving patient outcomes and minimizing the burden of this debilitating disease.

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