

## Original Article

### Is There any Seasonal Influence of Herpes Zoster?

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#### Abstract:

Herpes zoster is a neurocutaneous disease caused by varicella zoster virus (VZV). It results from the reactivation of latent virus in dorsal root or cranial nerve cells following primary infection or vaccination as a consequence of waning of immunity. There may be a possible association between the occurrence of varicella infection and various environmental factors. So this study was designed to know the pattern of clinical presentation, seasonal variations and epidemiological factors of Herpes Zoster patients. A total of 172 Herpes Zoster out of 27979 patients of different skin diseases attending at Dhamrai Upazilla Hospital in Bangladesh were studied between March 2010 to June 2013. The frequency of occurrence of Herpes Zoster was 0.61%. Among the patients, 57.56% were male and 42.44% were female between the ages of 5 months to 90 years, with mean age 39 years. Nearly half of the patients (48.26%) were in between 30-59 years age. The patients were continued to report throughout the year with a surge in rainy season. Majority of the patients (65.70%) had thoracic dermatome followed by cervical and lumbar distribution, each of them 11%. A large-scale and prospective community based study is recommended to enrich the findings as well as a complete clinical and epidemiological picture of Herpes zoster in Bangladesh.

**Key words:** Herpes Zoster, Varicella Zoster Virus, Seasonal Influence, Dermatome.

#### Introduction:

Herpes zoster is a neurocutaneous disease caused by varicella zoster virus (VZV). It results from the reactivation of latent virus in dorsal root or cranial nerve cells following primary infection or vaccination as a consequence of waning of immunity<sup>1-5</sup>.

Herpes zoster is prevalent worldwide<sup>6</sup>. The incidence rate of herpes zoster ranges from 1.2 to 3.4 per 1000 persons-years among younger healthy individuals, increasing to 3.9-11.8 per 1000 persons-years among those older than 65 years<sup>3, 7-14</sup> and the incidence rates are similar world wide<sup>7,15</sup>.

The incidence of herpes zoster is determined by factors that influence the host-virus relationship<sup>16-17</sup>.

Latent VZV is maintained in the presence of antibody and T cell response, both of which may contribute to maintaining virus in its latent state<sup>18</sup>. The virus begins to replicate after an average of few years of primary infection, traveling down the sensory nerve into the skin. Other than immunosuppression and age, the factors involved in the reactivation are unknown<sup>19</sup>.

Varicella typically occurs during childhood in temperate climate and during adolescent or early adulthood in tropical areas<sup>7</sup>. In temperate climates, cases are more common in the cooler winter and spring months<sup>17,20-24</sup>. Zoster may occur less frequently in tropical areas, because of later acquisition of primary infection<sup>25</sup>.

A number of studies have been conducted in different Asian countries to investigate the possible association between the occurrence of Varicella infection and various environmental factors such as temperature, rainfall, humidity, geographic regions, population densities and degree of social development and found annual temperature variation affected the seasonal variations in varicella<sup>26-30</sup>. The first report of varicella-

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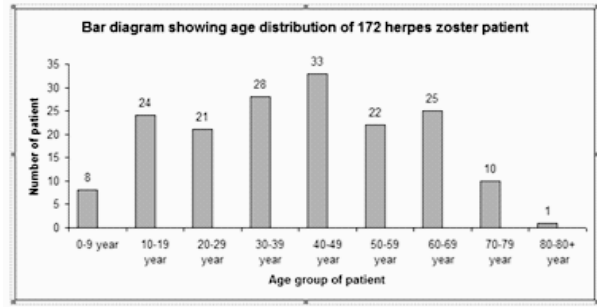
zoster antibody seroprevalence in Bangladesh suggests that, as in other tropical areas, a significant proportion of children, adolescents, and adults are at risk of developing varicella infection in Bangladesh<sup>31</sup>. Any one infected with varicella virus previously is at risk for reactivation of dormant virus and the onset of zoster disease<sup>32</sup>.

We do not have adequate information regarding epidemiology of herpes zoster in Bangladesh. Considering the facts above, we tried to make an association between herpes zoster and seasonal influence and also to find out local epidemiology.

**Materials and Methods:**

The study was carried out in a periurban 50 bedded upazilla hospital during the period of March 2010 to June 2013. This was an observational type of prospective study. A total of 27979 patients with different skin diseases attended OPD of the hospital were our study population. Irrespective of age and sex any patient had a clinical diagnosis of herpes zoster were considered to be eligible for inclusion in this study and thus 172 patients were identified. Informations were collected through pre-tested open questionnaire which included demographic data (Age, Sex, and Address), onset of disease and the dermatomes affected.

**Results:**



**Fig 1:** Age distribution of herpes zoster patients.

The recruited patients were between the ages from 5 months to 90 years with a mean 39 years 2 months. Highest number of patients 33 (19.18%) were in the age group 40-49 years followed by 28 (16.28%) patients in the age group 30-39 years and a least number of patient 1 (0.58%) was above 80 years age.



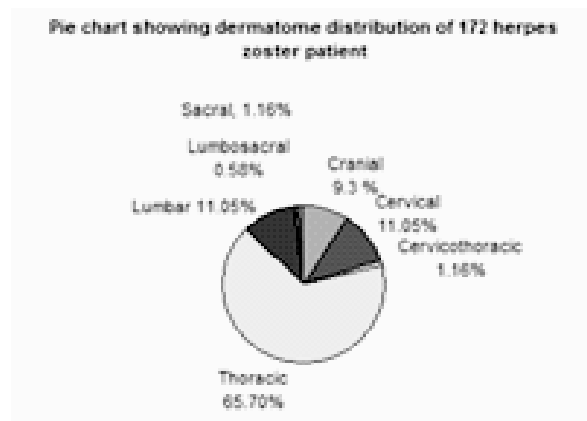
**Fig 2:** Sex distribution of herpes zoster patients.

Among the total 172 patients 99 (57.56%) were male and 73 (42.44%) were female.

**Table I:** Distribution of Herpes Zoster patients according to month/Year

Year/ Month	2010			2011			2012			2013			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
January	-	-	-	2	3	5	4	4	8	0	1	1	14
February	-	-	-	5	2	7	2	1	3	4	1	5	15
March	1	3	4	0	1	1	3	2	5	3	1	4	14
April	1	1	2	1	2	3	0	0	0	0	0	0	5
May	2	1	3	3	3	6	3	3	6	3	0	3	18
June	5	1	6	4	3	7	3	4	7	10	2	12	32
July	1	0	1	2	0	2	5	6	11	-	-	-	14
August	1	4	5	1	1	2	5	1	6	-	-	-	13
September	5	3	8	5	3	8	1	5	6	-	-	-	22
October	3	2	5	3	1	4	3	1	4	-	-	-	13
November	1	2	3	0	2	2	1	1	2	-	-	-	7
December	1	1	2	1	1	2	1	0	1	-	-	-	5
<b>Total</b>	<b>21</b>	<b>18</b>	<b>39</b>	<b>27</b>	<b>22</b>	<b>49</b>	<b>31</b>	<b>28</b>	<b>59</b>	<b>20</b>	<b>5</b>	<b>25</b>	<b>172</b>

Table-I showing distribution of seasonality index for herpes zoster in different months of the year. The cases were found to occur throughout the year, having the least number of patients in April and the highest in the month of June. Though there were sharp rise and sharp falls, it continued to occur more or less in consistent manner through May to October.



**Figure 3:** Dermatome distribution of herpes zoster patients.

Out of 172 herpes zoster patients, most of the cases (65.7%) had thoracic (One female patient of age 42 years was Zoster duplex) distribution followed by cervical and lumbar dermatome of which each occupied 11.05%. Among the 16 cranial herpes cases only 3 patients had been suffering from ophthalmic zoster.

### Discussion:

Herpes zoster (HZ) is a viral disease and can cause a considerable morbidity<sup>1-2</sup>. It is prevalent worldwide, occurs more sporadically than does primary infection (varicella)<sup>6</sup>. Age is one of the strong risk factor for HZ<sup>9-13</sup>. It is uncommon in childhood and the incidence increases with age<sup>5,10,17</sup>. In rare instances herpes zoster can also occur in infancy as a result of reactivation of primary varicella infection acquired in utero or in early infancy<sup>33</sup>. Out of eight children less than 10 years age, two were infants in this series. One of the babies of five months age had a prenatal history of maternal contact with varicella virus.

Sex is commonly believed to exert an effect on the incidence of herpes zoster, males being said to suffer more often than females<sup>3</sup>. The finding of this study supports this view. The study done by Suhail M et al revealed the same findings<sup>34</sup>. One author claimed females are more sufferer than male<sup>16</sup>. According to some author, both the sexes are equally affected<sup>17</sup>.

Maximum patients in this study were found in the rainy monsoon season (June-September) which corresponds to the moderately increased temperature, highest percentage of humidity and highest rainfall. On the contrary, least patients (Mean seasonality index 71.74%) were found in the hot, humid summer (Highest temperature and lowest humidity). One study done in Pakistan where they found surge of herpes

zoster cases with the onset of summer<sup>34</sup>. This may be a clue to prove that occurrence of herpes zoster cases like varicella actually depend on temperature, humidity, rainfall and geographic regions. Varicella typically occurs during childhood in temperate climate and during adolescent or early adulthood in tropical areas<sup>7</sup>. In temperate climates, cases are more common in the cooler winter and spring months<sup>17,20-24</sup>. Zoster may occur less frequently in tropical areas, because of later acquisition of primary infection<sup>25</sup>. Most of the study neither found any seasonal variation<sup>9,16,17</sup> nor any epidemic<sup>9</sup>.

The thoracic (53%), cervical (usually 2, 3, 4- 20%), trigeminal including ophthalmic (15%) and lumbosacral (11%) dermatomes are most commonly involved at all ages, but the relative frequency of ophthalmic zoster increases with old age<sup>17</sup>. Our study reveals thoracic dermatome 66.07% which correlates with all the previous study<sup>1,3,5,16,17,19,34</sup> but do not match with other dermatomes (cranial 8.93%, cervical and lumbar each 11.31%) distribution. The area supplied by the trigeminal nerve, particularly the ophthalmic division, and the trunk from T3 to L2 are most frequently affected; the thoracic region alone accounts for more than one-half of all reported cases, and lesions rarely occur distal to the elbows or knees<sup>3</sup>.

### Conclusion:

Herpes zoster is not so uncommon and mostly found in rainy season in our country, though does not match the findings of this study with other. Having none or very few information regarding the pattern of clinical presentation and seasonal variation it reasonably needs large scale population based prospective study.

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