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ORIGINAL ARTICLE

Assessment of incidence of peripheral diabetic neuropathy in diabetic patients

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ABSTRACT:
Background: Diabetes is fast gaining the status of a potential epidemic in India. The incidence of diabetic neuropathy (DN) in India is not well known. Hence; the present study was undertaken for assessing the incidence of peripheral diabetic neuropathy in diabetic patients. **Materials & methods:** A total of 100 diabetic patients were enrolled in the present study. A case record form of each patient was filled which contained the patients detailed diabetes profile including their age, sex, duration of diabetes, their personal habits smoking, dietary habits, medical history and treatment taken. Any patient with peripheral neuropathy was counselled regarding foot care. Also, based on the results of laboratory investigations and clinical examination of the patient, management was initiated as per institutional guidelines and that of the concerned treating medicine unit. **Results:** Diabetic neuropathy was present in 25 percent of the patients. Mean age of the patients with and without diabetic neuropathy was 46.6 years and 59.4 years respectively. Mean duration of diabetes among patients with and without diabetic neuropathy was 5.6 years and 10.9 years respectively. Mean HbA1c concentration among patients with and without diabetic neuropathy was 8.2% and 10.4% respectively. Age, duration of diabetes, and poor glycemic control were considered to be the risk factors for neuropathy. **Conclusion:** Age, duration of diabetes, and poor glycemic control were considered to be the risk factors for neuropathy.
Key words: Diabetic, Neuropathy.

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INTRODUCTION

Diabetes is fast gaining the status of a potential epidemic in India. Among the various microvascular and macrovascular complications of diabetes, neuropathy is a major health problem responsible for substantial morbidity, increased mortality and impaired quality of life. Several pathogenic processes are involved in the development of diabetes. These range from autoimmune destruction of the β-cells of the pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action. The basis of the abnormalities in carbohydrate, fat, and protein metabolism in diabetes is deficient action of insulin on target tissues. Deficient insulin action results from inadequate insulin secretion and/or diminished tissue responses to insulin at one or more points in the complex pathways of hormone action. Impairment of insulin secretion and defects in insulin action frequently coexist in the same patient, and it is often unclear which abnormality, if either alone, is the primary cause of the hyperglycemia.[1-3]

The incidence of diabetic neuropathy (DN) in India is not well known. The early recognition and appropriate management of neuropathy in the patient with diabetes is important. Treating diabetic neuropathy is a difficult task for the physician and patient. Most of the medicines mentioned in the Medication section do not lead to complete symptom relief. Clinical trials are under way to help find new ways to treat symptoms and delay disease progression.[4-6] Hence; the present study was undertaken for assessing the incidence of peripheral diabetic neuropathy in diabetic patients.

MATERIALS & METHODS

A total of 100 diabetic patients were enrolled in the present study. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the subjects after explaining in detail the entire research protocol. A case record form of each patient was filled which contained the patients detailed diabetes profile including their age, sex, duration of diabetes, their personal habits smoking, dietary habits, medical history and treatment taken. Any patient with peripheral neuropathy was counselled regarding foot care. Also, based on the results of laboratory investigations and clinical examination of the patient, management was initiated as per institutional guidelines and that of the

concerned treating medicine unit. Further investigations and treatment, including pharmacological intervention were not a part of this study. All the results were analyzed by SPSS software. Chi- square test and Mann-Whitney U test were used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

In the present study, diabetic neuropathy was present in 25 percent of the patients. Mean age of the patients with and without diabetic neuropathy was 46.6 years and 59.4 years respectively. Mean duration of diabetes among patients with and without diabetic neuropathy was 5.6 years and 10.9 years respectively. Mean HbA1c concentration among patients with and without diabetic neuropathy was 8.2% and 10.4% respectively. Age, duration of diabetes, and poor glycemic control were considered to be the risk factors for neuropathy.

Table 1: Incidence of diabetic neuropathy

Variable	Number of patients	Percentage of patients
Diabetic neuropathy	25	25

Table 2: Risk factors of diabetic neuropathy

Variable	Diabetic neuropathy present	Diabetic neuropathy absent	p- value
Age (years)	46.6	59.4	0.00 (Significant)
Duration of diabetes (years)	5.6	10.9	0.01 (Significant)
HbA1c (%)	8.2	10.4	0.02 (Significant)

DISCUSSION

Diabetic neuropathy (DN) is a common disorder and is defined as signs and symptoms of peripheral nerve dysfunction in a patient with diabetes mellitus (DM) in whom other causes of peripheral nerve dysfunction have been excluded. There is a higher prevalence of DM in India (4.3%) compared with the West (1%–2%). Probably Asian Indians are more prone for insulin resistance and cardiovascular mortality. The incidence of DN in India is not well known but in a study from South India 19.1% type II diabetic patients had peripheral neuropathy. DN is one of the commonest causes of peripheral neuropathy.[7-9]

In the present study, diabetic neuropathy was present in 25 percent of the patients. Mean age of the patients with and without diabetic neuropathy was 46.6 years and 59.4 years respectively. Oguejiofor OC et al evaluated the effect of duration of diabetes mellitus on peripheral neuropathy using the United Kingdom Screening Test (UKST) Scoring System, Bio-thesiometry and Aesthesiometry, in Nigerian diabetic subjects without current or previous foot ulceration. Long duration of diabetes mellitus and peripheral neuropathy are risk factors for foot complication in Nigerians with diabetes mellitus.[9] Escobar C et al assessed the prevalence of PAD in an elderly population with diabetes. A total of 1462 patients were included. The most frequent cardiovascular risk factor and cardiovascular disease were hypertension (80.37%) and PAD, respectively. The concomitance with other risk factors and cardiovascular diseases was very high. The ABI allowed increasing the diagnosis of PAD.[10]

In the present study, Mean duration of diabetes among patients with and without diabetic neuropathy was 5.6 years and 10.9 years respectively. Mean HbA1c concentration among patients with and without diabetic neuropathy was 8.2% and 10.4% respectively. Age, duration of diabetes, and poor glycemic control were considered to be the risk factors for neuropathy. Banoo S et al determined the bacterial and clinical profile of diabetic foot ulcer using optimal culture techniques and the antimicrobial sensitivity pattern of the isolates. The predominant anaerobic organisms isolated were Peptostreptococcus sp, 10 (45.5%). All the aerobic Gram-negative organisms were sensitive to imipenem (100%). Gram-positive organism was 100% sensitive to vancomycin. Methicillin resistant staphylococcus aureus (MRSA) was seen in 66.7%. All the anaerobes were sensitive to metronidazole, clindamycin, cefoxitin, and penicillin G. Pseudomonas was the most common organism isolated in our study. MRSA was seen in 66.7% of the isolate.[11]

Katulanda P et al assessed the prevalence, patterns and predictors of diabetic peripheral neuropathy in a developing country. The mean age of those with and without DPN was 62.1 ± 10.8 and 55.1 ± 10.8 years respectively. The majority of those with DPN were from rural-areas (75.3%) and earned a monthly income < Sri Lankan Rupees 12,000 (87.6%). In the binary logistic-regression presence of foot ulcers, female gender and smoking were the strongest predictors followed by insulin treatment, diabetic retinopathy, treatment with sulphonylureas, increasing height, rural residence, higher levels of triglycerides and longer duration of DM.[12]

CONCLUSION

DPN is a common and costly disease. Over the past decade, there have been great strides in understanding the underlying pathophysiology and the interplay of metabolic risk factors. Age, duration of diabetes, and

poor glycemic control were considered to be the risk factors for neuropathy.

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