Profile of Herpes Zoster Patients with Co-morbidities: Cross-sectional Observation at a Tertiary Level Hospital in Dhaka

Khan MSI[1], Emran HM[2], Karim ATMR[3]

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Abstract

Introduction: Herpes zoster (HZ) is characterized by an extremely painful vesicular rash, which may be complicated by secondary infection and post-herpetic neuralgia. To date, multiple risk factors associated with HZ have been established, including endocrine diseases, immunosuppressive conditions, cancers, and other chronic medical conditions.

Objectives: To assess the profile of herpes zoster associated with co-morbid condition.

Methods and Materials: This cross sectional study was conducted among purposively selected 130 HZ patients in the department of Dermatology and Venereology, Combined Military Hospital (CMH) Dhaka from January 2017 to December 2018. Data were collected through face to face interview using pretested semi-structured questionnaire.

Results: Out of 130 patients, majority of the patients were male (69.2%) and mean age was 53.5±9.8 years and majority gave the history of chicken pox 60% and common site of involvement were chest (right and left) 33.1% and 48.5%, upper back (right and left) 30.8% and 43.1% and upper right arm 33.1%. About 66.9% patients gave the history of having co-morbid condition like Diabetes 30.8%, Stroke 9.2%, Hypertension 2.3%, Myocardial infarction 3.8%, Peptic ulcer disease 10.0%, Malignancy 2.3%, Tuberculosis 2.3% and Irritable bowel syndrome 2.3%.

Conclusion: Based on our study finding, we can conclude that herpes zoster is a disease that is associated with other co-morbid conditions. If herpes zoster is an early manifestation of undiagnosed co-morbid condition, patients should undergo testing for undiagnosed disease when they present with herpes zoster.

Key-words: Herpes zoster, Herpes zoster with co-morbidities.

Introduction

Varicella zoster virus (VZV) has been described as a "re-emerging" infection because of its potentially increased prevalence as elderly and immunocompromised populations grow in modern societies. Herpes zoster (HZ) is caused by the reactivation of VZV latent in the sensory ganglia after primary infection. It is a painful blister or rash on the affected dermatomes secondary to the spreading of the virus along the sensory nerve fibers[1-3]. The occurrence of herpes zoster could be associated with derangement of the immunological status of hosts related to aging, trauma, stress, or other diseases[4]. The incidence of HZ substantially increases with age and immuno-suppression[5]. Other risk factors include human immunodeficiency virus infection, neoplastic diseases, organ transplantation, use of immunosuppressive drugs, and other conditions that cause a decline in cell-mediated immunity[6,7].

Diabetic patients are susceptible to HZ secondary to VZV reactivation as cell-mediated immunity (CMI) declines during the process[8]. Certain drugs which are commonly used in diabetes and related conditions are thought to increase the risk of HZ[9]. When patients have two or more coexisting co-morbidities, there is an increased risk of HZ occurrence10. Numerous reports of VZV-induced vasculopathy and stroke syndrome after herpes zoster attacks have been reported since the early 1970s. VZV is also the only recognized human virus able to replicate in cerebral arteries[11,12]. Some studies have also revealed that herpes zoster could be an early manifestation of undiagnosed HIV infection because of an early defect in cell-mediated immunity[13,14]. Cancer patients may experience cell-mediated immunosuppression, resulting from chemotherapy, psychological stress, or physical trauma of surgery or radiotherapy, putting them at greater risk of herpes zoster[15].A wide spectrum of neurological consequences of VZV reactivation, such as postherpetic neuralgia, associated neuropathy, radiculitis, myelitis, encephalitis, ventriculitis, vasculopathy, Guillain-Barré syndrome (GBS), Parkinson's disease and stroke, have been recognized[16-18]. To date, no formal research based on systematic analysis has focused on the relationship between HZ and co-morbid condition. As such the present study aimed to assess the profile of HZ patient associated with various co-morbidities.

Methods and Materials

This cross sectional study was conducted at the department of Dermatology and Venerology of Combined Military Hospital Dhaka from January 2017 to December 2018. Irrespective of age and sex,

1. **Col Md Shirajul Islam Khan**, MBBS, DDV, MCPS, FCPS, Classified Specialist in Dermatology and Venereology, CMH, Dhaka (*E-mail*: siraj824@gmail.com) 2. **Maj Hossain Md Emran**, MBBS, DDV Graded specialist in Dermatology and Venereology, CMH, Dhaka 3. **Lt Col ATM Rezaul Karim**, MBBS, MCPS, DDV, FCPS, Associate Professor & Head, Department of Dermatology, AFMC, Dhaka

diagnosed 130 HZ patients were selected purposively with an objective to assess the profile of HZ associated with co-morbid condition. Prior to conduct the study ethical clearance was taken from Ethical Committee of CMH Dhaka. Data were collected through face-to-face interview with the help of pretested semi-structured questionnaire and checklist. Informed written consent was taken from all the respondents and neither any intervention nor any invasive procedure was undertaken. The questionnaire included the sociodemographic, HZ related information and details about the co-morbidities related to HZ. Data processing and analyses were done using Statistical Package for Social Sciences (SPSS) software.

Results

Among 130 HZ patients, the majority (69.2%) were males. The majority (48.5%) of the patients were in the age group >50 years, 33.1% belonged to the age group 41-50 years and their mean age (±SD) was 53.5±9.8 years. Of all, 87.7% were from armed forces personnel which was followed by house wife (8.5%) (Table-I). The majority (60%) gave the history of chicken pox and common site of involvement were chest (right 33.1% and left 48.5 %,) and upper back (right 30.8% and left 43.1%) and upper right arm 33.1% (Table-II). Out of 130 patients about 66.9% patients gave the history of having co-morbid condition like Diabetes 30.8%, Stroke 9.2%, Hypertension 2.3%, myocardial infarction 3.8%, Peptic ulcer disease 10.0%, malignancy 2.3%, tuberculosis 2.3%, history of radiotherapy 2.3%, and irritable bowel syndrome 2.3% (Table-III).

Table-I: Socio-demographic characteristics of the study patients (n=130)

Characteristics	Frequency (%)
Sex	
Male	90(69.2)
Female	40(30.8)
Age in years	
≤ 20	2(1.5)
21-30	9(6.9)
31-40	13(10)
41-50	43(33.1)
>50	63(48.5)
Mean age ±SD = 53.45±9.77	
Occupational status	
Armed forces personnel	114(87.7)
House wife	11(8.5)
Student	3(2.3)
Messenger	1(0.8)
Cook	1(0.8)

Table-II: Distribution of the patients by clinical characteristics (n=130)

Characteristics	Frequency (%)
History of chicken pox	
Yes	78 (60)
No	52 (40)
Site of involvement	
Chest (Left side)	63 (48.5)
Chest (right side)	43 (33.1)
Forehead (left side)	15 (11.5)
Forehead (right side)	11 (8.5)
Nose (Left side)	13 (10.0)
Neck (right side)	9 (6.9)
Forearm (right)	12 (9.2)
Upper back (right side)	40 (30.8)
Upper back (left side)	56 (43.1)
Lower back (right side)	31 (23.0)
Lower back (left side)	19 (14.6)
Scalp (right side)	5 (3.8)
Upper arm (right)	43 (33.1)
shoulder (left)	6 (4.6)
shoulder (right)	13 (10.0)
Buttock and thigh (right side)	11 (8.5)

Table-III: Distribution of the patients of herpes zoster by co-morbidities (n=130)

Co-morbidities	Frequency (%)
History of co-morbidity	
Yes	87 (66.9)
No	43 (33.1)
Co-morbid conditions	
Diabetes	40 (30.8)
Stroke	12 (9.2)
Hypertension	3 (2.3)
Myocardial infarction	5 (3.8)
Malignancy	1 (2.3)
Tuberculosis	1 (2.3)
Radiotherapy	1 (2.3)
Peptic ulcer disease	13 (10.0)
Irritable bowel syndrome	1 (2.3)

Discussion

We conducted this single centered cross sectional study to assess the profile of HZ patients associated with co-morbid condition. We took the diagnosed case of HZ patients utilizing standard case definition. Major co-morbidities identified include diabetes, peptic ulcer disease, stroke, myocardial infarction. The study results will helps to take comprehensive preventive measures against HZ.

We revealed that male (69.2%) were more affected with HZ than female which is consistent with the findings of Oxman MN et al[2] but

dissimilar with the findings of Esteban-Vasallo MD et al and Breuer J et al.[4,11] which is may be due to the fact that majority of the respondents in our study were from serving armed forces personnel. Our study revealed that the majority (48.5%) of the patients were in the age group >50 years, and 33.1% belonged to the age group 41-50 years and 30.8% of the respondents had diabetes as co-morbidity. According to the demographic profile of Bangladesh, the majority (40.07%) of the population belong to the age group of 25–54 years, and 6.42% belong to the age group >65 years[19]. Though the majority of patients belonged to the middle age group, but in our study the majority patients were advanced age group (>51 years) which is consistent with the study conducted by Ke CC et al., who conducted a case-control study from 2005 to 2011 in Taiwan which included 25, 345 newly diagnosed herpes zoster patients as case in a 1:4 ratio with control. They revealed that the highest rate in patients >70 years old and the lowest rate in those <30 years old. Both male and female diabetic patients appeared to have an increased risk of developing herpes zoster compared to those without diabetes respectively. They also revealed that patients with DM were associated with a 24% increase in the risk of HZ as compared to those without diabetes (OR = 1.24, 95% CI = 1.19–1.28, p<0.001). They found that diabetic patients co-morbid with coronary artery disease (CAD) alone had a significantly higher risk of developing HZ than patients without CAD (21.2% vs. 18.5%, adjusted OR = 1.21, 95% CI = 1.12–1.31, p<0.001). Regarding the combination of complications associated with the risk of HZ, diabetic patients co-morbid with both CAD and microvascular diseases had the highest risk (OR = 1.32, 95% CI = 1.12–1.55, p<0.001), as compared to those without CAD or microvascular diseases[20]. Naveen KN et al. found in their study that the majority of the patients were in the third decade which is not similar to our study[3]. By occupation, lion shareholders were service holders (87.7%). As the study was conducted at CMH Dhaka where only the entitled serving and retired armed forces personnel including their family members get the treatment so it is obvious that the majority of the respondents should be the service holders. In regards to the distribution of the rash of HZ, we found common site were at the chest which is consistent with the findings of Weinberg JM[10].

In regards to the co-morbidities, the majority (30.8%) of the respondents had diabetes mellitus which was followed by peptic ulcer disease (10.0%) and stroke (9.2%). These findings were almost similar to the findings of Guignard AP et al, Struijs JN et al and Hansson et al[8,9,21].

Conclusion

Based on the study findings, majority of the herpes zoster patients gave the history of having co-morbid conditions. Among the herpes zoster patients, diabetes was the highest, next was peptic ulcer disease, stroke, myocardial infarction, malignancy, tuberculosis, hypertension and irritable bowel syndrome. If herpes zoster is an early manifestation of undiagnosed co-morbid condition, patients should undergo testing for undiagnosed disease when they present with herpes zoster.

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