INTRODUCTION

There is disordered metabolism in patients of Diabetes mellitus leading to hyperglycaemia, it can be due to insulin deficiency or peripheral resistance to insulin. The prevalence of diabetes and resultant complications are increasing continuously in many countries, patients with poor glycaemic control end up with higher rate of microvascular complications, other contributing factors are longer duration of diabetes and obesity. Diabetes mellitus is a condition that continues to receive much attention from health care providers yet resulting in substantial mortality and morbidity. Life style modification is also necessary to reduce hazards.

There are two broad categories in which vast majority of diabetic patients are classified that is type-1 having absolute deficiency of insulin, and type-2 diabetes, in which there is presence of insulin resistance and an inadequate increase in insulin secretion to compensate. The factors that are most important for prognosis are hyperglycaemia, long duration of diabetes mellitus, old age, and increase body mass index. The patients with diabetes are at increased risk of series of complications that cause premature mortality and morbidity. In diabetes mellitus, involvement of peripheral nervous system may lead to numbness or paraesthesia in a glove and stocking pattern of distribution. There are certain cellular events that trigger the development of vascular complications in diseases like diabetes and hypertension on background endothelial dysfunction plays a key role.

There are many long term complications of diabetes. Neuropathies are the commonest among them.

Managing chronic sensorimotor distal symmetric polyneuropathy is the most important therapeutic challenge. The clinical presentations of Diabetic peripheral neuropathy (DPN) are diverse that includes troublesome neuropathic pain on one end and there may be insensitive foot on the other end which is also at risk of ulceration. This affects quality of life because of paesthetic symptoms that can be both unfamiliar and painful. In advanced peripheral diabetic neuropathy (PDN) there is elevated vibration and thermal perception thresholds that leads to sensory loss and degeneration of all types of fibres in peripheral nerve. A significant number of diabetic patients also reports abnormal sensations which may include paresthesia, hyperalgesia, allodynia and spontaneous pain.

This study was designed to determine the frequency of painful peripheral neuropathy in diabetes and to stratify the neuropathy into various subtypes.

MATERIAL AND METHODS

It was a cross sectional survey that was carried out in Diabetes Management Centre, Services Hospital, Lahore. Two hundred and fifty patients of diabetes mellitus were included in this study, and total duration of study was six months. Sampling was done through non probability purposive sampling. All diabetic patients with 5 years duration of diabetes or more and age 16–60 of any gender were included. Their HbA1C was between 6–8. All those with history of exposure to lead, insecticides and history of any trauma leading to neurological deficit that can compromise assessment of sensory system along with history of renal failure (presenting with creatinine level more than 1.5mg/dl) were excluded.
Effect modifier was studied through stratification. Data collected with help of pro forma and SPSS-12 was used to analyse the data.

Descriptive statistics were calculated. Quantitative variables of study were age and duration of diabetes. These were presented as mean and standard deviation. Frequency and percentage of presence and absence of neuropathy were calculated and its variants were presented by frequency and percentage.

RESULTS

A total of 250 patients with diabetes mellitus diagnosed for or more than 5 years were selected from the Diabetes Management Centre of Services Hospital Lahore.

Results showed that amongst the 250 patients, Overall percentage of females was more than that of males. Regarding age distribution of patients, there were few patients at the extremes of age groups shown, with the minimum age of 18 and maximum age of 60. Mean age was 49.52±7.933 years, and the majority of diabetic patients were between age group 50–60 years.

The frequency of neuropathy in diabetic patients was 187 (74.8%) out of the total 250 patients studied. Table-1 shows frequency of variants of neuropathy out of 187 patients that had neuropathy. 116 (62.0%) had burning pain, 114 (60.9%) had numbness, 61 (32.6%) had tingling, 55 (29.4%) had dull pain, 44 (23.5%) had cold pain, 43 (23.8%) had sensitive pain. In group-A (duration of disease 5–10 years), 70 patients out of 115 had neuropathy. In group-B (duration of disease 11–20 years), 95 out of 112 patients had neuropathy and in group-C (above 20 years), 22 out of 23 patients had neuropathy.

Table-2 shows frequency of neuropathy with respect to gender, it shows out of 94 males 67 (71.2%) had neuropathy, Out of 156 females 120 (76.9%) had neuropathy.

Table-3 shows effect of duration of diabetes on neuropathy. In group-A (duration of disease 5–10 years), 70 patients out of 115 had neuropathy. In group-B (duration of disease 11–20 years), 95 out of 112 patients had neuropathy and in group-C (above 20 years), 22 out of 23 patients had neuropathy.

Regarding relation of age groups with neuropathy there were four groups in group-1 (16–29 years) all of 4 patients had neuropathy, in group-2 (30–39 years), 16 (84.2%) out of 19 had it, in group-3 (40–49 years), 54 (68.3%) out of 79 had it; in group-4 (50–60 years), 113 (76%) out of 148 patients had it. The relation of age group and different variants of neuropathy was also calculated, in group-1, 3 (75%) had burning, 1 (25%) had numbness, 0 (0%) had tingling, 1 (25%) had dull pain, 2 (50%) had cold pain, 0 (0%) had sharp pain, 0 (0%) had itchy pain and 0 (0%) had sensitive pain. In group-2, 12 (75%) had burning, 12 (75%) had numbness, 7 (43.7%) had tingling, 4 (25%) had dull pain, 5 (31.25%) had cold pain, 3 (18.7%) had sensitive pain, 0 (0%) had itchy pain and 1 (6.25%) had sensitive pain. In group-3, 32 (59.2%) had burning, 28 (51.8%) had numbness, 15 (27.7%) had tingling, 10 (18.5%) had dull pain, 10 (18.5%) had cold pain, 3 (1.8%) had sharp pain, 4 (7.4%) had itchy pain and 12 (10.6%) had sensitive pain. In group-4, 69 (61.06%) had burning, 73 (64.60%) had numbness, 39 (34.5%) had tingling, 40 (35.39%) had dull pain, 27 (23.8%) had cold pain, 13 (11.50%) had sharp pain, 12 (10.6%) had itchy pain and 7 (6.19%) had sensitive pain.

DISCUSSION

In diabetes mellitus, involvement of peripheral nervous system may lead to numbness or paraesthesia in a glove and stocking pattern of distribution⁴, it is believed that diabetes is a major cause of many complications like blindness, end-stage renal disease and lower leg amputation despite the introduction of many treatment strategies these all contribute to the excess morbidity as well as mortality in diabetic patients.¹⁴

In our study the mean age of the patients was 49.52±7.933 years. As compared with the study of Elaine Cristina Salzedas Muniz et al.⁵ the average age of the patients was 60.9 years, which is slightly more that found in our study. The two main approaches to DPN therapy are currently in use. First, to alleviate the
persistent painful symptoms in the upper and lower limbs by use of the tricyclic antidepressants, anticonvulsants, opioids, and opioid-like agents; these are supported by multiple randomized controlled trials (RCTs) and meta-analyses as far as efficacy is concerned.\textsuperscript{15} The second group of therapies consists of mainly experimental treatments, which are approved for use in number of countries for example the antioxidant-lipoic acid\textsuperscript{16}, although not available in the U.S. another example is the aldose-reductase inhibitor epalrestat, being only available in Japan.\textsuperscript{17} In our study the frequency of peripheral neuropathy was found to be 74.8\% as compared with the international study by Feray Soyupek et al\textsuperscript{18} that showed the frequency of peripheral neuropathy was 80.4\% which is also comparable.

In our study burning pain was present in 46.4\% of patients as compared to frequency of 19.44\%. In the same study frequency of numbness was 45.6\% and 39.73\%. Frequency of tingling was found to be 24.4\% and 35.62\%.

In various international studies frequency of paresthesia has been calculated in patients with diabetes but in our study we have further stratified into different varieties like coldness, sharp pain, itchy pain, dullness and sensitive pain. Present study is hospital based, done in tertiary care hospital which covers large population.

Sample size taken in this study was also large and all the possible confounders addressed to prevent bias. Moreover this study was easy to perform as \textit{pro forma} was used for survey, it was also economical.

However still multicentre trials needed to know the exact frequency of neuropathy in diabetics these would also be helpful to know the frequency in different populations. And there is need to cover extreme of ages.

Further research is required to better understand the different factors that influence neuropathy. This will enable us to introduce new treatment and diagnostic modalities which can reduce morbidity and mortality related to diabetic microvascular complications.

\textbf{CONCLUSION}

The study showed that painful diabetic neuropathy is present in majority of controlled diabetics and most of them belong to old age. It further showed that majority of sufferer were females. The most common variety of pain encountered was burning type of pain. The study provide a basis for future research of longer duration in a bigger group of patients.

\textbf{REFERENCES}


\textbf{Address for Correspondence:}

\textbf{Dr. Mehwish Ifitikhar}, Department of Endocrinology and Metabolism, Services Hospital, Lahore, Pakistan.

\textbf{Cell: +92-300-4291641, Tel: +92-423-7564286, +92-423-7592000}

\textbf{Email: drmehwish@live.com}