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# ORIGINAL ARTICLE

# STUDY OF HERPES ZOSTER IN HIV PATIENTS IN RELATION TO CD4 COUNT

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**ABSTRACT: AIMS AND OBJECTIVES:** 1. To study herpes zoster in HIV positive patients in relation to CD4 count. 2. To study the various clinical presentations, common sites, and demographic characteristics of herpes zoster in HIV. **MATERIALS AND METHODS:** A study was conducted on 94 HIV patients with a clinical diagnosis herpes zoster attending DVL OPD of Government General Hospital, Kakinada. Severity of rash was graded depending on the number of lesions as mild (<25), moderate (25-50) and severe (>50).Assessment of intensity of pain was done using visual analog scale (VAS), a numerical rating scale marked from 0 to 10 in increasing order of severity. The relation of CD4 count and herpes zoster and complications of zoster were recorded. **RESULTS:** The maximum incidence of herpes zoster was found in the sexually active age group with higher incidence in males53.1% and urban people 55.3%. Patients with severe rash were 57.4% moderate rash 31.9% and mild rash 10.6%. At the time of presentation, majority 51.06% had vesicular rash. The most common symptom was pricking pain followed by burning sensation and stabbing pain. Most of the patients had thoracic dermatome involvement in 51, cer vical in 18, trigeminal nerve in 16and lumbar in 9. Ophthalmic branch the relation of CD4 count and is involved in 7, maxillary in 5 and mandibular in 4. Majority 18 (19.14%) were in the CD4 range 200-249, 15 between CD4 150-199 and 11 between CD4 350-399. Complications noted were post herpetic neuralgia, secondary bacterial infection, scarring, conjuntivis, facial palasy and keratitis. Multidermatomal involvement is seen in 15.95%.
**KEYWORDS:** HIV, CD4 Count, Herpes Zoster.

**INTRODUCTION:** The primary infection of varicella zoster virus includes viraemia and a widespread eruption, after which the virus persists in nerve ganglion cells, usually sensory.

Zoster is the result of reactivation of this residual latent virus. Recurrent VZV infection (zoster or "shingles") occurs with advancing age and occurs earlier in immunocompromised hosts as a result of decreased specific VZV immunity. Zoster typically presents as a painful, localized cutaneous eruption occurring along one or more contiguous dermatomes. As with varicella, zoster usually is self-limited in the immunocompetent host, but immunocompromised persons are at risk of more severe illness with cutaneous or visceral dissemination. Hence, the present study is conducted to know the relation to CD4 count and manifestations of herpes zoster.

**AIMS AND OBJECTIVES:**

1. To study the relation of CD4 count and herpes zoster in HIV patients.
2. To study the various clinical presentations, common sites, and demographic characteristics of Herpes zoster in HIV.

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**MATERIALS AND METHODS:** This study has an approval of Ethics committee of Rangaraya Medical College, Kakinada. A study was conducted on HIV patients with a clinical diagnosis herpes zoster attending DVL OPD of Government General Hospital attached to Rangaraya Medical College, Kakinada, over a period of 15 months from June 2012 to August 2013.

**Data Collection:** A preforma containing detailed information on each patient was prepared according to the protocol designed for the study.

Selection criteria for patients: A total of 94 HIV patients with herpes zoster were enrolled in the study. Herpes zoster was diagnosed clinically based on the presence of tense, grouped, vesiculo bullous lesions on an erythematous base, unilaterally in a dermatomal distribution.

The inclusion criteria for the patients are HIV patients with clinical diagnosis of herpes zoster.

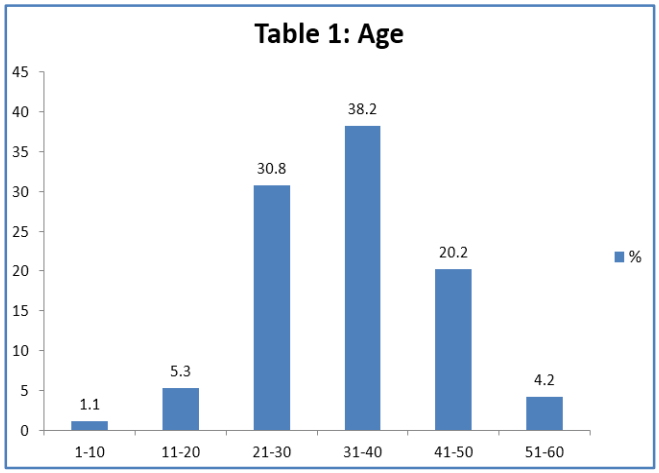
**The rash was defined depending on the different stages of lesions as follows:**

1. Maculopapular: Reddened and/or raised above the surface of the surrounding skin; solid and not containing fluid.
2. Vesicular: Blister like, rise above the surface of the surrounding skin and containing fluid.
3. Crusted: Dry, scab like layer that forms after the vesicular fluid is lost. It also included ulcers which may be present after the crust is lost, before re-epithelialization occurs.
4. Healed: Dry, non-glistening, re-epithelialized skin after falling of crust. Erythema and scarring may be present.

Severity of rash was graded depending on the number of lesions as mild (<25 lesions), moderate (25-50 lesions) and severe (>50 lesions).

Assessment of intensity of pain was done using visual analog scale (VAS) which is a numerical rating scale marked from 0 to 10 in increasing order of severity. A score of 0 was described as no pain and10 as worst possible. Presence of complications of zoster, or any adverse events were recorded at each visit. The results have been compiled, tabulated and analyzed.

**RESULTS:** Table 1: Age distribution of herpes zoster in HIV: The maximum incidence was in the age group of 31-40 years (38.2%), followed by that of 21-30 years (30.8%), and 41-50 years (20.2%). Minimum incidence was observed in the age group 1-10 years. (1.1).



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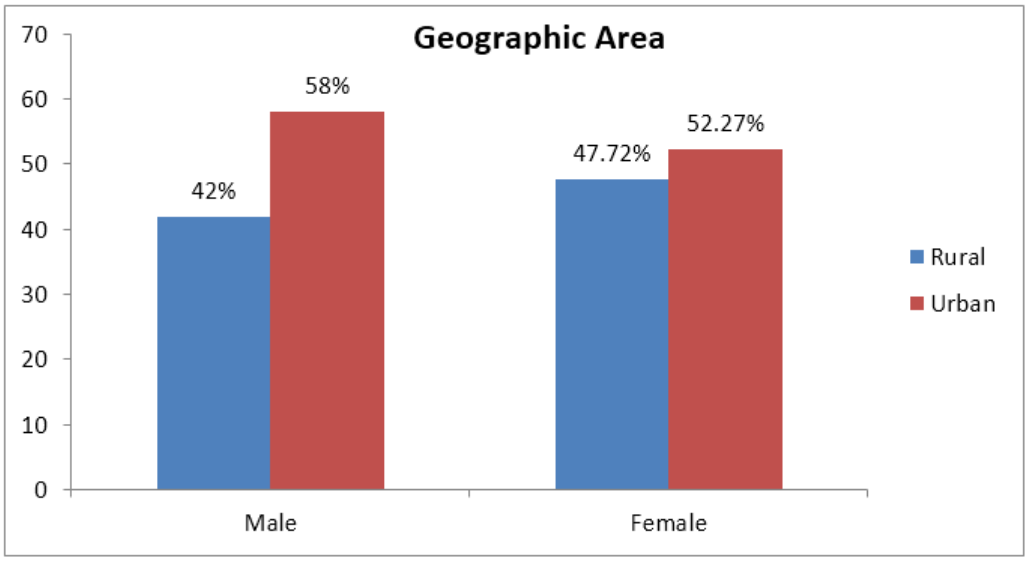
| Gender | No | % |
|---|---|---|
| Male | 50 | 53.1% |
| Female | 44 | 46.8% |
| **Total** | **94** | **100%** |

Table 2: Gender distribution

Out of 94 HIV positive herpes zoster cases predominance of males 50(53.1%) with an incidence of 44(46.8%) in females was observed.

**Table 3:** Geographic Area: Out of the total number of 94 patients the rural population included 21 (42%) male patients and 21(47.72%) female patients. Urban population included 29(58%) male patients and 23(52.27%) female patients. The total rural population is 44.68%, the urban population being 53.31%.




| Occupation | No. of Patients | % |
|---|---|---|
| Labourers | 22 | 23.4% |
| House wives | 27 | 28.72% |
| Drivers | 8 | 8.5% |
| Business | 4 | 4.25% |
| Student | 5 | 5.31% |
| CSW | 0 | 0% |
| MSM | 0 | 0% |
| Others | 28 | 29.78% |
| **Total** | **94** | **100%** |

Table 4: Occupation

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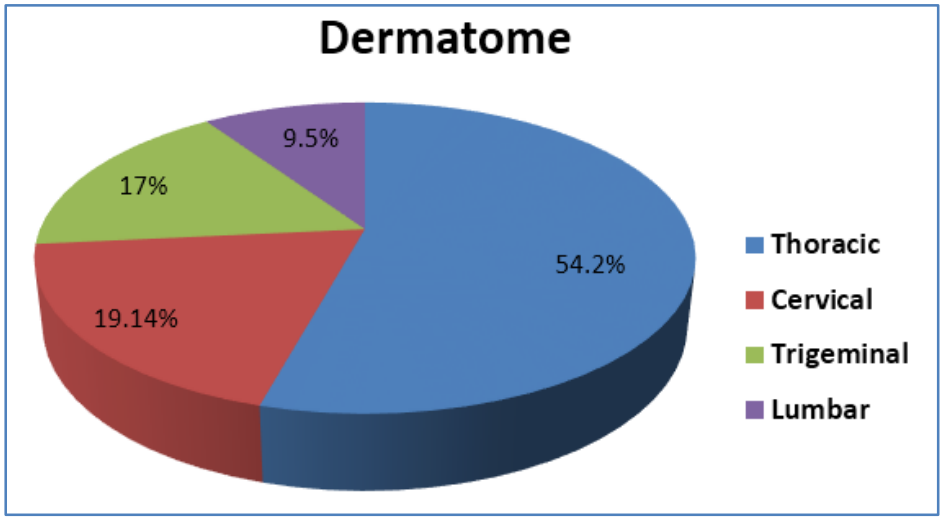
In our study 27(28.72%) were housewives,22(23.4%) were labourers 8(8.5%)patients were drivers,5(5.31%) were students business men include 4(4.25%) and others constituted about 28(29.78%) with no CSW or MSM.

| Dermatome | No | % |
|---|---|---|
| Thoracic | 51 | 54.2% |
| Cervical | 18 | 19.14% |
| Trigeminal | 16 | 17% |
| Ophthalmic | 7 | 7.4% |
| Maxillary | 5 | 5.31 |
| Mandibular | 4 | 4.25% |
| Lumbar | 9 | 9.5% |

Table 5: Dermatomal distribution

In our study, thoracic dermatome was involved in 51 (54.2%) cases followed by cervical in 18(19.14%) and trigeminal nerve in 16(17%) cases, lumbar in 9(9.5%) cases.




| Severity | No. of pt | % |
|---|---|---|
| Mild<25 | 10 | 10.6% |
| Moderate25-50 | 30 | 31.9% |
| Severe>50 | 54 | 57.4% |

Table 6: Severity of rash at presentation

Severity of rash was graded depending on the number of lesions as mild (<25 lesions), moderate (25-50 lesions) and severe (>50 lesions).In our study most of the patients presented with severe rash 54(57.4%) followed by moderate rash in 30(31.9%) patients with mild rash in 10(10.6%) patients.

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**Table 7:** Morphology of rash at presentation: At presentation, majority of the patients 48(51.06%) had vesicular rash followed by maculopapular rash with vesicles in 22(23.4%) and vesicular with pustular in 18(19.1%) with maculopapular rash alone in only 3(3.1%) patients and bullous rash in 3(3.19%). Those with vesiculopustular lesions presented mostly after 4 days duration.

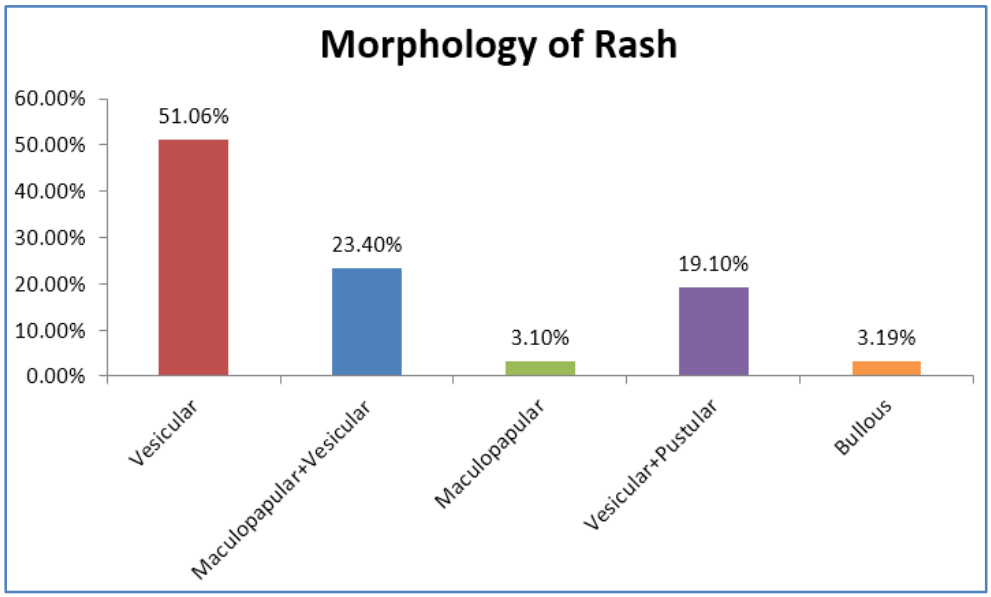


**Table 8:** Duration of rash at the time of consultation: Most of the patients27(28.7%) presented on day 3 followed by 18 patients each on 5$^{th}$ and 6$^{th}$ day with 15 patients on day 2 and 14 patients on day 4 and 1 pt each on 1$^{st}$ and 7$^{th}$ day.

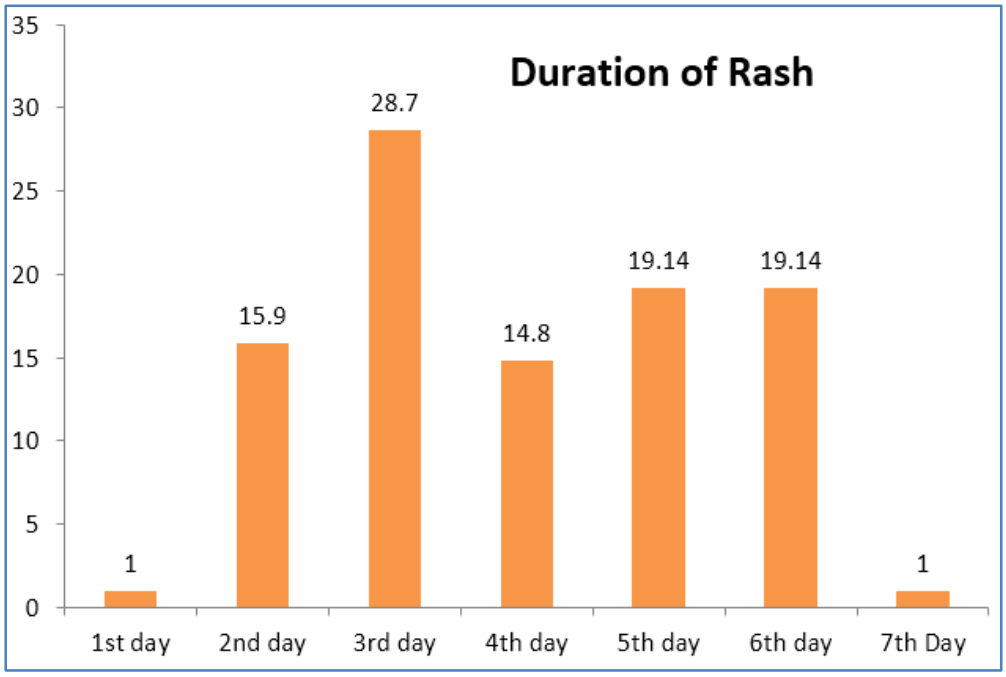

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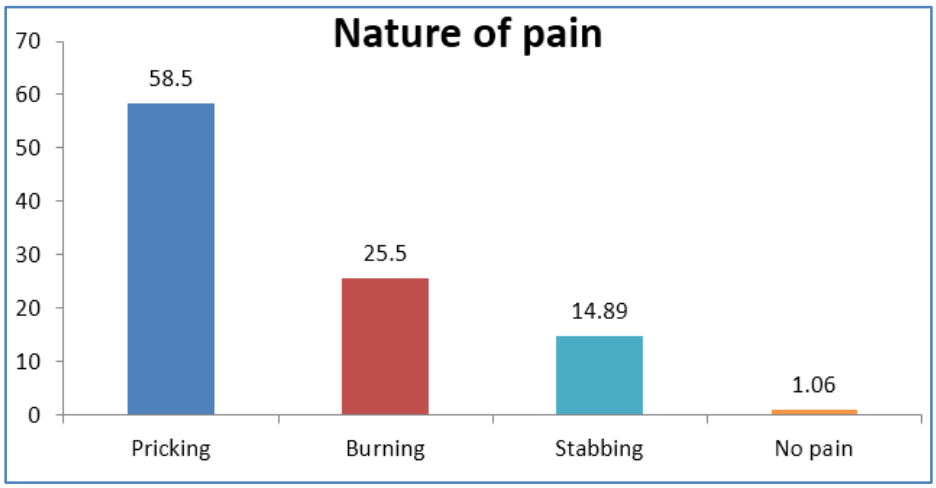
**Table 9:** Nature of pain at presentation: At the time of presentation 55(58.5%) have pricking pain 24 (25.5%) have burning sensation, with 14(14.89%) having stabbing pain and only 1(1.06%) person did not have pain.




| CD 4 | No. of patients | % |
|---|---|---|
| <50 | 3 | 3.19% |
| 51-99 | 6 | 6.38% |
| 100-149 | 10 | 10.63% |
| 150-199 | 15 | 15.95% |
| 200-249 | 18 | 19.14% |
| 250-299 | 10 | 10.63% |
| 300-349 | 10 | 10.63% |
| 350-399 | 11 | 11.70% |
| 400-449 | 5 | 5.31% |
| 450-499 | 2 | 2.12% |
| >500 | 4 | 4.25% |
| **Total** | **94** | **100%** |

Table 10: CD4 Count

Out of the 94 patients majority were in the CD4 range 200-249 with 18 (19.145) patients followed by 15(15.95%)patients in the CD4 range 150-199 and 11 (11.70%) in the CD4 range 350-399.There were 10(10.63%) patients each in CD4 ranges 100-149,250-249,300-349 respectively.

**Table 11:** Zoster associated complications: In our study out of 94 patients 43(45.7%) patients had post herpetic neuralgia, secondary bacterial infection in 39(41.48%), scarring in 6(6.38%) and conjunctivitis in 5(5.31%) with 1(1.06%) person each having facial palasy and keratitis.

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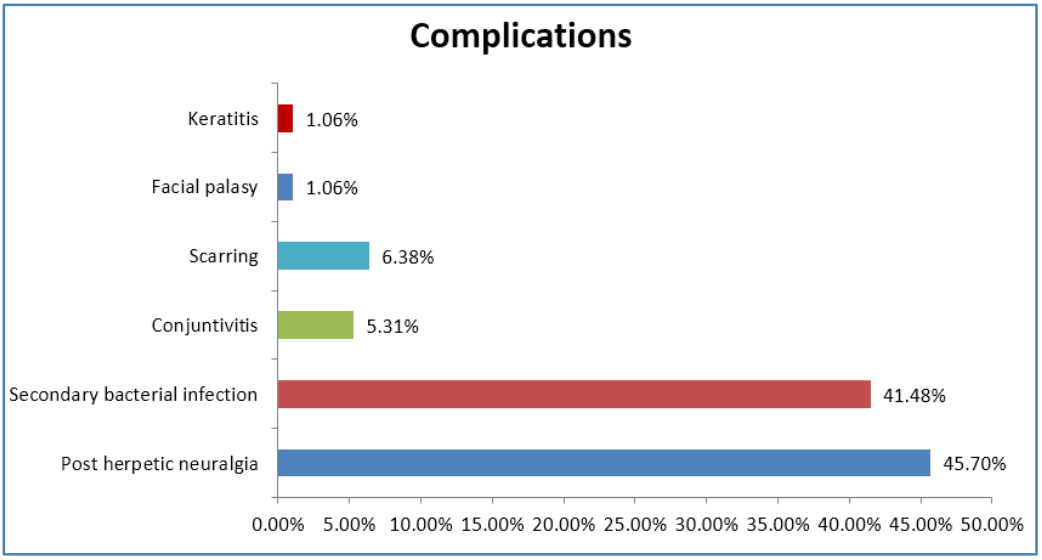


**DISCUSSION:** Acute herpes zoster is a painful, debilitating condition. It occurs due to reactivation of VZV from a latent infection of dorsal sensory or cranial nerve ganglia. Declining cell mediated immunity as a result of aging, immunosuppressive illnesses and immunosuppressive agents increase the risk of zoster. The pain of herpes zoster is the principal reason most patients seek medical attention. Persistence of pain after rash healing may occur more commonly in the elderly and immunosuppressed resulting in post herpetic neuralgia which is difficult and often costly to treat effectively. An increased acute pain and severity of rash are risk factors for PHN. The presence of new vesicles correlates with recent viral replication and may be a marker for patients who would benefit from antiviral therapy, even beyond 72 hours. In addition, patients presenting with the high-risk characteristics like elderly persons, HIV positive patients and other immune compromised patients should be considered for antiviral treatment, even when presenting beyond 72 hours after lesion onset. However, patients whose lesions that have all begun to crust are unlikely to derive benefit from antiviral therapy.

A Total number of 812 HIV positive patients attended our DVL OPD out of which 94 patients presented with herpes zoster. So the incidence of herpes zoster among OPD HIV positive patients is 11.57%. However, The incidence of herpes zoster in HIV infection has been reported to be 11% by Colebenders[1] et al, 16% by Marshell [2] et al, 26.7% by Buchbinder[3] et al and 8.4% by Hira.[4] Our study shows incidence of herpes zoster to be 11.57% in HIV infected patients. The incidence of herpes zoster in HIV seronegative patients has been reported to be 1% and 2% by Colebenders[1] et al and Hira,[4] respectively. Results of our study showing high incidence of herpes zoster in HIV infection is in general agreement with results of other workers.

It is observed in various Indian studies that the majority of herpes zoster cases occur in the 2nd to 4th decades of life. The present study also had most cases between the ages of 20 and 40 years, thus correlating well with the above studies. Compared to previous studies, recent ones have showed an increased incidence of herpes zoster in younger populations. This may be due to the increasing prevalence of HIV infection, which mainly affects these age groups. In our study of

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HIV persons the maximum incidence of herpes zoster was found in the sexually active age group of 31-40 years (38.2%),followed by that of 21-30 years (30.8%), and 41-50 years (20.2%). Minimum incidence was observed in the age group 1-10 years (1.1%). Majority of the patients were in the age group 21-40 years with 65(69%) persons. This is similar to other studies done by AL Das[5] et al in seropositive male patients, Kar P.K[6] et al in seropositive zoster infected patients and K.N Naveen[7] et al in seropositive patients.

Herpes zoster affects both sexes and all races with equal frequency. Many international studies have noted an equal sex incidence. There are a few Indian studies which have noted a higher incidence of herpes zoster in males compared to females. The present study also has a slightly higher incidence in males which correlates with earlier studies. This may perhaps be because fewer women seek medical attention compared to males. Most of the patients attending the hospital in this study are urban people. The probable reason was that most of the rural people went to local quacks or PHCs and they are more inclined towards the local medicine. In our study 27(28.72%) were housewives, 22(23.4%) were labourers 8(8.5%) patients were drivers, 5(5.31%) were students, business men include 4(4.25%) and others constituted about 28(29.78%) with no CSW or MSM.

In the present study, there is slightly more number of patients reporting after 72 hours after the onset of their lesions, 51(54.25%) out of the 94 patients. One Indian study by Chaudary et[8] al reported that 75% of patients sought medical advice within 3-5 days of the eruption, while the remaining 25% reported within 10 days of the eruption. Another Indian study by Dubey A.K[9] et al reported that the average duration at presentation was 3.25 days. In the present study, fewer patients presented to the OPD early as compared to the other studies mentioned above. This is perhaps because of the lower health educational standards and going for local medicine before attending the hospital.

At the time of presentation 55(58.5%) have pricking pain 24 (25.5%) have burning sensation, with 14(14.89%) having stabbing pain and only 1(1.06%) person did not have pain in our study. This is similar to a study done by G. Nagesh Raju et al.[10]

In our study, thoracic dermatome was involvement is seen in 51 (54.2%) cases which is more than other dermatomes i.e. cervical in 18(19.14%) and trigeminal nerve in 16(17%) cases, lumbar in 9 (9.5%) cases. In the trigeminal ophthalmic branch is involved in 7(7.4%), maxillary in 5(5.31%) and mandibular in 4(4.25%).The results were similar in relation to the type of dermatome affected in a study done by AL Das[5] et al in which thoracic dermatome (68%) was commonest to get involved followed by cervical (14.5%), trigeminal (9.7%) and lumbosacral (8%).However in our study thoracic dermatome involvement is less and trigeminal involvement is more when compared to AL Das[5] et al study. In another study done by Kar P.K et al[6] there was a predominant involvement of ophthalmic dermatome in HIV patients rather than the thoracic. In a study done by EN Abdul Latheef at al the commonest segment affected was thoracic (42.4%) followed by cranial (28.2%) and cervical (12.1%). In a study done by Anand Kumar Dubey[9] et al thoracic dermatome was the most common dermatome involved in 64 (59.8%) cases followed by cervical in 17(15.8%) cases which is similar to our study.

Herpes zoster occurring in HIV disease is most often unidermatomal with the classic vesicular eruption but it may be multidermatomal or recurrent with bullous, hemorrhagic,

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necrotic, ulcerated and may be be accompanied by severe pain. Increasing incidence of HIV seropositivity is noted as the number of dermatomes involved increases. In our study 15(15.95%) patients were having multidermatomal involvement; majority of the patients 48(51.06%) had vesicular rash followed by maculopapular rash with vesicles in 22(23.4%) and vesicular with pustular in 18(19.1%) with maculopapular rash alone in only 3(3.1%) patients and bullous rash in 3(3.19%). Those with vesiculopustular lesions presented mostly after 4 days duration.

The pain of herpes zoster is the principal reason most patients seek medical attention. An increased acute pain and severity of rash are risk factors for PHN. In our study out of 94 patients 43(45.7%) patients had post herpetic neuralgia followed by secondary bacterial infection in 39(41.48%),scarring in 6(6.38%) and conjuntivtis in 5(5.31%)with 1(1.06%) person each having facial palsy and keratitis. In a study done by Leah J. Blank et al[10] and by Glesby MJ[11,12] et al in 42 seropositive the major complication was post herpetic neuralgia as in our study. However in a study done by Kar P.K[6]et al the major complication was ocular. Reactivated VZV infection (zoster or shingles) may occur at any stage of HIV infection, and may be the first clinical evidence of HIV infection.[13]

According to a study done by Joon Young et al[14] a Korean study zoster occurs at a wide range of CD4 T-cell counts in HIV-infected patients which also was observed in our study with CD4 counts ranging from as low as 33cell/cumm to as high as 550 cells/cumm. Most of the herpes zoster cases are seen at a CD4 range of 200-500 cells/cumm which was also observed in our study where there are more number of cases at a CD4 count range of 200-500 cells/cumm with most of the cases 18(19.14%) having a CD4 count between 200-250cells/cumm.

**CONCLUSION:** A total of 94 HIV patients with herpes zoster were enrolled in the study. Herpes zoster was diagnosed clinically based on the presence of tense, grouped, vesiculo bullous lesions on an erythematous base, unilaterally in a dermatomal distribution. Most of herpes zoster cases have occurred at a CD4 count range of 200-250 cells/cumm.: The maximum incidence of herpes zoster was found in the sexually active age group of 31-40 years (38.2%), followed by that of 21-30 years (30.8%). There is slightly higher incidence in males (53.1%) than females (46.8%). Most of the patients in this study are urban people 52(55.3%) and rural accounted for 42(44.68%) patients. The most common symptom at the time of presentation was pricking pain followed by burning sensation and stabbing pain. Most of the patients had thoracic dermatome involvement51 (54.2%) cases followed by cervical in 18(19.14%), trigeminal nerve in 16(17%) cases and lumbar in 9 (9.5%) cases. In the trigeminal ophthalmic branch is involved in 7(7.4%), maxillary in 5(5.31%) and mandibular in 4(4.25%). Multidermatomal involvement is seen in 15(15.95%) patients.

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