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A STUDY OF PERIPHERAL NEUROPATHY IN TYPE 2 DIABETIC PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL.

Diabetology

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ABSTRACT

Aim: To study Peripheral Neuropathy in Type 2 Diabetic Patients attending a tertiary care teaching hospital and risk factors associated with diabetic Peripheral neuropathy.

Methods: Total 50 patients of Type 2 DM were included as per inclusion and exclusion criteria. Nerve conduction velocity and Autonomic function tests were carried out with detailed clinical history which included age and duration of diabetes.

Results: Total 15 cases (30%) were found to have signs and symptoms of diabetic neuropathy.

Conclusion: Various Socio demographic (i.e. age, gender, literacy) and clinical variables (i.e. HTN) are significantly associated with diabetic PN.

KEYWORDS

Diabetic Peripheral Neuropathy.

INTRODUCTION

Diabetes mellitus (DM) is one of the major global public health crisis of the 21st century. Approximately 415 million adults population have diabetes and by the end of 2040 this number will increase to 642 million. It is projected that 193 million cases with diabetes are unrecognized and are consequently more at risk of developing grave complications.

Neuropathies are one of the most common complication of DM with a prevalence of approximately 60%. Cases with type 2 Diabetes Mellitus may present with such complication after only a some period of known poor glycemic control; sometimes, such cases already have neuropathy right at the time of diagnosis.

Diabetic neuropathy (DN) is a varied group of presentation of clinical or subclinical symptoms and signs involving the peripheral nervous system (PNS) as one of the complication of diabetes. It might have diverse clinical presentation, patho physiological mechanisms, initiation and progress.

Distal symmetric polyneuropathy is the most common form of diabetic neuropathy. The disease is frequently insidious and may be asymptomatic. Prompt medical care and improved glycemic control may reduce its severity and progression. With this background, the present study was designed to study peripheral neuropathy in type 2 diabetic patients attending a tertiary care teaching hospital.

AIMS AND OBJECTIVES:

1. To study the Prevalence of Diabetic Peripheral Neuropathy (DPN) in Type 2 DM.
2. To study the risk factors and study pattern of DPN among Type 2 diabetic Patients.

MATERIALS AND METHODS:

This Cross sectional observational study was conducted at Dr DY Patil Medical College, Hospital and research center, Pimpri. This study was conducted among the patients attending Medicine OPD, and patients who were admitted to the Emergency Department, Medicine wards and ICU. Study was initiated after taking approval from Institute's Ethics Committee. Total 50 cases of Type 2 DM fulfilling inclusion criteria were included in the study.

Inclusion criteria: Patients with Type 2 DM having age 30 to 70 years .

Exclusion criteria: Patients who are chronic alcoholic, having chronic kidney disease (egfr < 60 ml/mm), Severe anemia Hb% < 8gm % in men and < 10gm % in women Peripheral Neuropathy due to any other known cause and patients on alpha Blockers.

Statistical analysis: Statistical correlation was assessed at 95 % CI with P value of < 0.05. For qualitative variables, chi square test was used and for quantitative variables, student test was used.

RESULTS

The study included 50 cases of DM to assess prevalence of neuropathy (PN) and factors associated with it. Out of 50 cases of DM, signs of DPN were found to be positive in 15 cases. This gives 30 % of prevalence of peripheral neuropathy in diabetic cases.

Table no 1. Distribution of diabetic subject according to Peripheral Neuropathy (PN)

	Cases	%
Patients with PN	15	30.0%
Patients without PN	35	7.00%
Total	50	100%

Cases with PN were termed as 'Cases' group and cases without PN were termed as 'Controls' group. Both group were compared in terms of various socio - demographic and clinical variables to assess whether they are significantly associated with diabetic PN, Among these duration of diabetes and glycemic control has special place.

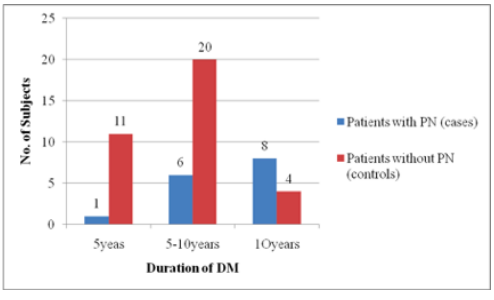

Figure 1: Comparison of Duration of Diabetes among cases (with PN) and control (without PN)

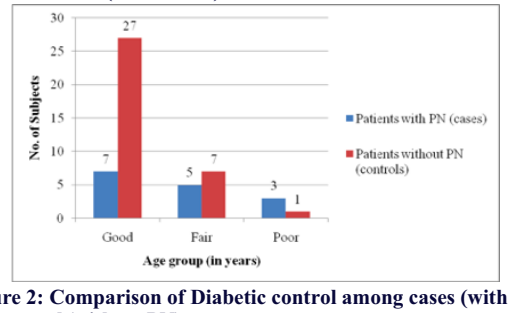

Figure 2: Comparison of Diabetic control among cases (with PN) and control (without PN)

DISCUSSION:

Prevalence of DPN:

In the present study signs of Diabetic PN were found to be positive in 15 cases. This gives 30% prevalence of Peripheral Neuropathy in diabetic cases. The prevalence of DPN varies in the literature from 5-100%, which may reflect the different diagnostic criteria and diverse

study populations. In the present study in cases (with PN) 80% patients were above 50 year of age while in control (without PN) group 82.9% patients were below 50 year of age. In cases (with PN) 40% were male and 60% were female while in control (without PN) group 48.6%% were male and 51.4% were female. Proportion of female was higher in case group as well as in control (without PN) group. However the difference was statistically not significant which indicates that the prevalence of DPN was fairly similar in male and female. In the present study, cases (with PN) 73.3% were illiterate while in control (without PN) group 31.4% were illiterate. Proportion of illiterate was very high in case group compare to control (without PN) group. In our study cases (with PN) 66.7% were unskilled worker while in control (without PN) group 65.7% were unskilled worker. Distribution of patients according to occupation was almost similar in case group and control (without PN) group. In cases (with PN) 73.3% were having low income while in control (without PN) group 54.3% were low income. Proportion of low income patients was higher in case group compare to control (without PN) group. In the present study cases (with PN) 46.7% were married while in control (without PN) group 20% were married. Proportion of married was comparatively high in case group compare to control (without PN) group.

In the present study in cases (with PN) 53.3% were having DM since more that 10 years while in control (without PN) group only 11.4% were having DM since more than 10 year. Proportion of patient with long duration DM (>10yr) was higher in case group compare to control (without PN) group. Similar findings were also observed by other researchers. In cases (with PN) 46.7% were having good control of DM while in control (without PN) group 77.1% were having good control of DM. Proportion of patient with good diabetic control were more in control (without PN) group compare to case group. In cases (with PN) 33.3% were having HT while in control (without PN) group 80% were having HT. Proportions of patients with HT were less in case group compare to control (without PN) group. In the present study in cases (with PN) 60% were having one or other heart disease while in control (without PN) group 91.4% were having associated heart disease. Proportion of patient with associated cardiac condition was higher in control (without PN) group compare to case group. In the present study in cases (with PN) 53.3% were having family history of DM while in control (without PN) group only 11.4% were having family history of DM. Proportion of patient with family history of DM was less in case group compare to control (without PN) group. In the present study in cases (with PN) 13.3% were smoker while in control (without PN) group only 14.3% were smoker. Application of statistical test indicate that the difference was statistically non significant ($p>0.05$). This means that peripheral neuropathy was not associated with smoking status of the patient. In the present study in cases (with PN) 46.7% were doing regular exercise while in control (without PN) group 77.1% were doing regular exercise. Application of statistical test indicate that the difference was statistically significant ($p<0.05$). This means that peripheral neuropathy was associated with Regular Exercise. PN was less in patient regular exercise compared to those who were not doing it. In the present study in cases (with PN) 33.3% were taking irregular DM treatment while in control (without PN) group 5.7% were taking irregular DM treatment. Application of statistical test indicate that the difference was statistically significant ($p<0.05$). This means that peripheral neuropathy was associated with DM treatment regularity. PN was more in patient having irregular DM treatment compared to those who were taking regular treatment. In the present study in cases (with PN) 60% were having HbA1C >=7% while in control (without PN) group 20% were having HbA1C >=7%. Application of statistical test indicate that the difference was statistically significant ($p<0.05$). This means that peripheral neuropathy was associated with having HbA1C >=7%. PN was more in patient having HbA1C >=7% compared to those who had having HbA1C <7%. In the present study in cases (with PN) 46.7% had BMI >=25kg/m^2 while in control (without PN) group 60% had BMI >=25kg/m^2. Application of statistical test indicate that the difference was statistically non significant ($p>0.05$). This means that peripheral neuropathy was not associated with BMI in the diabetic patients. In the present study peripheral neuropathy was not associated with retinopathy in the diabetic patients. In the present study peripheral neuropathy was associated with albuminuria in diabetic patients. PN was less in patient having albuminuria compared to those who were not having albuminuria. In present study peripheral neuropathy was associated with estimated GFR. PN was more in patient with <60 GFR. In present study peripheral neuropathy was not associated with control of dyslipidemia among diabetic patients.

CONCLUSION

We can conclude that some socio - demographic and clinical variables have important impact on peripheral neuropathy in Type 2 DM then others. Female gender, illiteracy, married life, low income, long duration of DM 2, poor glycemic control, sedentary lifestyle, treatment irregularity, high HBA1c < 7%, estimated GFR < 60, are all associated with increased incidence of peripheral neuropathy in Type 2 DM.

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