



PERIPHERAL NEUROPATHY IN NEWLY DIAGNOSED TYPE II DIABETES MELLITUS

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ABSTRACT

BACKGROUND: Diabetes Mellitus is a common and serious disease with chronic complications and constitutes a substantial burden for both patient and health care systems. Globally, it is estimated that 415 million people had diabetes in 2015 (10% of the world adult population), and this figure is expected to reach 642 million by 2040 as a consequence of longer life expectancy, sedentary lifestyle and changing dietary patterns.¹

AIM: To study peripheral neuropathy in patients with newly detected Diabetes Mellitus. Distribution according to Age and Sex. Peripheral neuropathy with only symptoms. Peripheral neuropathy with both signs and symptoms. Peripheral neuropathy with only signs.

MATERIALS AND METHODS: A Hospital-based Prospective study was conducted in Department of General Medicine, Santhiram medical college & general hospital for five months. All the patients coming to the department of General Medicine during the study period with age >18 years and Patients who fulfill criteria were taken for study after taking prior informed consent. The final sample size was 50 subjects of peripheral neuropathy in newly diagnosed type II diabetes mellitus.

RESULTS: The mean age of study subjects was 48.9 years (range from 19-87 years) with M: Fratio of 1.7:1. The most common presentations are burning sensation of the foot constituted of 34%, numbness with 24% and focal weakness of about 10%. Patients with only symptoms are with 18 males and 12 females.

CONCLUSION: Symptomatic peripheral neuropathy is more common than asymptomatic. 36% of the patients presented with peripheral neuropathy at the time of diagnosis of diabetes. 30% of the patients (18% males and 12% females) were presented with only symptoms of peripheral neuropathy, 6% of them were presented with only signs of peripheral neuropathy, 28% of them (16% males and 12% females) were having both signs and symptoms. More than 50% of the patients had Microvascular complications at the time of diagnosis of Diabetes Mellitus

KEYWORDS :

INTRODUCTION :

Diabetes Mellitus is a common and serious disease with chronic complications and constitutes a substantial burden for both patient and health care systems. Globally, it is estimated that 415 million people had diabetes in 2015 (10% of the world adult population), and this figure is expected to reach 642 million by 2040 as a consequence of longer life expectancy, sedentary lifestyle and changing dietary patterns.¹

The prevalence of diabetic peripheral neuropathy (DPN) varies greatly in different studies, ranging from 8% to 59%.² DPN significantly increases the risk of complications such as foot infections, deformities, gangrene, and amputations. In India, the adverse effects of peripheral neuropathy (PN) are compounded by poor foot hygiene, improper footwear, and frequent barefoot walking. In such circumstances, complications of foot infections and gangrene are a common cause of hospital admissions.³ Type2DM is characterized by a long asymptomatic phase (ranging from 4 to 7 years) between the actual onset of hyperglycemia and clinical diagnosis which explain the relatively high prevalence of microvascular complications in newly diagnosed patients with Type2DM. The prevalence of DPN at diagnosis of type2DM ranges from 10% to 48%, depending upon the population studied and method used to evaluate neuropathy.³ Because of the poor awareness and lack of regular screening programs, the initial presentation to the physician is frequently delayed. This may predispose to an increased rate of microvascular complications at the onset.

Ethnic differences in the prevalence of various diabetes-related complications have also been documented.⁴ There is a paucity of reports on DPN in Indians. In a study comparing European and South Asian subjects with T2DM in the United Kingdom, the prevalence was lower in the latter.⁵ However, in surveys in Indian patients, the prevalence has ranged from 26% to 31%.⁴

AIM AND OBJECTIVES :

To study peripheral neuropathy in patients with newly detected

Diabetes Mellitus.

Distribution according to Age and Sex.

Peripheral neuropathy with only symptoms.

Peripheral neuropathy with both signs and symptoms.

Peripheral neuropathy with only signs.

MATERIAL AND METHODS :

A Hospital-based Prospective study was conducted in Department of General Medicine, Santhiram Medical College and General Hospital for five months after taking approval from the Hospital Ethics and Research Committee.

SAMPLING TECHNIQUE AND SAMPLE SIZE:

All the patients coming to the department of general medicine during the study period and fulfilling the inclusion criteria were taken for study after taking prior informed consent. The patients included in the study were from both OutPatients and wards. The final sample size came to be 50 subjects.

INCLUSION CRITERIA

Patients with newly diagnosed Diabetes Mellitus presenting to SRMC General Hospital. Criteria for establishing Diabetes Mellitus:

Symptoms of diabetes plus random blood glucose concentration ≥ 11.1 mmol/L (200 mg/dl)^a or Fasting plasma glucose ≥ 7.0 mmol/L (126 mg/dl)^b or Two-hour plasma glucose ≥ 11.1 mmol/L (200 mg/dl)^c during an Oral Glucose tolerance test.

^a = Random is defined as without regard to time since the last meal

^b = Fasting is defined as no caloric intake for at least eight hours

^c = The test should be performed using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water

(Source: adapted from ADA, 2010).

Three ways to diagnose diabetes are possible, and each, in the absence of unequivocal hyperglycemia, must be confirmed on a subsequent day by any one of the three methods.

The use of the hemoglobin A1C (HbA_{1c}) for the diagnosis of diabetes is not recommended at this time

EXCLUSION CRITERIA

- Congestive cardiac failure
- Urinary tract infection
- Known hypertensives
- Fever
- Renal diseases
- Other diseases causing peripheral neuropathy

DATA ANALYSIS

All patient profiles were recorded in proforma, and findings were tabulated, SPSS24 was used for the analysis of the data.

RESULTS :

Among the fifty patients in the study, 32 (64%) were males, and 18 (36%) were females. The male-female ratio was 1.7:1.0

Table 1 : Distribution based on Gender

GENDER	FREQUENCY	PERCENTAGE
Males	32	64
Females	18	36
Total	50	100

Table 2: Distribution based on Age

AGE—YEARS	FREQUENCY	PERCENTAGE
20-39	6	12
40-49	16	32
50-59	16	32
60-69	9	18
ABOVE 70	3	6
TOTAL	50	100

In the study of 50 patients, most of the patients present between the age of 40 to 59, which constitutes about 64% (32+32), and 18% were above 60 years.

PRESENTING COMPLAINTS

Table 3: Distribution based on Presenting Complaint

Presenting Complaints	Frequency	Percentage
Burning Sensation of feet	17	34
Numbness	12	24
Focal weakness	5	10
Total	44	100

In the study of 50 patients, 34% of individuals have a burning sensation of the foot, numbness with 24% and focal weakness with 10%

Table 4: Distribution based on Symptoms and Signs

PERIPHERAL NEUROPATHY	MALE	FEMALE	TOTAL
Only symptoms	18	12	30
Both signs and symptoms	16	12	28
Only signs	4	2	6

The patients with only symptoms are 30 with both signs and symptoms are 28 and with only signs are 6

Table 5: Distribution based on Type of neuropathy

Types of neuropathy	Frequency	Percentage
SensoryMotorNeuropathy	21	42
Mononeuritis Multiplexa	6	12
Sensory Neuropathy	8	16
Motor Neuropathy	11	22
Carpel Tunnel Syndrome	4	8
Total	50	100

Out of total 50 patients, 42% of patients are having sensory-motor neuropathy and only 8% having Carpel tunnel syndrome.

DISCUSSION :

Sonalika Gogia et al⁶. found (2017) and the proportion of males affected by neuropathy was more than females. 43.1% males had a positive DNS score while only 27.2% of them had a positive DNE score.

Sonalika Gogia et al found among the people who had neuropathy, nearly half of the patients had been diagnosed between 40 and 49 years of age.

Kisozi T et al⁷ found the age 60 years and above was associated with peripheral neuropathy with newly diagnosed type II diabetes mellitus.

Gill H K et al² (2014) found forty percent of subjects >50 years had DPN. The prevalence of PN in controls was 10.7% (95% CI 3.5-17.8%). The prevalence increased with age and was present in 13.3% for >50 years of age.

Amour AA et al⁸ (2019) found the highest risk factors for DPN were age 40-60 years, OR= 6.4 (2.9-14), >60 years 15 (6.8-34.4).

Khawaja N et al⁹ (2018) The most frequently reported symptoms were numbness (32.3%) and pain with walking (29.7%), while the least reported symptoms were the history of amputation (1.3%) and loss of sensation in legs/feet while walking (3.8%).

CONCLUSION :

The following conclusions were derived from this study

1. Most common age is from 40-59 years
2. Male preponderance
3. The most common presentation is the burning sensation of feet
4. The most common type is sensory-motor neuropathy
5. More than 50% of the patients had Microvascular complications at the time of diagnosis of Diabetes Mellitus

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