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Prevalence of Diabetes in Migraine Headache

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Abstract

Introduction: Migraine is a common disorder with an overall prevalence of 5-15%. The prevalence of migraine in females is higher (6-22%) compared to males (3-7%).The pathogenesis is multifactorial and several genetic and environmental factors have been suggested.

Objective: this study aimed to determine the prevalence of diabetes in migraine headache.

Material and Methods: A cross-sectional study was performed on patients with migraine headache based on International Headache Society Criteria who presented to outpatient department of Govt. Medical College Srinagar.

Results: A total of 300 patients were enrolled. Females were 79% and males were 21%. Prevalence of diabetes in migraine patients was 2.3% and 3.6 % based on FBG and HbA1C respectively.

Conclusion: the prevalence of diabetes in patients with migraine was lower as compared to general population.

Keywords: Migraine, Beside Obesity, Chronic Liver Disease, Malignancy.

Introduction

Migraine is a common disorder with an overall prevalence of 5-15%.[1-3] The -prevalence of migraine in females is higher (6-22%) compared to males (3-7%).[4-6] The pathogenesis is multifactorial and several genetic and environmental factors have been suggested.

Diabetes may be relevant in migraine pathophysiology, considering that diabetic patients display changes in vascular reactivity and nerve conduction.[7] However, the association between migraine and diabetes is controversial. An inverse relationship between diabetes and migraine has been reported in several studies,[8,9] nevertheless, other studies have concluded that the prevalence of migraine has been shown to be similar or higher.[10-12] Several authors have found that obesity is a risk factor for type 2 diabetes and for migraine and therefore, obesity would be a confounding variable for the association between migraine and diabetes.[13,14] However, differences in the socio-demographic characteristics, coexisting physical and mental conditions and lifestyles, may explain the association between diabetes and migraine, beside obesity, described by other

authors.[9-11,15] Further investigations are necessary to increase knowledge on the pathophysiology of migraine in people with diabetes, and as a consequence to be able to improve the management of migraine among diabetic patients.[8,16]

Material and Method

A cross sectional study was done on 300 migraine patients to determine prevalence of diabetes in migraine headache from nov 2022-sep 2024. Diagnosis of Migraine and diabetes in patients presented to outpatient department of Govt. Medical College Srinagar was based on International Headache Society classification (table below) and ADA guidelines (table) below:

Diagnostic Criteria of Migraine Based On International Headache Society Classification

Repeated attacks of headache lasting 4-72 hours in patients with a normal physical examination,no other reasonable cause for the headache and:	
At least 2 of the following features:	Plus at least 1 of the following features:
Unilateral pain Throbbing pain Aggravation by movement Moderate or severe intensity	Nausea/Vomiting Photophobia and Phonophobia

Diagnostic Criteria of Diabetes Based on Ada and Who Guidelines

Parameter	Normoglycemia(mg/dl)		Prediabetes(mg/dl)		Diabetes (mg/dl)
	WHO	ADA	WHO	ADA	
FBG	<110	<100	110-125	100-125	≥126

2-h PG	<140	140-199	≥200
HbA1C	<5.7%	5.7-6.4%	≥6.5%
Random plasma glucose			≥200(with symptoms of diabetes)

Inclusion Criteria

All patients with migraine headache above age 18 years

Exclusion Criteria

- Age <18 years
- Patients with Cerebrovascular accident and cardiovascular accident
- Patients with Chronic liver disease
- Patients with Chronic kidney disease
- Patients with malignancy
- Pregnancy

Results

A total of 300 patients were enrolled. Patients were divided into three age groups, 18-30,31-60 and greater than 60 years. Most of the patients were presented in the age group 31-60(n=156) and 18-30(n=141) while patients aged >60 were only 3 in number. The mean age of patients was 33.44±10.53 years. (table 1) Females outnumbered males as 79%(n=237) were females and 21%(n=63) were males. (table 2)

Table 1: Age distribution

Age group	Frequency(n)	Percent (%)
18-30	141	47
31-60	156	52
>60	3	1
Total	300	100
Mean ±SD=33.44±10.53		

Table 2: Gender distribution

Gender	Frequency(n)	Percent (%)
Males	63	21
Females	237	79
Total	300	100

Normoglycemia (FBG<100) was found in 244 patients (81.33%).49 patients (16.33%) were prediabetic (FBG 100-125) and 7 patients (2.3%) were diabetic

(FBG≥126). Mean FBG was found to be 96.61±11.19. (table 3).

Table 3: Fasting Blood Glucose

FBG(mg/dl)	Frequency(n)	Percent (%)
<100	244	81.33
100-125	49	16.33
≥126	7	2.3
Total	300	100
Mean FBG±SD=92.61±11.19		

HbA1C of <5.7 was seen 251 patients (83. 66%).HbA1C of 5.7-6.4 (prediabetic) was found in 38 patients (12.66%) while HbA1C of ≥6.5 was found in 11 patients (3.6%). Mean HbA1C was found to be 5.27±0.50. (table 4)

Table 4: HbA1C level

HbA1C(%)	Frequency(n)	Percent (%)
<5.7	251	83.66
5.7-6.4	38	12.66
≥6.5	11	3.6
Total	300	100
Mean ±SD=5.27±0.50		

On the basis of FBG (fasting blood glucose) , prevalence of diabetes was found to be 2.3% and on the basis of HbA1C prevalence was found to be 3.6%.

Discussion

A total of 300 patients were enrolled. Patients were divided into three age groups, 18-30, 31-60 and greater than 60 years. Most of the patients were presented in the age group 31-60(n=156) and 18-30(n=141) while patients aged >60 were only 3 in number. The mean age of patients was 33.44±10.53 years.

The prevalence of diabetes in migraine in our study was 2.3% and 3.6% on the basis of FBG and HbA1C levels respectively. The prevalence of diabetes in India has risen from 7.1% in 2009 to 8.9% in 2019.17-19So in our study it was found that prevalence of diabetes in migraine is lower as compared to general population. Our results agree with Haghighi et al, 11 who compared 147 patients with type 2 diabetes with data from 150 matched subjects from the general population and observed no significant differences in the prevalence of migraine. Our study was consistent with the study done by Indian Council of Medical Research–India DIABETES study, the largest nationally representative epidemiological survey conducted in India on diabetes and prediabetes, the data from 15 states/UT of the country showed that the prevalence of diabetes ranged from 3.5 to 8.7% in rural to 5.8 to 15.5% in urban areas and the prevalence varied from 4.3% in Bihar to 13.6% in Chandigarh.20,21 The prevalence of diabetes was higher in urban areas (11.2%) compared to rural areas (5.2%).

The prevalence of prediabetes in our study was 16.33 % and 12.66 on the basis of FBG and HbA1C. The was consistent with the study of Indian Council of Medical Research–India DIABetes study, who found that the prevalence of prediabetes ranged from 5.8 to 14.7% in rural to 7.2 to 16.2% in urban areas.20,21 The prevalence of prediabetes exceeded that of diabetes in most states.20,21 This indicates the presence of a large number of individuals who may develop type 2 diabetes in the near future. So in our study it was found that prevalence of prediabetes was similar in migraine and general population.

Conclusion

In conclusion, we observed no significant differences in the prevalence of diabetes in migraine patients and general population and even the prevalence of diabetes was lower in migraine patients as compared to general population. However, the prevalence of prediabetes was found to be similar in migraine patients and general population.

References

1. Robbins MS, Lipton RB (2010) The epidemiology of primary headache disorder. Semin Neurol 30:107–119
2. Brennum J, Brinck T, Schriver L et al (1996) Sumatriptan has noclinically relevant effect in the treatment of episodic tension type headache. Eur J Neurol 3:23–28
3. Stang PE, Carson AP, Rose KM et al (2005) Headache, cerebrovascular symptoms, and stroke: the atherosclerosis risk in communities' study. Neurology 64:1573–1577
4. Lipton RB, Stewart WF, Cady R et al (2000) Wolfe Award. Sumatriptan for the range of headaches in migraine sufferers: results of the Spectrum Study. Headache 40:783–791
5. LjStovner, Hagen K, Jensen R et al (2007) The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia 27:193–210
6. Sakai F, Igarashi H (1997) Prevalence of migraine in Japan: anationwide survey. Cephalalgia 17:15–22
7. Casucci G, Villani V, Cologno D, D'Onofrio F. Migraine and metabolism. Neurol Sci. 2012;33 Suppl 1:S81–85.
8. Aamodt AH, Stovner LJ, Midthjell K, Hagen K, Zwart JA. Headache prevalence related to diabetes mellitus. The Head-HUNT study. Eur J Neurol. 2007;14(7):738–744.
9. Berge LI, Riise T, Fasmer OB, et al. Does diabetes have a protective effect on migraine? Epidemiology. 2013;24(1):129–134.
10. Burch RC, Rist PM, Winter AC, et al. Migraine and risk of incident diabetes in women: a prospective study. Cephalalgia. 2012;32(13): 991–997.
11. Haghighi FS, Rahmanian M, Namiranian N, et al. Migraine and type 2 diabetes; is there any association? J Diabetes Metab Disord. 2016;15(1):37.
12. Split W, Szydlowska M. Headaches in non insulin-dependent diabetes mellitus. Funct Neurol. 1997;12(6):327–332.
13. Ford ES, Li C, Pearson WS, et al. Body mass index and headaches: findings from a national sample of US adults. Cephalalgia. 2008;28(12):1270–1276.
14. Peterlin BL, Rapoport AM, Kurth T. Migraine and obesity: epidemiology, mechanisms, and implications. Headache. 2010;50(4):631–648.
15. Bigal ME, Kurth T, Santanello N, et al. Migraine and cardiovascular disease: a population-based study. Neurology. 2010;74(8):628–635.
16. Hagen K, Åsvold BO, Midthjell K, et al. Inverse relationship between type 1 diabetes mellitus and migraine. Data from the Nord-Trøndelag Health Surveys 1995–1997 and 2006–2008. Cephalalgia. 2018;38(3): 417–426.
17. International Diabetes Federation. IDF Diabetes Atlas. 9th ed.Brussels, Belgium: International Diabetes Federation; 2019.
18. International Diabetes Federation. IDF Diabetes Atlas. 4th ed. Brussels, Belgium: International Diabetes Federation; 2009.
19. International Diabetes Federation. IDF Diabetes Atlas. 8th edn. Brussels, Belgium: International Diabetes Federation; 2017.
20. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, et al. Prevalence of diabetes and prediabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical

Research–INdia DIABetes (ICMR–INDIAB) study. Diabetologia 2011;54:3022-7.

21. Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, et al. Prevalence of diabetes and prediabetes in 15 states of India: results from the ICMR-INDIAB population-based cross-sectional study. Lancet Diabetes Endocrinol 2017;5:585-96.