World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

Check for updates

Neuropathic pain in patients with diabetes: Utility of DN4 questionnaire

M. Ben Lafqih *, N. Idrissi Dafali, S. Rafi, G. El Mghari and N. EL Ansari

Department of Endocrinology, Diabetes, Metabolic Diseases and Nutrition, Mohammed VI University Hospital, Marrakech, Morocco.

World Journal of Advanced Research and Reviews, 2023, 17(01), 093–096

Publication history: Received on 17 November 2022; revised on 30 December 2022; accepted on 02 January 2023

Article DOI: https://doi.org/10.30574/wjarr.2023.17.1.1466

Abstract

Diabetic neuropathy is a common complication of diabetes. The objective of our study is to evaluate the prevalence of diabetic neuropathy via the DN4 questionnaire in our diabetic patients and to identify the factors associated with diabetic neuropathy. We included 231 diabetic patients. The average age of the patients was 45.77 years, 67.1% of women, 36.8% type 1 diabetic and 63.2% type 2 diabetic, The average duration of diabetes evolution was 7, 21 years old. The average HbA1c was 10.4%. The prevalence of diabetic neuropathy in our study was 28.1%, it was more frequent in women, in unbalanced patients, and it was significantly correlated with age, type 1 diabetes, consumption of alcohol and duration of diabetes, in our study we found a significant association of diabetic neuropathy with age, duration of diabetes and alcohol consumption

Keywords: DN4; Diabetic patients; Duration of diabetes; Alcohol consumption; Age

1. Introduction

Painful diabetic neuropathy (NDD) is a common complication of diabetes, affecting approximately 30% of diabetics at the time of diagnosis. Its painful form, painful diabetic neuropathy (NDD), represents the most common cause of neuropathic pain. It can have serious complications including foot ulcers and amputation [1]. 10 items of 4 questions affirms the diagnosis if four of the answers are positive, it appears interesting because it is a simple and validated diagnostic tool [2]. The objective of our study is to evaluate the prevalence of diabetic neuropathy via the DN4 questionnaire in our diabetic patients and to identify the factors associated with diabetic neuropathy.

2. Material and methods

This is a retrospective cross-sectional analytical study conducted at the endocrinology and diabetology department, CHU Mohammed VI in Marrakech, including type 1 and type 2 diabetic patients who were hospitalized in our training from June 2021 to June 2022 and patients having consulted during the open doors of Ramadan organized in our service, the exclusion criteria the duration of diabetes less than 5 years in type 1 diabetics and the presence of other types of neuropathic pain of non-diabetic origin. All the patients had benefited from a meticulous clinical examination, a multidisciplinary evaluation and a biological assessment. Diabetic neuropathy was assessed using the DN4 questionnaire. A DN4 score ≥ 4/10 defines diabetic neuropathy. The statistical analysis was made by SPSS 26 software. The qualitative variables were analyzed via the KHI2 test, and the quantitative variables by the student test. The correlations were studied by Spearman's test. The identification of risk factors was made by logistic regression. P values less than 0.05 were considered significant.

* Corresponding author: maryame ben lafqih
Department of Endocrinology, Diabetes, Metabolic Diseases and Nutrition, Mohammed VI University Hospital, Marrakech,Morocco.

3. Results

We included 231 diabetic patients. The average age of the patients was 45.77 years, 67.1% of women (sex ratio: 0.49), 36.8% type 1 diabetic and 63.2% type 2 diabetic, 53.24% were on insulin, 36.37% on ADO, 6.92% on insulin and ADO, 3.47% under lifestyle and dietary rules.

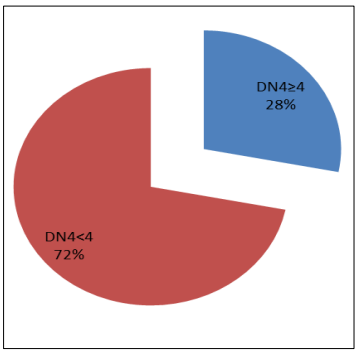

Figure 1 Prevalence of diabetic neuropathy

The average duration of diabetes evolution was 7.21 years. The average HbA1c was 10.4%. The prevalence of diabetic neuropathy in our study was 28.1%, it was more frequent in women but not significant (p=0.159), in unbalanced patients (p=0.128), and it was significantly correlated with age (0.002), type of diabetes 1 (0.001), alcohol consumption (0.045) and duration of diabetes progression (p=0.001) (Table 1).

Table 1 Results of univariate analysis

Settings		**DN4**				**p**
		<4		**≥4**		
Age(years)		163		68		0.002
<50 years	≥50 years					
Gender						0.159
female	Male	97	59	58	17	
type of diabetes		67	91	18	55	0.001
DT1	DT2					
BMI(kg/m_2)		23.77		24.56		0.581
Duration of diabetes (years)		8.24		10.43		0.001
HBA1C		8.76		10.05		0.128
Alcohol consumption		2		4		0.045
HTA		18		15		0.444
Dyslipidemia		3		2		0.593
Smoking		6		3		0.814
Type of treatment						0.067
Insulin		91		32		
Oral antidiabetics		44		40		
Insulin et Oral antidiabetics		11		5		
Life style		5		3		

4. Discussion

The prevalence and incidence of NDD are difficult to determine with precision given the diversity of recruitment of the populations studied and the differences in the criteria, it varies from 8% to 53.7% [3,4]. In our study the prevalence of painful neuropathic pain was 28.1%.Several studies have observed a direct link between advanced age and the presence of NDD [3,4,5], including our study which showed a significant linear relationship between NDD and age.Most studies have objectified a clear preponderance of painful diabetic neuropathy in type 2 diabetics compared to type 1 diabetics [4,5], in our study it was more frequent in type 1 diabetics.The results of studies that have studied sex as a risk factor for NDD, split between those that did not find a difference in prevalence by sex [6,7], and those that found a female predominance [3, 4.8]. In our study we found a female predominance but it was not significant.Several studies have shown a positive correlation between the duration of diabetes and NDD, more particularly after 10 years of diabetes [4, 9]. This correlation was confirmed by our study.Alcohol consumption and NDD was reported by several studies [6, 10]. In our study we found a significant association between NDD and alcoholism.The role of hyperglycemia is clearly established in the onset and aggravation of peripheral polyneuropathy, poor glycemic control could increase the risk of diabetic polyneuropathy by more than 5 times [2,11].

Diabetic neuropathy is one of the most common complications of diabetes, it is most often asymptomatic, many questionnaires helping to identify the neuropathy nature of pain have been published. The DN4 questionnaire appears particularly interesting because it is quick, easy to use and validated. In the literature several factors were associated with diabetic neuropathy, in our study we found a significant association of diabetic neuropathy with age, type of diabetes, duration of diabetes and alcohol consumption.

5. Conclusion

Diabetic neuropathy remains largely underdiagnosed and undertreated. The DN4 questionnaire is a simple tool for diagnosing diabetic neuropathy, it must be evaluated in any diabetic patients.

Compliance with ethical standards

Acknowledgments

I thank my teachers for their help in developing this work.

Disclosure of conflict of interest

We declare no conflict of interest

Statement of ethical approval

Informed consent was obtained from all individual participants included in the study.

References

[1] Aslam A, Singh J, Rajbhandari S. Prevalence of Painful Diabetic Neuropathy Using the Self-Completed Leeds Assessment of Neuropathic Symptoms and Signs Questionnaire in a Population with Diabetes. Can J Diabetes. 2015 Aug;39(4):285-95

[2] A. Hartemann et al. Painful diabetic neuropathy: diagnosis and management. Diabetes Metab. 2011 Nov; 37(5):377-88.

[3] Wu .EQ et al. Estimated prevalence of peripheral neuropathy and associated pain in adults with diabetes in France. Curr Med Res Opin. 2007 Sep;23(9):2035-42

[4] Jambart S et al. Prevalence of painful diabetic peripheral neuropathy among patients with diabetes mellitus in the Middle East region. J Int Med Res. 2011;39(2):366-77

[5] Abbott CA, RA .Malik, van Ross ER, Kulkarni J, Boulton AJ. Prevalence and characteristics of painful diabetic neuropathy in a large community-based diabetic population in the U.K. Diabetes Care. 2011 Oct; 34(10):2220-4.

[6] Ziegler D et al. Neuropathic pain in diabetes, prediabetes and normal glucose tolerance: the MONICA/KORA Augsburg Surveys S2 and S3. Pain Med. 2009 Mar;10(2):393-400

[7] Daousi C et al .Chronic painful peripheral neuropathy in an urban community: a controlled comparison of people with and without diabetes. Diabet Med. 2004 Sep; 21(9):976-82.

[8] Erbas T et al. Prevalence of peripheral neuropathy and painful peripheral neuropathy in Turkish diabetic patients. J Clin Neurophysiol. 2011 Feb; 28(1):51-5.

[9] Van Acker K, et al. Prevalence and impact on quality of life of peripheral neuropathy with or without neuropathic pain in type 1 and type 2 diabetic patients attending hospital outpatients clinics. Diabetes Metab 2009; 35: 206-13.

[10] Sands ML, Shetterly SM, Franklin GM, Hamman RF. Incidence of distal symmetric (sensory) neuropathy in NIDDM. The San Luis Valley Diabetes Study. Diabetes Care 1997. 20(3):322-329

[11] Papanas N, Ziegler D. Risk Factors and Comorbidities in Diabetic Neuropathy: An Update 2015. Rev Diabet Stud. 2015 Spring-Summer;12(1-2):48-62