

Original Research

Incidence of peripheral neuropathy among diabetic patients

¹Sanjay Venketrao Padalwar, ²Palshikar Anil Ramrao

¹Associate Professor, Department of General Medicine, Rama Medical College Hospital and Research Centre, Pilukhawa, Hapur, Uttar Pradesh, India;

²Associate Professor, Department of Radio- diagnosis, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India

ABSTRACT:

Background: The present study was conducted for evaluating incidence of peripheral neuropathy among diabetic patients. **Materials & methods:** A total of 100 Patients of either sex diagnosed with type 2 diabetes mellitus of any duration, established as per American Diabetes Association (ADA) guidelines (random blood sugar >200 mg/dL or fasting blood sugar >126 mg/dL) & willing to participate were enrolled. 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. Incidence of diabetic peripheral neuropathy was assessed. Each patient was assessed for peripheral neuropathy using a neuropathy symptom score (NSS) questionnaire and physical examination. **Results:** A total of 100 patients were evaluated. Mean age of the patients was 43.8 years. Diabetic neuropathy was seen in 19 percent of the patients. Patients with peripheral neuropathy were associated with significantly higher duration of diabetes. **Conclusion:** Patients with longer duration of diabetes are predisposed for development of peripheral neuropathy.

Key words: Diabetic, Neuropathy

Corresponding author: Palshikar Anil Ramrao, Associate Professor, Department of Radio- diagnosis, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India

This article may be cited as: Padalwar SV, Ramrao PA. Incidence of peripheral neuropathy among diabetic patients. J Adv Med Dent Sci Res 2016;4(2):286-288.

INTRODUCTION

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Metabolic abnormalities in carbohydrates, lipids, and proteins result from the importance of insulin as an anabolic hormone. Low levels of insulin to achieve adequate response and/or insulin resistance of target tissues, mainly skeletal muscles, adipose tissue, and to a lesser extent, liver, at the level of insulin receptors, signal transduction system, and/or effector enzymes or genes are responsible for these metabolic abnormalities.¹

The severity of symptoms is due to the type and duration of diabetes. Some of the diabetes patients are asymptomatic especially those with type 2 diabetes during the early years of the disease, others with marked hyperglycemia and especially in children with absolute insulin deficiency may suffer from polyuria, polydipsia, polyphagia, weight loss, and blurred vision. Uncontrolled diabetes may lead to stupor, coma and if not treated death, due to ketoacidosis or rare from nonketotic hyperosmolar syndrome.¹⁻³

Long-term complications of diabetes include retinopathy with potential loss of vision; nephropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial, and cerebrovascular disease. Hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes.³⁻⁵ Hence; the present study was conducted for evaluating incidence of peripheral neuropathy among diabetic patients.

MATERIALS & METHODS

A total of 100 Patients of either sex diagnosed with type 2 diabetes mellitus of any duration, established as per American Diabetes Association (ADA) guidelines (random blood sugar >200 mg/dL or fasting blood sugar >126 mg/dL) & willing to participate were enrolled. 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. Incidence of diabetic peripheral neuropathy was assessed. Each patient was assessed for peripheral neuropathy using a neuropathy symptom score (NSS) questionnaire and physical examination. 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

A total of 100 patients were evaluated. Mean age of the patients was 43.8 years. Diabetic neuropathy was seen in 19 percent of the patients. Patients with peripheral neuropathy were associated with significantly higher duration of diabetes.

Table 1: Incidence of peripheral neuropathy

Neuropathy	Number	Percentage
Present	19	19
Absent	81	81
Total	100	100

Table 2: Correlation of peripheral neuropathy with duration of diabetes

Neuropathy	Mean duration of diabetes	p-value
Present	13.8 years	0.001 (Significant)
Absent	8.1 years	

DISCUSSION

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. The incidence of diabetic neuropathy (DN) in India is not well known. Data from a multicentric study from India revealed that the prevalence of neuropathy was 15%, peripheral arterial disease (PAD) 5% and infections 7.6%. In a study of 1000 consecutive type 2 diabetes mellitus patients attending a diabetes centre in South India, the prevalence of neuropathy was 19.1%.⁶⁻⁹

A total of 100 patients were evaluated. Mean age of the patients was 43.8 years. Diabetic neuropathy was seen in 19 percent of the patients. Patients with peripheral neuropathy were associated with significantly higher duration of diabetes. Sobhani S, Asayesh H, Sharifi F, Djalalinia S, Baradaran HR, Arzaghi SM et al (2014) reviewed the prevalence of DPN among patients with type 1 and 2 DM in Iran. Using PubMed and NLM Gateway (for MEDLINE), Institute of Scientific Information (ISI), and SCOPUS as the main international electronic data sources, and Iranmedex, Irandoc, and Scientific Information Database (SID), as the main domestic databases with systematic search capability, we systematically searched surveys, papers, and reports on the prevalence of DPN (between January 1991 to

February 2013). They found 304 records; from them a total of 21 studies comprising 5540 diabetic patients were included. The prevalence of diabetic neuropathy (reported) from 16% to 87%. In overall the prevalence of DPN estimated 53% by using random-effect. This study showed that the prevalence of DPN seems very high among the population with diabetes in Iran and more than half of the patients with DM has any type of diabetic neuropathy.¹⁰Islam SM, Islam MS, Rawal LB, Mainuddin A, Wahiduzzaman M, Niessen LW (2015) determined the clinical status of patients with DN and its associated factors in Bangladesh. A cross-sectional study was conducted among 130 DN patients. They collected data using structured questionnaires, anthropometric, biochemical, and clinical measurements. The mean age of the patients was 56.50 ± 14.2 years. The mean duration of hypertension, diabetes, and DN was 7.32 ± 5.42, 10.08 ± 6.8, and 3.24 ± 3.67 years, respectively. The mean HbA1c was 10.07 ± 3.27%, and mean serum creatinine 2.91 ± 1.98 mg/dl. The correlation coefficient matrix suggests relationships between many of the patients' characteristics and clinical outcomes. The results showed that among the study participants DN develops earlier with a shorter duration of hypertension and diabetes, providing a strong case for promoting effective strategies for optimum management of diabetes and hypertension in the clinics.¹¹Bhamre SD, Kailash KM, Sadiwala CA (2015) studied the clinical profile of diabetic foot patients, and associated risk factors. A descriptive study, including diabetic foot patients admitted in surgery department at tertiary health care centre was carried out over a period of 2 years. Majority of patients were males. Highest number of patients was in 61-70 years age group. Use of tobacco and trauma were common causative factor. Diabetic foot is common in elderly male diabetics, tobacco users, with peripheral neuropathy, often caused due to minor trauma which patient ignores.¹²

CONCLUSION

Patients with longer duration of diabetes are predisposed for development of peripheral neuropathy.

REFERENCES

1. Kharroubi AT, Darwish HM. Diabetes mellitus: The epidemic of the century. *World Journal of Diabetes.* 2015;6(6):850-867.
2. American Diabetes Association. Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care.* 2010;33(Suppl 1):S62-S69.
3. Boulton J, Kempler P, Ametov A, Ziegler D. Whether pathogenetic treatments for diabetic polyneuropathy? *Diabetes Metab Res Rev* 2013; 29:327-33
4. Callaghan BC, Cheng HT, Stables CL, Smith AL, Feldman EL. Diabetic neuropathy: clinical manifestations and current treatments. *Lancet Neurol* 2012; 11:521-34

5. Guariguata L. By the numbers: new estimates from the IDF Diabetes Atlas Update for 2012. *Diabetes Res Clin Pract* 2012; 98: 524–525.
6. IDF Diabetes Atlas, 4th edition. International Diabetes Federation, 2009. 2010; 375:408–18
7. Mohan V, Pradeepa R. Epidemiology of diabetes in different regions of India. *Health Administrator* 2009; 22:1–18.
8. Rani PK, Raman R, Rachapalli SR, et al. Prevalence and risk factors for severity of diabetic neuropathy in type 2 diabetes mellitus. *Indian J Med Sci* 2010; 64: 51–7.
9. Pradeepa R, Rema M, Vignesh J, et al. Prevalence and risk factors for diabetic neuropathy in an urban south Indian population: the Chennai Urban Rural Epidemiology Study (CURES-55). *Diabet Med* 2008; 25: 407–12.
10. Sobhani S, Asayesh H, Sharifi F, Djalalinia S, Baradaran HR, Arzaghi SM et al. Prevalence of diabetic peripheral neuropathy in Iran: a systematic review and meta-analysis. *Journal of Diabetes & Metabolic Disorders* 2014, 13:97.
11. Islam SM, Islam MS, Rawal LB, Mainuddin A, Wahiduzzaman M, Niessen LW. Clinical profile of patients with diabetic nephropathy in a tertiary level hospital in Dhaka, Bangladesh. *Arch Med Health Sci* 2015;3:191-7.
12. Bhamre SD, Kailash KM, Sadiwala CA. A Clinical Profile of Diabetic Foot Patients at Tertiary Health Care Institute, Nashik. *MVP Journal of Medical Sciences*. 2015; 2(1): 49–52.