Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Index Copernicus value = 85.10

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of cases of diabetic peripheral neuropathy in type II diabetes mellitus patients

Ashish Gopal[1], Amit Varshney[2]

[1]Associate Professor, Department of General Medicine, Autonomous State Medical College, Firozabad, Uttar Pradesh, India;
[2]Associate Professor, Department of General Medicine, United Institute of Medical Sciences & Research, Prayagraj

ABSTRACT:
Background: The present study was conducted to assess cases of diabetic peripheral neuropathy in type II diabetic patients.
Materials & Methods: 80 type II diabetes patients were subjected to fasting blood sugar, random blood sugar and glycosylated hemoglobin and numbness, ulcerations loss of reflexes were recorded.
Results: Out of 80 patients, males were 48 and 32 were females. 32 (40%) had peripheral neuropathy (PNP). 26 patients had ulcerations and 36 had numbness of limbs. The difference was non- significant (P> 0.05). 26 cases had >10 years of diabetes, 10 had 5-10 years and 4 had 5 years of diabetes. The difference was significant (P<0.05).
Conclusion: Authors found that there was high prevalence of diabetic peripheral neuropathy among type II diabetic patients.
Key words: Diabetes, diabetic peripheral neuropathy, Numbness

Received: October 26, 2019 **Accepted:** November 25, 2019

Corresponding Author: Dr. Amit Varshney, Associate Professor, Department of General Medicine, United Institute of Medical Sciences & Research, Prayagraj, U.P., India

This article may be cited as: Gopal A, Varshney A. Assessment of cases of diabetic peripheral neuropathy in type II diabetes mellitus patients. J Adv Med Dent Scie Res 2019;7(12):260-263.

INTRODUCTION

Diabetes mellitus (DM) is a group of common metabolic disorders that share the phenotype of hyperglycemia, which are caused by a complex interaction of genetics and environmental factors.[1] The prevalence of diabetes is rapidly rising all over the world. It has now become the disease of morbidity and mortality affecting the youth and middle aged people.[2] Type 2 diabetes mellitus has higher prevalence rate all over the world which accounts for more than 90 percent of all diabetes cases., but number of type I diabetes mellitus cases is increasing excessively nowadays. The number of diagnosed diabetic patients is 61.3 million so far and hence also known as the diabetic capital of the world.[3]

Neuropathy is the most common microvascular complications among diabetics that can involve peripheral, central and/or autonomic nervous systems. It can also develop at earlier stages of dysglycemia as in the prediabetics phase.[4] Peripheral neuropathy (PN) is the predominant variety in patients with diabetes whether type 1 or type 2. It manifests as distal symmetrical polyneuropathy (DSPN), also known as diabetic peripheral neuropathy (DPN), causing nerve damage in the extremities particularly the feet, in addition to radiculopathy and mononeuropathy.[5] Clinically, DPN is defined as the presence of symptoms or signs of peripheral nerve dysfunction in people with diabetes after other possible causes have been excluded.[6]

The present study was conducted to assess prevalence of diabetic polyneuropathy in type II diabetics.

MATERIALS & METHODS

The present study was conducted on 80 type II diabetes patients of both genders. The study protocol was approved from institutional committee. All patients were informed regarding the study and written consent was obtained.

Patient information such as name, age, gender etc. was recorded. Investigations such as fasting blood sugar, random blood sugar and glycosylated hemoglobin were conducted in all patients. Physical signs such as numbness, ulcerations loss of reflexes were recorded. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total - 80		
Gender	**Male**	**Female**
Number	48	32

Table I, graph I shows that out of 80 patients, males were 48 and females were 32.

Graph I Distribution of patients

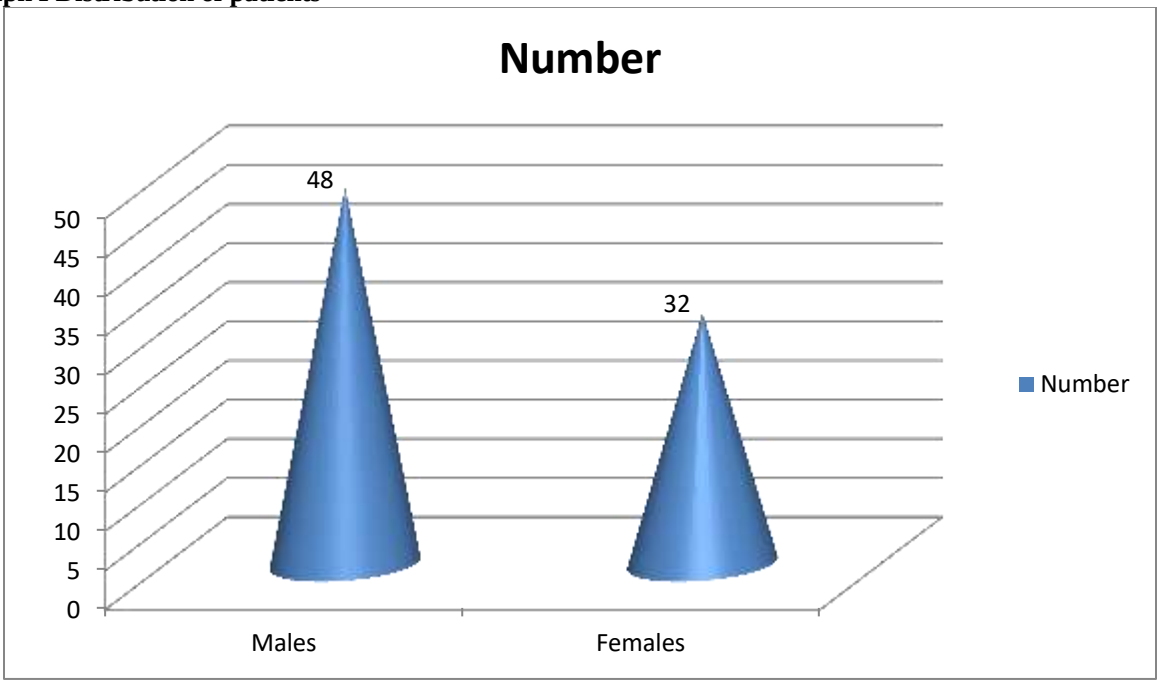


Table II Prevalence of Peripheral neuropathy

Total	Number	Percentage
80	32	40%

Table II shows that out of 80 patients, 32 (40%) had peripheral neuropathy (PNP).

Table III Assessment of clinical symptoms

Clinical Symptoms	Number	P value
Ulcerations	26	0.09
Numbness	36	

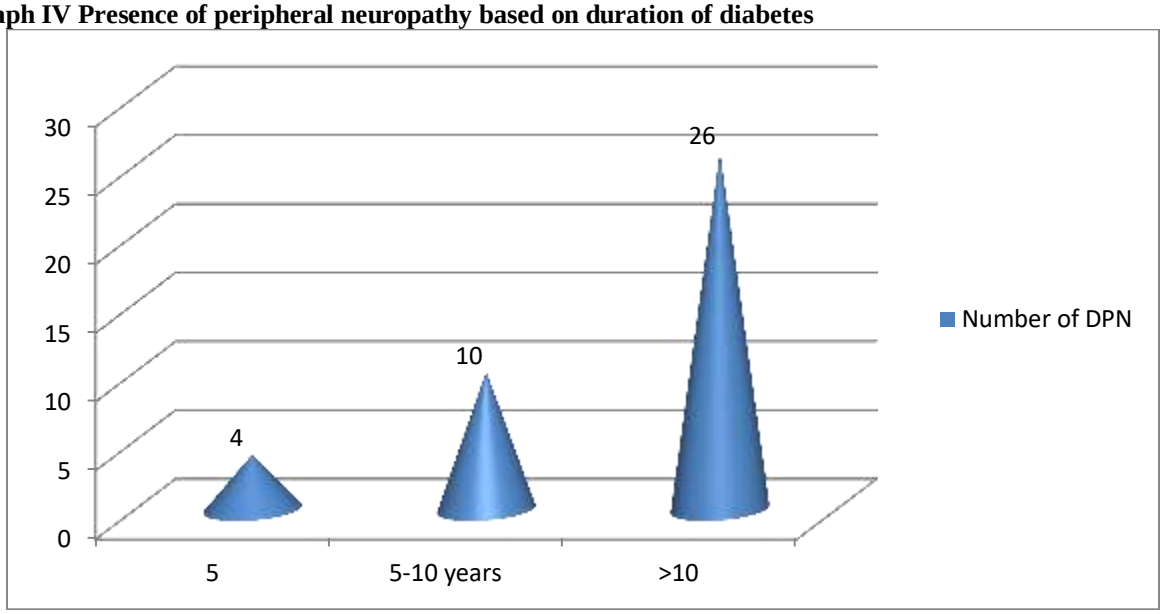
Table III shows that 26 patients had ulcerations and 36 had numbness of limbs. The difference was non- significant (P> 0.05).

Table IV Presence of peripheral neuropathy based on duration of diabetes

Duration (Years)	Number of patients	P value
5	4	0.01
5-10	10	
>10	26	

Table IV, graph II shows that 26 cases had >10 years of diabetes, 10 had 5-10 years and 4 had 5 years of diabetes. The difference was significant (P<0.05).

Graph IV Presence of peripheral neuropathy based on duration of diabetes



DISCUSSION

Diabetes mellitus (DM) is a devastating metabolic disorder that places an economic burden for every country around the world with the global increasing trend.[7] As a cost of urbanization, the overall status of diabetes according to IDF estimates in 2017 showed that there are now 425 million adults with diabetes and 352 million adults with impaired glucose tolerance worldwide.[8]

The two main complications affecting limbs, mainly feet and legs, are diabetic polyneuropathy (DPN) which affects between 30 and 50% of diabetics and diabetic leg and foot ulcers. The lifetime incidence of foot ulcers occurring in DM patients is up to 25%. Diabetic neuropathy is the primary risk factor for the development of diabetic foot ulcers and is implicated in 50–75% of nontraumatic amputations.[9] The present study was conducted to determine diabetic polyneuropathy in type II diabetic patients.

In present study, out of 80 patients, males were 48 and females were 32. We found peripheral neuropathy in 32 (40%) diabetics. Lobo et al[10] among the 50 patients, there were 18 males and 32 females with a mean (SD) age of 56.44 (+10. 82) years. Among them, 29 patients were new to treatment for diabetes. The average random blood sugar (RBS) and glycated hemoglobin (HbA1c) were 249.92 (126.63) mg/dl and 10.532 (10.64) gm% respectively. Only 46% patients had symptoms and 34% had signs of diabetic neuropathy. Pain being the commonest symptom (24%) and loss of vibration sense the most frequent sign (26%) in these patients. Features of diabetic retinopathy and albuminuria were present in 6/50 (12%) and 20/50 (40%) patients respectively. The presence or severity of neuropathic signs or symptoms had no statistically significant correlation to their glycemic control. There was a significant correlation of presence of neuropathy with albuminuria and retinopathy. The study establishes the use of m-TCNS as a simple and good screening tool to detect diabetic neuropathy. Pain and loss of vibration sense were the most common symptom and sign in DN. The severity of neuropathy was mild but had a significant correlation with other microvascular complications.

We found that 26 patients had ulcerations and 36 had numbness of limbs. 26 cases had >10 years of diabetes, 10 had 5-10 years and 4 had 5 years of diabetes. Callaghan et al[11] conducted a study and found that the mean age was 57.2 yrs. A total of 238 (72%) had type 2 and 89 (27.2%) had type 1 DM. The prevalence of peripheral neuropathy was 72.2% of whom 55% were severe, 19% were moderate, and 26% were mild. The

severity of neuropathy increased with the increase in age >40 years and increase in body mass index ($p<0.001$) and duration of diabetes; duration >7 years. DPN when present is mainly irreversible; hence screening and identifying associated potentially modifiable risk factors is very crucial especially for the low-income countries. The main risk factors that are known to be associated with DPN are increasing age, longer duration of diabetes since diagnosis, poor glycemic control, and increased body mass index.

Maheshwari et al[12] found that out of 328 diabetic patients, males were 210 and females were 118. Age group <30 years had 45 males and 18 females, age group 30-45 years had 70 males and 40 females and age>45 years had 95 males and 60 females. 218 patients were vegetarian, 110 were non- vegetarian, 156 patients were smokers and 148 were alcoholic. 190 patients were obese. The difference was statistical significant ($P<0.05$). Common complications were hypertension in 215, visual disturbance in 65, neuropathy in 56, foot ulceration in 34, nephropathy in 58, impotency in 14, and diabetic retinopathy in 75. Study revealed that common complications in type II diabetes mellitus patients were hypertension, visual disturbances, neuropathy, foot ulceration, nephropathy, impotency and diabetic retinopathy.

CONCLUSION

Authors found that there was high prevalence of diabetic peripheral neuropathy among type II diabetic patients.

REFERENCES

1. Hirschfeld G, von Glischinski M, Blankenburg M, et al. Screening for peripheral neuropathies in children with diabetes: A systematic review," Pediatrics. 2014 2013-3645.
2. Young MJ, Boulton AJ, MacLeod AF, et al. A multicentre study of the prevalence of diabetic peripheral neuropathy in the United Kingdom hospital clinic population. Diabetologia. 1993;36:150-4.
3. Mulder G, Tallis A, Marshall V. Treatment of non-healing diabetic foot ulcers with a platelet-derived growth factor gene-activated matrix (GAM501): results of a phase 1/2 trial. Wound Repair Regen. 2009;17:772-9.
4. Bhatia A, Bains SK. Platelet rich Plasma. Journal of Stomatognathic Sciences. 2017; 7 (1): 22-25.
5. Ajlouni K, Khader YS, Batieha A, Ajlouni H, El-Khateeb M. An increase in prevalence of diabetes mellitus in Jordan over 10 years. J Diabetes Complicat 2008;22:317–24.
6. Khader Y, Batieha A, Ajlouni H, El-Khateeb M, Ajlouni K. Obesity in Jordan: prevalence, associated factors, comorbidities, and change in prevalence over ten years. Metab Syndr Relat Disord. 2008;6(2):113–20.
7. Tesfaye S, Selvarajah D. Advances in the epidemiology, pathogenesis and management of diabetic peripheral neuropathy. Diabetes Metab Res Rev. 2012;28(Suppl 1):8–14.
8. Boulton AJ, Gries FA, Jervell JA. Guidelines for the diagnosis and outpatient management of diabetic peripheral neuropathy. Diabet Med 1998;15:508–514.
9. Papanas N, Ziegler D. Prediabetic neuropathy: does it exist? Curr Diabetes Rep. 2012;12:376–83.
10. Lobo AC, George P, Fernandes K. An assessment of the patterns and severity of diabetic neuropathy using the modified–Toronto Clinical Neuropathy Score in recently detected diabetics. International Journal of Biomedical Research. 2017;8(05):266-70.
11. Callaghan BC, Cheng HT, Stables CL, Andrea L, Smith AL, Feldman EL. Diabetic neuropathy: clinical manifestations and current treatments. Lancet Neurol. 2012;11:521–34.
12. Maheshwari A. Assessment of complications in type II diabetes mellitus patients- A clinical study. J Adv Med Dent Scie Res 2016;4(1):148-151.