

Frequency of Peripheral Neuropathy in Newly Diagnosed Cases of Type II Diabetes Mellitus

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ABSTRACT

Objectives: To determine the frequency of peripheral neuropathy in newly diagnosed cases of type II diabetes mellitus.

Study Design: Cross-sectional

Place and Duration: Study was conducted at medicine department of Allied Hospital Faisalabad for duration of one year from July 2018 to June 2019.

Material and Methods: Total 120 newly diagnosed patients of type 2 diabetes mellitus were enrolled in this study. Patients detailed demographically recorded after getting written consent. Patients were diagnosed for the duration of 4-weeks and calculated fasting blood sugar (FBS) of ≥ 126 mg/dl, and Random Blood Sugar (RBS) of ≥ 200 mg/dl or HbA1c ≤ 6.5 . All data was analyzed by SPSS 24.0 version.

Results: Out of 120 patients there were 70(58.3%) males and rest 50(41.7%) were females with mean age 37.15 years + 10.91SD. Mean Body mass index of the patients was 22.48+3.66 kg/m². 42(35%) patients had symptoms of peripheral neuropathy while that patients who did not have any symptom was 78(65%). Same symptoms were observed within 4-weeks and we noticed that 23(19.2%) patients showed peripheral neuropathy and rest 97(80.8%) patients did not have any symptoms.

Conclusion: We concluded that the frequency of peripheral neuropathy is higher in early stages of 2-diabetes mellitus and its frequency can be reduced to diagnosed within a month.

Keywords: Peripheral Neuropathy, diabetes mellitus

INTRODUCTION

Diabetes mellitus (DM) is a crippling metabolism that places the world's rising global economic burden on every country in the world. As a cost for urbanisation, the overall diabetes situation in 2017 according to IDF estimates shows there are 425 million diabetes adults and 352 million glucose deficient adults in the world[1]. In Jordan the alarming rates in obesity, growth in the population, transition to nutrition, and a major challenge

WHO's figures suggest that the highest overweight and obesity rates in Egypt, Bahrain, Jordan, Kuwait, Saudi Arabia and the United Arab Emirates have been in 16 countries in the Eastern Mediterranean.[4] Approximately 50% are expected to develop neuropathy based on the length of disease and the diabetic regulation. [6] Multifactorial pathogenesis of peripheral diabetic neuropathy. The DPN can be categorised as widespread symmetry polyneuropathies and focus / multipocal neuropathies, while polyol pathway, advanced glycaemic end products and oxidative stress and chronic hyperglycaemia have an important position. Symmetrical, distal sensorimotor polyneuropathy (DPN) is the most prevalent form of diabetes neuropathy.[7] This is around 75% of diabetic neuropathy[8].

There are no local data available regarding peripheral neuropathy prevalence in diabetic patients at the time of diagnosis; however, 7.5 percent of the patients at the time of diagnosis are reported to have neuropathy.[9] Therefore,

peripheral neuropathy is one of the key aspects when diabetic patients are advised and early detection of primary care is essential for initiation of the application. The prevalence of newly diagnosed diabetic patients was determined in this study.

MATERIALS AND METHODS

This cross-sectional study was conducted at the medicine department of Allied Hospital Faisalabad for duration of one year from July 2018 to June 2019. Total 120 patients of both genders with ages 25 to 60 years presented with peripheral neuropathy among newly diagnosed diabetes were enrolled in this study.

Patients detailed demographics including age, sex, residence and body mass index were recorded after taking written consent. Patients who had peripheral neuropathy due to other disease i.e. autoimmune, drugs, renal failure, liver disease, leprosy and malignancy were excluded from this study. All the patients were examined clinically and electrophysiological method was used (only for a purpose if required) within a month. Three types of muscles (sample) were tested to examine impression of neuropathy. Complete patients were examined to calculate fasting blood sugar (FBS) of ≥ 126 mg/dl, and Random Blood Sugar (RBS) of ≥ 200 mg/dl or HbA1c ≤ 6.5 . Chi square test was performed to know the prevalence of duration of symptoms. All data was analyzed by SPSS 24.0 version.

RESULTS

Out of 120 patients 70(58.2%) were males while 50(41.8) were females with mean age 37.15 + 10.91 years. Mean BMI was 22.48+3.66 kg/m². (Table 1)

Table No 1: Baseline detail of all the patients

Characteristics	Frequency No.	%age
Mean age (Yrs)	37.15 + 10.91	-
Mean BMI (Kg/m)	22.48+3.66	-
Gender		
Male	70	58.2
Female	50	41.8

At start, we observed that the 42(35%) patients had symptoms of peripheral neuropathy while that patients who did not have any symptom was 78(65%). After continuously examination within a month, we observed the prevalence of symptoms 23(19.2%) patients showed peripheral neuropathy as compared to these 97(80.8%) patients did not show any symptoms. (Table 2)

Table 2: Frequency of peripheral neuropathy

Peripheral Neuropathy	Frequency No.	%age
Beginning		
Yes	42	35
No	78	65
After 4-weeks		
Yes	23	19.2
No	97	80.8

Regular examination showed results that out of 23 patients, 8(34.8%) patients showed peripheral neuropathy and the remaining 15(65.2%) patients did not show any symptoms. That 97(80.8%) patients who did not show symptoms at start, after further analysis 34(35.05%) showed symptoms and 63(64.95%) were not symptomatic. (Table 3)

Table 3: Symptoms of peripheral/non-peripheral neuropathy after further analysis

Variables	Frequency No.	%age
Peripheral Neuropathy(n=23)		
Yes	8	34.8
No	15	65.2
Non- Peripheral Neuropathy(n=97)		
Yes	34	35.05
No	63	64.95

We observed that the majority of the patients 45.8% were in 5th decade of peripheral neuropathy, 29.2% were in 4th decade and rest of 25% were in 6th decade of diabetic peripheral neuropathy.

DISCUSSION

Diabetic neuropathies are heterogeneous diseases that affect the multiple components of the patient's nervous system. It's the most predominant complication of diabetes mellitus. Nerve complications can occur in patients with diabetes mellitus at any time, but longer, higher risk. It has been estimated that 50% of diabetes patients are neuropathic, but not all neuropathic patients have symptoms.[10]. This study found that in 45 (35 percent)

patients, the symptoms of 2-diabetes mellitus peripheral neuropathy were the same as those of Muslim Ali Lakhiaretc.[11]. The variations between our various trials and our prevalence of peripheral diabetic neuropathy can be explained by the clinical and electrophysiological studies in our research, while other neuropathic studies in Ashok et al [10], which is close to the findings of our study, showed 8 percent of type 2 diabetes at diagnosis.

The hypothesis that metabolism and obesity are risk factors for DPN is supported by current evidence. Nerve damage mechanisms suggested include extracellular protein glycation, a deposition of fats, oxidative stress, defective mitochondrial and counter-regulatory pathways to metabolising chronic inflammation[12, 13]. The restrictions are a multi-section design that could not determine the longer-term effects of DPN risk factors for glycemic regulation. Kestev et al. have shown that insulin use among newly diagnosed diabetics in Germany and Great Britain is one of the highest risk factors for DPN[14].

Previous studies have shown clearly that diabetic patients suffering from other maCVs are more likely to develop diabetic neuropathy[15-18]including the degree of hypertension, dyslipidemia, insulin resistance, obesity, cigarette smoking and alcoholic consumption, the risk of diabetic neuropathy is correlated with a variety of modifiable and non-modifiable risk factors.

Our study is a large-scale clinical study, so that our findings will relate to people in the population receiving treatment. In addition, initial steps should be taken to avoid DPN from progressing and postpone the development of such a deteriorating complication in terms of lifestyle and behavioural improvements such as balanced food habits and exercises.

CONCLUSION

We concluded from this study that the symptoms of peripheral neuropathy were present in 35% patients and there is need to diagnose at its earliest stage to reduce prevalence.

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