

Frequency of undiagnosed diabetes mellitus in patient with herpes zoster

Deepa Mohan Lal*, Ajmal Rashid**, Muhammad Irfan Anwar*

* Department of Dermatology, PNS Shifa Hospital, Karachi

** Department of Dermatology, CMH, Sialkot Cantt

Abstract *Objective* To determine frequency of undiagnosed diabetes mellitus in patients with herpes zoster. (HZ).

Methods This cross-sectional study was performed at PNS Shifa hospital, Karachi from June, 2013 to December, 2013. A total of 89 patients suffering from HZ from age 40-70 years were included in this study after taking informed consent. All patients underwent fasting blood sugar evaluation from hospital laboratory.

Results 34 (38.2%) patients were of 40-55 years of age while 55 (61.8%) were of 56-70 year age group. Mean age was 56.93 ± 8.24 years, 48 (53.9) were male and 41 (46.1%) were females while undiagnosed diabetes mellitus in patients with HZ occurred in 36 (40.5%) while 53 (59.5%) had no findings of the morbidity.

Conclusion Frequency of undiagnosed diabetes mellitus is higher among patients with herpes zoster. So, it is recommended that every patient who present with HZ, should be evaluated for diabetes mellitus.

Keywords

Diabetes mellitus, herpes zoster.

Introduction

Herpes zoster (HZ) is an acute vesicular eruption due to reactivation of varicella-zoster virus (VZV) that lies dormant in the spinal and cranial sensory ganglia following a primary infection with varicella (chickenpox), usually during childhood.¹ Risk factors for HZ include older age, glucocorticoid use, immunosuppressive therapy, malignancies and several comorbid medical conditions like diabetes. The risk of HZ is about 20% especially in elderly.² Immune dysfunction in certain diseases considered a

potent cause for HZ. In patients with impaired cell-mediated immunity, both the incidence and severity of HZ are increased.³

Individual with diabetes mellitus have greater frequency and severity of infections due to dysfunction cellular immunity.^{4,5} There is significant association between HZ and undetected diabetes mellitus and known type II diabetes mellitus cases are also associated with an increased risk of HZ (OR=1.53; 95% CI: 1.44-1.62)⁶ while data also show that there is no correlation between these two entities.⁷

The rationale of this study was to determine the frequency of undiagnosed diabetes mellitus in patients of HZ to make earlier diagnosis of diabetes mellitus possible so that proper

Address for correspondence

Dr. Muhammad Irfan Anwar
Department of Dermatology
PNS SHIFA, DHA-II, Karachi Cantt
Email: doctorirfananwar@gmail.com

management can be started on time and complications be avoided.

Methods

This cross-sectional study was conducted in PNS Shifa Hospital, Karachi from June 2013 to December, 2013. Sample size of 89 patients was calculated using program OpenEpi (version 2) with 95% confidence interval and absolute precision of 10%. All male and female patients of age between 40 to 70 years that visited dermatology department in hospital with herpes zoster were included. While patients with past history of diabetes mellitus, known immunosuppressive disorders (HIV infections, chemotherapy, transplantation, neoplastic disorders) and those receiving drugs that increase blood glucose level (corticosteroids, beta blockers, thyroid hormones and thiazides) were excluded from the study. Written permission from the ethical committee of the hospital was taken before starting the study.

After informed consent, all the patients fulfilling the inclusion criteria with clinical diagnosis of HZ were given treatment for 1 week and then fasting blood glucose was measured. Fasting blood sugar was performed by chemistry analyzer (Selectra XL®) in hospital laboratory. To avoid bias, single laboratory technician performed the test and investigators themselves looked after the procedure. To overcome stress-induced hyperglycemia, fasting blood glucose was taken after healing of vesicular eruption that is after one week of antiviral therapy to avoid false positive result.

Data analysis was computer based with the use of SPSS 16. Quantitative variables like age and duration of illness were calculated by taking means and standard deviation. Frequency and percentage was calculated for gender and undiagnosed diabetes mellitus. Stratification

Table 1 Frequency of undiagnosed diabetes mellitus in patients with herpes zoster (n=89)

	Undiagnosed diabetes	N (%)
Yes		36 (40.4)
No		53 (59.6)

Table 2 Stratification for age (n=36)

Age (years)	Undiagnosed Diabetes	
	Yes	No
40-55	22 (61.1%)	14 (38.9%)
56-70	14 (38.9%)	22 (61.1%)

P=0.05

Table 3 Stratification of gender distribution (n=36)

Gender	Undiagnosed Diabetes	
	Yes	No
Male	17 (47.2%)	19 (52.8%)
Female	19 (52.8%)	17 (47.2%)

P=0.05

with respect to age, gender and duration of illness, was done. Post-stratification chi-square test was applied. $P \leq 0.05$ was taken as significant.

Results

Age distribution of the patients showed that 34 (38.2%) were between 40-55 years of age while 55 (61.8%) were between 56-70 years and mean age was calculated 56.93 ± 8.24 years. There were 48 (53.9%) males and 41 (46.1%) females. Frequency of undiagnosed diabetes mellitus in patients with herpes zoster was found to be 40.4% (n=36) while 53 (59.6%) had no findings of the morbidity (**Table 1**). Stratification for age was done in **Table 2**, where out of 36 cases of undiagnosed diabetes, 22 (61.1%) were between 40-55 years and 14 (38.9%) were between 56-70 years, $p = 0.05$. Stratification for gender showed that out of 36 cases of undiagnosed diabetes, 17 (47.2%) were male and 19 (52.8%) were female, $p = 0.63$, **Table 3**.

Discussion

Herpes zoster (HZ) is reactivation of latent varicella-zoster virus that involves dermatomes. Aging and immunosuppressed states are among the main risk factors. Some investigations showed that HZ is more common in diabetic patients than in normal population. Diabetes mellitus (DM) is often accompanied by impaired cell-mediated immunity and previous studies have shown that the DM patients have infections more often than nondiabetic individuals.⁸ The loss of cell-mediated immunity probably correlates with the duration of DM and impaired glycemic control.⁹ Therefore, DM patients, particularly those with long-standing disease and poor glycemic control, are expected to have an increased risk of HZ.^{10,11} The current study determined the frequency of undiagnosed DM in patients of HZ to make earlier diagnosis of diabetes mellitus possible.

In our study, 34 (38.2%) patients belonged to 40-55 years of age while 55 (61.8%) were between 56-70 years with mean age of 56.93±8.24 years; 48 (53.9%) were male and 41 (46.1%) were females. Undiagnosed DM in patients with HZ was detected in 36 (40.4%) patients while 53 (59.5%) had no findings of the morbidity. The findings of our study regarding frequency of undiagnosed DM is in accordance with an Indian study, which determined that 35.9% of patients with HZ and 19.7% of the control group had DM. There was significant association between HZ and undiagnosed DM (OR=2.28, 95% CI: 1.28-4.06).⁵ In another study it was found that among 140 patients with HZ, 13.5% of patients had DM, which is significantly higher than general incidence of 2%. While on stratification with regards to age of the patients, over 50 years old, the incidence goes up to 17%.¹¹ In Cerny's study¹² patients with recurrent HZ were evaluated. Three of the patients had DM.¹² In 31 cases of HZ with

neurological complications; smoking with diabetes was the putative risk factors in 53%.¹³

Yet another study indicated that type 2 diabetes mellitus is associated with an increased risk of HZ (OR=1.53; 95% CI: 1.44-1.62).¹⁴ A local study¹⁵ determined the frequency and pattern of HZ at Liaquat University Hospital, Hyderabad and recorded DM being the most common systemic diseases seen among others in association with HZ.

Conclusion

The frequency of undiagnosed diabetes mellitus is higher among patients with herpes zoster. So, it is recommended that every patient presenting with herpes zoster, should be investigated for diabetes mellitus. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

References

1. Shapiro M, Kvern B, Watson P *et al.* Update on herpes zoster vaccination: a family practitioner's guide. *Can Fam Physician.* 2011;**57**:1127-31.
2. Giallorete LE, Merito M, Pezzotti P *et al.* Epidemiology and economic burden of herpes zoster and postherpetic neuralgia in Italy: a retrospective population-based study. *BMC Infect Dis.* 2010;**10**:230.
3. McDonald JR, Zeringue AL, Caplan L *et al.* Herpes zoster risk factors in a national cohort of veterans with rheumatoid arthritis. *Clin Infect Dis.* 2009;**48**:1364-71.
4. American Diabetic Association. Standards of medical care in diabetes. *Diabetes Care.* 2011;**34**:S11.
5. Nassaji-Zavareh M, Taheri R, Ghorbani R, Aminian M. Undiagnosed diabetes mellitus in patients with herpes zoster. *Indian J Dermatol.* 2008;**53**:119-21.
6. Heymann AD. Diabetes as a risk factor for herpes zoster infection: results of a population-based study in Israel. *Infection.* 2008;**36**:226-30.
7. Ragozzino MW, Melton LJ, Kurland LT. Herpes zoster and diabetes mellitus: an

- epidemiological investigation. *Chronic Dis*. 1983;**36**:501-5.
8. Geerlings S, Hoepelman A. Immune dysfunction in patients with diabetes mellitus (DM). *FEMS Immunol Med Microbiol*. 1999; 26:259-65.
 9. Diabetes Control and Complications Trial Research Group The effect of intensive diabetes therapy on the development and progression of neuropathy. *Ann Intern Med*. 1995;**122**:561-8.
 10. Ragozzino M, Melton L, Kurland L *et al*. Population based study of herpes zoster and its sequelae. *Medicine*. 1982;**61**:310-6.
 11. Brown GR. Herpes zoster: Correlation of age, sex, distribution, neuralgia and associated disorders. *South Med J*. 1976;**69**:576-8.
 12. Cerny Z. Recurrent eruptions of herpes zoster. *Bratisl Lek Listy*. 1999;**100**:515-8.
 13. Guidetti D, Gabbi E, Motti L, Ferrarini G. Neurological complications of herpes zoster. *Ital J Neurol Sci*. 1990;**11**:559-65.
 14. Ragozzino MW, Melton LJ, Kurland LT. Herpes zoster and diabetes mellitus: an epidemiological investigation. *Chronic Dis*. 1983;**36**:501-5.
 15. Bajaj DR, Devrajani BR, Yousfani A *et al*. Frequency and pattern of herpes zoster at Liaquat University Hospital Hyderabad (Six months hospital based descriptive study). *J Liaquat Uni Med Health Sci*. 2009;**8**:113-7.