Original Research Article

A study of clinical profile of peripheral neuropathy in Type 2 diabetes mellitus at RIMS Raichur

Chandrashekar[1], Arun M[2*]

[1,2]Assistant Professor, Department of General Medicine, Raichur Institute of Medical Sciences Raichur INDIA.
Email: arunmaski26@gmail.com

Abstract

Background and Objectives: Diabetic Neuropathy is a either subclinical or clinically evident disorder of nerves that occurs in both peripheral and the autonomic nervous systems. Peripheral Neuropathies are among most common complication of diabetes mellitus (DM) affecting up to 50% of patients with Type 1 and Type 2 diabetes. In type 1 diabetes, distal polyneuropathy becomes apparent after several years of diagnosis; in contrast, type 2 diabetes patients may have neuropathy at the time of diagnosis[1] **Methods:** This study was undertaken to study clinical profile of peripheral neuropathy in diabetes mellitus and to correlate it with various parameters. In this study total 125 diabetic patients were studied. The detailed clinical examination including sensory system examination was done and different clinical parameters were studied in them. **Results:** The most frequent complaints detected in the present study were tingling and numbness. The most commonly impairments detected were impaired vibratory sense, impaired sensation and loss of ankle jerk. Severity of peripheral neuropathy increases with age. It was also observed that, the severity of peripheral neuropathy increases with duration of diabetes mellitus. Diabetics can minimize their risk of developing nerve damage by keeping their blood sugar levels as close to normal range as possible the severity of peripheral neuropathy was found to be directly related with the levels of blood sugar
Key Word: Type 2 Diabetes mellitus, Peripheral neuropathy

[*]**Address for Correspondence:**
Dr. Arun M, Assistant Professor, Department of General Medicine, Raichur Institute Of Medical Sciences Raichur, INDIA.
Email: arunmaski26@gmail.com
Received Date: 12/06/2018 Revised Date: 26/07/2018 Accepted Date: 20/08/2018
DOI: https://doi.org/10.26611/1021723

Access this article online

Quick Response Code:

Website: www.medpulse.in

Accessed Date: 16 August 2018

INTRODUCTION

Diabetic peripheral neuropathy (DPN) is the most common and chronic complication of diabetes leading to great mortality and morbidity[2]. It covers a wide range of abnormalities involving both peripheral and autonomic nerve functions. Peripheral neuropathy is damage to one or more of peripheral nerves. Peripheral neuropathy can occur due to different conditions. Diabetes is one of the most frequent causes of chronic peripheral neuropathy. The symptoms of peripheral neuropathy may depend on the type of peripheral nerve involved (sensory, motor or autonomic nerves). It may affect one type of nerve, or a combination of all three types of nerves. Distal symmetrical sensorimotor neuropathy is the most common form of DPN and it may be present even at the time of diagnosis of diabetes[2]. The initial pathogenetic mechanism for developing DPN is metabolic which is completely reversible by good glycemic control with insulin therapy. The later stages involves the ischemic process which is irreversible and ultimately leads to devastating complication like loss of ankle jerk and loss of sensations and thereby development of foot ulcers and diabetic foot leading to amputation of the foot. Hence, there is a need for earlier diagnosis, evaluation, regular examinations and proper patient education. When we take diabetes as a risk factor, about 50% of people who have had diabetes for 25 years have peripheral neuropathy. Around 70% of all people with diabetes may eventually develop peripheral neuropathy, although not all suffer pain. Yet this damage is not inevitable. Studies have shown that people with diabetes may reduce their risk of developing nerve damage by controlling their blood glucose levels as close to normal range as possible[3].

How to cite this article: Chandrashekar, Arun M. A study of clinical profile of peripheral neuropathy in Type 2 diabetes mellitus at RIMS Raichur. *MedPulse International Journal of Medicine.* August 2018; 7(2): 47-50. https://www.medpulse.in/Medicine/

MATERIALS AND METHODS

Diabetic patients attending OPD / IPD of Department of General Medicine RIMS age between 20-70 years.

Parameters recorded:

1. Patient was subjected to detailed clinical history (signs and symptoms)
2. Detailed history of diabetes (Duration, Treatment, Medication and Adherence to Treatment)
3. Vitals: Blood Pressure, Pulse rate, height, weight, BMI
4. Clinical examination for touch, pain, pressure (monofilament), Vibration (Tuning fork), reflexes (knee hammer)
5. Laboratory investigations: complete blood picture, RBS, Blood Urea, Serum creatinine

Inclusion criteria: Diabetic patients attending OPD / IPD Department of General Medicine age between 20-70 years.

Exclusion criteria: Other causes of peripheral neuropathy (familial, nutritional, heavy metals, alcohol, leprosy), patients not willing for participation in the study

Procedure: Diabetic patients attending OPD / IPD Department of General Medicine age between 20-70 years willing to participate in study informed/written consent were taken. Patients were subjected to detailed clinical history, detailed diabetes history and clinical examination, the findings were noted. The severity of diabetic peripheral neuropathy was graded using NSS, NDS Score.

RESULTS

Table 1: Age Wise Distribution of Study Subjects

Age group	Males (n= 75)	Females (n= 50)	Total (n= 125)
< 30 yrs	2	0	2
31- 40 yrs	9	9	18
41- 50 yrs	25	13	38
51- 60 yrs	25	15	40
61- 70 yrs	11	11	22
> 70 yrs	3	2	5

Table 2: Age Wise Prevalence of Peripheral Neuropathy among Study Subjects

Age group	Subjects (n=125)	Males with peripheral neuropathy (n=68)	Females with peripheral neuropathy (n=41)	Total peripheral neuropathy subjects (n=109)	Incidence (%)
< 30 yrs	2	0	0	0	0
31- 40 yrs	18	4	5	9	50
41- 50 yrs	38	25	9	34	89.47
51- 60 yrs	40	25	14	39	97.5
61- 70 yrs	22	11	11	22	100
> 70 yrs	5	3	2	5	100

Among study subjects prevalence of neuropathy was 87% with incidence of DPN being higher in middle aged and elderly diabetic. Among the affected 54% of males had DPN compared to 32% in female diabetics.

Table 3: Prevalence of Peripheral Neuropathy across Years of Diabetes Mellitus

Duration of Diabetes	Total subjects (n=125)	Males with peripheral neuropathy (n=68)	Females with peripheral neuropathy (n=41)	Total peripheral neuropathy cases (n=109)	Incidence (%)
1 yr	7	1	1	2	28.5
2 yr	6	2	0	2	33.3
3 yrs	15	4	6	10	66.6
4 yrs	13	9	3	12	92.3
5 yrs	15	9	5	14	93.3
6 yrs	12	9	3	12	100
> 6 yrs	57	34	23	57	100

Prevalence of DPN appeared to be increasing with duration of diabetes

Table 4: Prevalence of Peripheral Neuropathy across Blood Sugar Levels

Blood sugar levels (mg %)	Total subjects (n=125)	Males with peripheral neuropathy (n=68)	Females with peripheral neuropathy (n= 41)	Total peripheral neuropathy cases (n=109)	Incidence (%)
< 140	1	0	0	0	0
141- 180	8	0	1	1	12.5
181- 220	21	7	7	14	66.6
221- 260	27	17	10	27	100
261- 300	38	27	10	37	97.3
> 300	30	17	13	30	100

DISCUSSION

In this study, out of 125 cases studied, 75 were males and 50 were females. The age of patient varies from 21 to 70 years; more patients were in age group of 51 to 70 years.

Age incidence: The diabetic neuropathy is commonest after 5th decade of life. In our study middle age and elderly diabetics were more affected. Bahl *et al.*[4] demonstrated that middle age/elderly diabetic were generally more affected. Shaw *et al.*[5] had showed incidence of peripheral neuropathy was 17.6% between age group of 20-40 years and 56.8% between 40-70 years. Kasturi *et al.*[6] did study on 100 patients and found incidence of peripheral neuropathy as 24% in age group 21-40 years and 58% in 40 to 70 age group. Thus it is common that peripheral neuropathy in general occurs commonly in middle age and elderly diabetics.

Clinical incidence: In the present study, incidence of peripheral neuropathy was found to be 50% in younger diabetics as compared to more than 90% in middle aged and elderly diabetics on clinical examination, the figure tallies with uruvilla *et al.*[7]. The variability may depend upon selection of cases. High age group, longer duration of diabetes is the predictor of severity of disease.

Blood Sugar levels: The frequency, severity and progression of neuropathy are related to the degree and duration of hyperglycemia. Several studies (including DCCT- diabetes control and complication trial) have suggested that manifestations of neuropathy may be stabilized or improved by improved glucose control[8].Maximum patients of peripheral blood sugar levels of fasting 200 to 250 and post mealmore than of 260 mg% showed the presence of peripheral neuropathy. Behl *et al.*[3] in a study of 539 diabetic patients found strong correlation of severity of hyperglycemia with incidence of peripheral neuropathy. Partanen *et al.*[9] showed rising incidence of peripheral neuropathy with increase of blood glucose levels. Few workers like Dutta *et al.*[10] found incidence of peripheral neuropathy with blood sugar level in lower range of blood sugar level (fasting 197.2 + 57-67). In the present study it was observed that severity of peripheral neuropathy was related with blood sugar. Higher the blood sugar level, severe is neuropathy. Thus it can be concluded that peripheral neuropathy is common in diabetic and who has higher blood sugar levels. However the patients with lower blood sugar level have decreased incidence of peripheral neuropathy.

Duration of diabetes mellitus: In the present study neurological involvement were seen in relation to duration of diabetes mellitus. Kasturi *et al.*[5] also found the strong correlation between duration of diabetes mellitus and incidence of peripheral neuropathy. Present study very well matched with workers like Shaw *et al.*[4] and Kasturi *et al.*[5].

CONCLUSION

This study was done in 125 subjects of diagnosed diabetics with an objective of assessing neuropathy in them.

1. Prevalence of symptomatic diabetic neuropathy is very high in middle age and elderly diabetic.
2. Symptoms of neuropathy can be the presenting features at the time of diagnosis of diabetes.
3. Most common clinical presentation of diabetic neuropathy diabetics is distal symmetrical sensory neuropathy affecting mainly the lower limbs.
4. Most common type of neuropathy detected in new diagnosed diabetes is sensorimotor type which can be present even at the time of diagnosis of diabetes.
5. Although both motor and sensory abnormalities are detected at diagnose, the degree of sensory involvement is relatively higher.
6. Duration of diabetes is significantly associated with the clinical presentation of neuropathy. As the duration of diabetes increases the prevalence of DPN also increases clinically.
7. Glycemic status has significant association with clinical presentation of neuropathy. As the sugar level increases the prevalence of DPN also increases clinically.
8. Treatment modality is significantly associated with both the clinical presentation of neuropathy. 9.Patients treated with OHA are found to have more clinical symptoms of neuropathy compared

to patients treated with insulin are found to be having lesser symptoms.

REFERENCES

1. Maji D and.Maji T Neuropathy is the commonest long term complication of Type 2 diabetic individuals at diagnosis. Diabet and Metab 2003; 2373.
2. Dyck PJ, Thomas PK. Diabetic Neuropathy, Second Edition, Philadelphia, W.B. Saunders, 1999.
3. Peripheral Neuropathy. Available from http://www.patient.co.uk/health/peripheralneuropathy-Leaflet
4. Bahl A, Khosla HL, Caroli RK; A study of the involvement of the nervous system with special reference to neuropathy in diabetes mellitus. Indian Med Gaz., 1967; 24:53.
5. Shaw JE, Hodge AM, deCoruten M, Dowse GK, Gareeboo H, Tuomilehto J *et al.*; Diabetic peripheral neuropathy in Mauritius: Prevalence and risk factors. Diabetes Res ClinPract, 1998; 43(2):131-139.
6. Kathrin AS, Sofat MS, Kumar N; Somatic peripheral neuropathy in diabetes mellitus. MJAFI,2000;56: 33-36
7. Kirkville N; Thesis for M.D., Vellore, 1970.
8. Diabetes control of complications trial research group: The effect of intensive diabetes therapy on the development and progression of neuropathy: Ann of Intern Med 1995; 122: 561-568.
9. Partanen J, Niskanen L, Lehtinen J, Mervaala E, Siitonen O, Uusitupa M; Natural history of peripheral neuropathy in patients with non-insulin dependent diabetes mellitus. New Engl J Med., 1995; 333(2):89-94.
10. Dutta A, Naorem S, Singh TP, Wangjam: Prevalence of peripheral neuropathy in newly diagnosed type 2 diabetics. Int J DiabDev Countries., 2005; 25:30-33.

Source of Support: None Declared
Conflict of Interest: None Declared