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Original Research Article

A clinicoepidemiological study of herpes zoster in a tertiary care institute

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ABSTRACT

Background: Herpes zoster which is also known as shingles, caused by reactivation of latent Varicella-zoster virus from the dorsal root ganglion. Although it is usually self-limiting in healthy adults, immunocompromised individuals are at higher risk of developing severe or visceral or disseminated cutaneous involvement. The study aimed to analyse the clinical patterns and epidemiological factors of herpes zoster.
Methods: This was a cross-sectional study and conducted for 1 year. A total number of 100 patients with herpes zoster attending our dermatology outpatient department (OPD) were included in this study. A detailed epidemiological, clinical history and a complete dermatological examination were performed. Tzanck smear was done whenever necessary.
Results: Out of 100 patients with herpes zoster, 64% were males and 36% were females. The age group varied from 20-80 years. The most commonly affected age group was 41-50 years. Thoracic dermatome was most commonly affected by 48%, followed by lumbar dermatome. In the total study population, left side dermatomal affection (55%) was more than the right side. Most of the patients presented with pricking type of pain.
Conclusions: Herpes zoster can affect any age group with a higher incidence in elderly patients and immunocompromised individuals. Early recognition and treatment with antivirals within 72 hours of rash onset has shown a reduction in severity, complications, and postherpetic neuralgia.

Keywords: Herpes zoster, Dermatomal, Trigeminal

INTRODUCTION

Herpes zoster which is also known as shingles, caused by reactivation of latent neurotrophic virus 'Varicella zoster virus' from the dorsal root ganglion. It causes segmental cutaneous eruption in persons who have previous episodes of varicella infection either clinically or sub clinically.[1] Varicella zoster virus is host specific. Naturally it occurs only in humans.[2] Wider use of varicella vaccination leads to reduced prevalence of varicella.[3] It results in reduced chances of periodic re-exposure to varicella. This in turn can reduce natural boosting of immunity and lead to an increased incidence of herpes zoster.[4,5] Older age group is a major risk factor for developing herpes zoster.[6,7] The viral reactivation may be due to immunosuppressive states (iatrogenic, inherited or acquired) like diabetes, malignancy and HIV infection. Physiological stress, surgery, irradiation, sunburn and trauma also trigger the viral reactivation.[8]

In >90% of individuals, herpes zoster begins with a prodrome of itching, tingling, tenderness, hyperesthesia and followed by painful eruption of grouped vesicles on an erythematous base in a dermatomal distribution.[9] It usually resolves without any complications in immunocompetent individuals. However, pain, cutaneous lesions and

complications of herpes zoster become more severe with advancing age and immunosuppression. Early recognition and treatment with antivirals within 72 hours of rash onset has shown a reduction in severity, complications and post herpetic neuralgia.[10]

This study aimed to analyze the clinical pattern and associated epidemiological factors in patients with herpes zoster.

METHODS

Total of 100 patients with herpes zoster attending our dermatology OPD, at Rajiv Gandhi government general hospital-Chennai, from October 2019 to September 2020 were included in this study after obtaining informed consent.

Inclusion criteria

Patients with the clinical diagnosis of herpes zoster of either sex at all age groups; patients who are willing to give consent.

Exclusion criteria

Patients with complicated herpes zoster like visceral involvement, disseminated infection; pregnant and lactating women, and those who are not willing to participate in the study.

Methodology

This was a cross-sectional study and conducted for over 1 year. A detailed epidemiological, clinical history including age, sex, associated comorbidities, duration and distribution of the lesions were noted. A complete dermatological examination was performed. Tzanck smear was done whenever necessary to confirm the diagnosis. The data were collected in Google sheets and analyzed using statistical package for social science (SPSS) software version 17.0.

RESULTS

The mean age group of the total 100 herpes zoster patients was 43 years. The standard deviation for the age was 13.4 years. The most commonly affected age group was 41-50 years (27%) followed by 51-60 years (21%) (Figure 1). Out of 100 patients, 64 were males and 36 were females. The prevalence of herpes zoster was more common in males than in females with a male to female ratio of 1.7: 1.

Around 30% of patients presented to the OPD within 72 hours of the appearance of rash and rest of the patients presented after 3 days of onset of the lesions.

Around 34% of the patients had associated comorbid conditions like diabetes, hypertension, malignancy and other infections. In 14% of patients, diabetes was documented and they were on regular treatment. 6% of the patients had hypertension and another 5% had co-infections like HIV, HbsAg and tuberculosis. 4% of the patients had malignancy. Herpes zoster without any documented illness was seen in 66% of the patients (Table 1). In our study, patients with active malignancy, HIV and HbsAg developed herpes zoster during their treatment period. (Figure 3,5). Few patients presented with secondary changes of vesicles like pustules and hemorrhagic blisters (Figure 7).

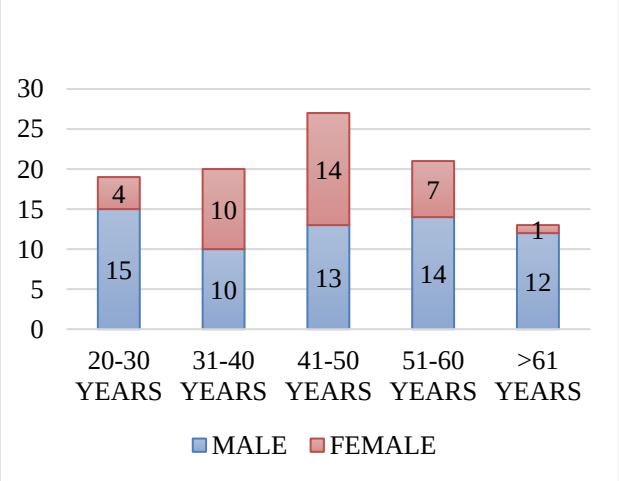

Figure 1: Age wise distribution of the patients.

Table 1: Associated illness of herpes zoster.

Associated illness	Number (Size=n)	Percentage (%)
Diabetes mellitus	12	12
Hypertension	6	6
Tuberculosis	2	2
HIV	2	2
HbsAg	1	1
Malignancy	4	4
SLE	1	1
Varicose veins	1	1
Others (post-surgery, asthma)	2	2
Multiple illnesses (>1)	3	3
No associated illness	66	66

Table 2: Characteristic pain presented with rash.

Pain	Number (Size=n)
Experienced in total no. of patients	**52**
Pricking type	34
Burning type	16
Shooting type	2

Thoracic dermatome was most commonly affected by 48%, followed by lumbar dermatome in 19%, trigeminal

nerve in 17%, cervical in 13% and sacral involvement was the least (1%). (Figure 4,6,8) during their treatment period. Multi-dermatomal involvement was seen only in 2 patients (Figure 2).

Almost half of the study population (52%) experienced pain. Pricking type of pain was the commonest presentation in 34% followed by burning pain in 16% (Table 2).

In the total study population, left side dermatomal affection (55%) was more than the right-side dermatomal affection.

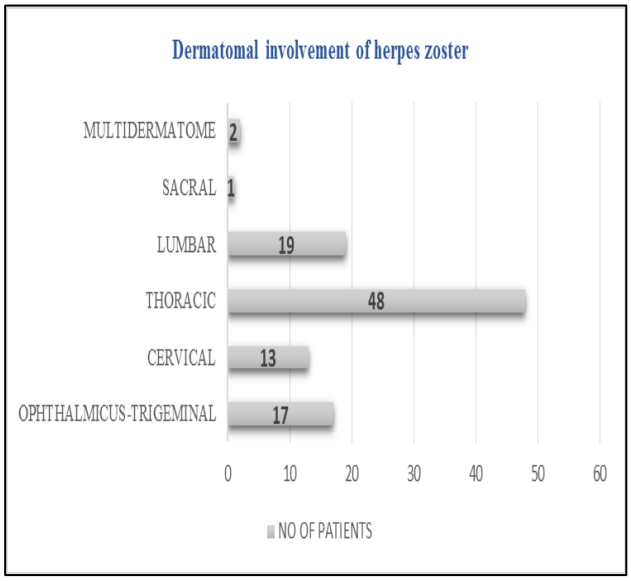

Figure 2: Dermatomal involvement of herpes zoster.

Figure 3: (A) involvement of the C2 segment in a patient on ART; (B) involvement of C3 and C4 segment in HbsAg positive patient.

Figure 4: Involvement of cervical segment-right palm and forearm, in a patient with CML and treated with imatinib.

Figure 5: Involvement of cervical segment-right palm and forearm, in a patient with CML and treated with imatinib.

Figure 6: (A) involvement of the right cervical segment in upper arm; (B) involvement of the right lumbar segment in a patient with stasis dermatitis and varicose veins

DISCUSSION

Varicella zoster virus (VZV) causes varicella (chickenpox) and herpes zoster (shingles). This virus has a worldwide distribution and 98% of the adult population is seropositive.[17] It is transmitted through airborne droplets and direct contact with vesicular fluid. The incubation period is 11-20 days. It is extremely contagious, and the affected individual is infectious from 1-2 days before skin lesions appear until all the vesicles have crusted. During varicella infection, primary viremia occurs at initial 2-4 days of viral replication within regional lymph nodes. After 14-16 days the virus replicates in the liver, spleen, and other organs which is followed by a secondary viremia. During this period, the virus enters the epidermis by invading capillary endothelium. Then it travels from mucocutaneous lesions to dorsal root ganglion cells, where it remains dormant until reactivation at later times.

Figure 7: Involvement of thoracic segment (A) presented with haemorrhagic blisters; (B) presented with pustules and vesicles.

Figure 8: (A) right cervical segment; (B) Left thoracic segment-in CA lung patient with post-surgery-intercostal drainage tube; (C) right sacral segment involvement involving gluteal region; (D) right sacral segment involvement involving penis.

Age wise incidence

In the present study, out of 100 patients with herpes zoster, the highest number of cases occurred in the age group of 41-50 years (27%). However, a study by Rachana et al showed a majority in the age group of 51-70 years and in Baghel et al mentioned in the age group of 20-40 years. The mean age of onset of herpes zoster in our study was43 years.[11] A study conducted by Shafran et al showed the mean age of the population was 55 years.[12]

Sex wise incidence

Male to female ratio was 1.7:1 which is similar to the studies of Mathur et al, Baghel et al and Chaudhary et al who reported a male preponderance.[13,14]

Associated comorbidities

We have encountered diabetes mellitus in 14%, hypertension in 6% and malignancy in 4% of study population as a comorbidity. Two studies have mentioned an association between herpes zoster and diabetes.[15] In the present study 2 patients were found to be HIV seropositive. This result is contrary to Baghel et al study which shows 33.6% of HIV association in their study population.

Dermatomal involvement

Thoracic dermatome was most commonly involved (48%). This finding is similar to Pavithran et al and Sharma studies.[16] The least common dermatome involved was sacral followed by cervical dermatome.

Herpes zoster reactivation occurs spontaneously or be induced by stress, fever, irradiation, local trauma, or immunosuppression.[18,19] During a herpes zoster outbreak, the virus continues to replicate in the affected ganglion and causes a painful ganglionitis. Neuronal inflammation and necrosis may result in a severe neuralgia. Fluid from vesicles can transmit VZV to seronegative individuals, leading to varicella but not herpes zoster. The transmission rate to susceptible contacts is ~15% for zoster, compared to 80-90% for varicella.

Herpes zoster usually resolves without any complications in immunocompetent patients. But the pain, cutaneous lesions, and complications of herpes zoster become more severe as age advances and in immune compromise. The most common complication is postherpetic neuralgia, which is characterized by dysesthetic pain that persists even after the skin lesions have healed. This affects 10-20% of all herpes zoster patients. Other complications are secondary bacterial infection, scarring, pneumonitis, meningitis and encephalitis.[20]

Varicella in immunocompetent children can be treated symptomatically with antipyretics, antihistamines, calamine lotion, and tepid baths. If treatment started within 72 hours after the onset of the rash, the duration and

severity of varicella can be decreased. Oral acyclovir and valacyclovir are FDA-approved for the treatment of varicella in children (2-17 years of age) while acyclovir is approved for adults.[21]

CONCLUSION

Herpes zoster commonly occurs from the 4th decade onwards and the mean age of presentation is 43 years. The thoracic dermatome is the commonest site of involvement. The left side of the body is more commonly affected. Immunodeficient states like diabetes, hypertension, malignancy and HIV can increase the risk of developing herpes zoster. The diagnosis of herpes zoster is usually made clinically based on the characteristic appearance of the rash. Early recognition and treatment with antiviral therapy, mainly in older and immunocompromised patients, can reduce the severity, complications, and postherpetic neuralgia.

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