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INTRODUCTION

Peripheral neuropathy is one of the most common complications of both type 1 and type 2 diabetes. Population-based studies estimated that 22% of diabetic patients would have moderate-to-severe peripheral neuropathy at any point in time [Abdott et al., 2003], and 50% would develop the condition over time [1]. When symptoms are present, they may be negative or positive. Negative symptoms include loss of sensation. Long-standing peripheral neuropathy can be associated with peripheral neuropathy occurs in one of six diabetic subjects worldwide [2], and two in every three Saudi diabetic patients [Halawa et al., 2010]. Peripheral neuropathy (or diabetic polyneuropathy) can lead to neuropathic ulcers through loss of sensation leading to amputation [3]. Peripheral neuropathy is the most frequent neurological disorder that a diabetic patient presents to their treating clinicians [4]. Prevalence estimates revolve around one in every five diabetic subjects, although variations occur due to heterogeneous settings and sampling techniques [5].

AIM

This study aims to estimate the point prevalence of neuropathy among high-risk diabetic patients presenting at the diabetic and endocrine specialist center in prince Mansour hospital and evaluate its associated factors.

METHOD

Study design: This study was a cross-sectional questionnaire-based descriptive study. The study included a randomized sample of all diabetic patients who attend specialist diabetes and endocrine centre in Prince Mansour Military Hospital in Taif, Saudi Arabia. The survey was conducted between January and May 2020. A standard questionnaire included various socio-demographic and clinical factors and data pertaining to different diabetic parameters related to neuropathy that help ascertain the severity of neuropathy if present. The following points were considered when designing the questionnaire:

Type of diabetes and its duration. Medications used. Most recent laboratory findings. Examination results of both feet.

Setting: The study was conducted on a sample of all diabetic patients who attend the specialist diabetes and endocrine centre in Prince Mansour Military Hospital in Taif, Saudi Arabia.

Data analysis: Data was analysed using the R-Statistical Software version 3.4.1. Categorical data (such as educational level, residence, insulin and presence of ulcer) were summarised using frequencies and displayed using tables and bar-graphs. Continuous data (such as age, duration of medication use, and BMI) were summarized using mean and standard deviation and visualised using line-plots and box-plots. The adjusted effect of categorical variables on the outcome variable was determined using multiple generalized linear regression modelling. The level of significance was set at p-value less than 5%.

STUDY OBJECTIVES

- To estimate the point prevalence of neuropathy in Saudi patients attending Prince Mansour Hospital in Taif, Saudi Arabia.
- To investigate the association of sociodemographic characteristics and neuropathy in Saudi patients attending Prince Mansour Hospital in Taif, Saudi Arabia.
- To examine the association of clinical characteristics and neuropathy in Saudi patients attending Prince Mansour Hospital in Taif, Saudi Arabia.

RESULTS

As detected by the monofilament test, the prevalence of neuropathy was (n = 291) 84.8% diabetic patients. Dyslipidaemia was associated with higher the risk for neuropathy by 98.4% (estimate = 0.6853, P = 0.04614). Additionally, lesser neuropathy risk was associated with cardiovascular disease by 62.1% (estimate = -0.9705, P = 0.0316), and retinopathy by 60.9% (estimate = -0.9401, P = 0.00752).

Interaction existed between the duration of diabetes and HbA1c levels in terms of their effect on peripheral neuropathy, as detailed in Table 1 and Figure 1. Clearly, in patients with a short duration of diabetes, a high HbA1c was associated with an increased probability of neuropathy. When interaction term is included, a positive association between neuropathy and both HbA1c (increased risk by 46.2%, estimate = 0.3789, P = 0.03222) and DM duration (increased risk by 19.6%, estimate = 0.1792, P = 0.04497).

As detected by the monofilament test, the prevalence of neuropathy was (n = 291) 84.8% diabetic patients. Over four out of every five diabetic patients have neuropathy.

DISCUSSION & CLINICAL IMPLICATIONS

We found that over four out of every five patients have neuropathy complication. This is worrying as peripheral neuropathy could lead to an array of serious diabetic complications [6]. Our results far exceed the recent 30.1% neuropathy figure among primary care diabetic patients obtained by Sendi et al [7]. Clearly, our study was conducted among a high-risk group of attendees at the specialist diabetic centre. Literature from Saudi Arabia indicates an established link of diabetic peripheral neuropathy to the severity and duration of poor diabetic control [8]. In our investigation we identified dyslipidaemia to double the risk for neuropathy [9]. This confirms a direct nerve-damaging effect for high levels of lipoproteins and lipids in the blood.

We uncovered a positive association between neuropathy and both HbA1c and DM duration. It is widely accepted that hyperglycaemia worsens sensorimotor nerve dysfunction [12].

RECOMMENDATIONS

- Poor glycaemic control, poor lipid profile, and longer duration for diabetes remain the main factors affecting neurological complications of diabetes in Saudi Arabia and should be addressed by clinicians as early as patients present at healthcare facilities.
- Research on diabetes complications in Saudi Arabia should focus on the demographic and clinical factors affecting mortality and survival from diabetes.
- Further research in Saudi Arabia on the link between diabetic retinopathy and neuropathy requires a large sample size, longitudinal design, and use of accurate diagnostic tools.

BIBLIOGRAPHY

References are available on request.