



Original Article

STUDY OF OBSTRUCTIVE SLEEP APNEA IN TYPE 2 DIABETES MELLITUS

Sudhakar Hase*, N.N Ramraje****, R.R.Hegde**, J.M Phadtare***, P.L.Meshram**

Department of Pulmonary Medicine, Grant Government Medical College, Mumbai-8

ARTICLE INFO

Keywords:

Obstructive sleep apnea (OSA)
Diabetes Mellitus Type 2

ABSTRACT

Type 2 Diabetes Mellitus is a major health concern with high morbidity, mortality and health care cost. Sleep Disorders especially Obstructive sleep apnea and Diabetes Mellitus share several risk factors including advancing age and obesity. The study was conducted on 100 patients attending our OPD who were diagnosed with Diabetes Mellitus. The patients were evaluated for the presence of sleep disorders by sleep studies. American Society of Sleep Medicine criteria were used for diagnosis of OSAS. Out of 100 patients included, 68% were males and 32% were females. Males showed a higher occurrence of OSA as compared to females, however the difference was not statistically significant. The occurrence of Mixed sleep apnea was statistically higher in males. There was no significant co-relation between age and sleep disorders. Of the 100 patients 66% had uncontrolled DM and 34% had controlled diabetes. Sleep disorders were found to be more common in patients with uncontrolled Diabetes and of which OSA had higher occurrence.

© Copyright 2018 BioMedSciDirect Publications IJBMR - ISSN: 0976:6685. All rights reserved.

Introduction

Type 2 Diabetes Mellitus is a major health concern with high morbidity, mortality and health care cost. Sleep Disorders especially Obstructive sleep apnea and Diabetes Mellitus share several risk factors including advancing age and obesity. Recent reports have indicated that majority of obese patients with Type 2 Diabetes Mellitus also have Obstructive sleep apnea. There is an alarming increase in the prevalence of Type 2 Diabetes Mellitus that may be attributed largely to obesity. Excess weight is also an important risk factor for OSA. This remarkable association raises the possibility that sleep disorders may be a risk factor for type 2 Diabetes and/or conversely chronic hyperglycemia may promote OSA. Therefore there is a need to study the occurrence of OSA in patients with Type 2 Diabetes Mellitus and conversely evaluate the presence of Type 2 Diabetes Mellitus in patients of OSA.

PATIENTS AND METHODS

The study was conducted in Pulmonary Medicine Department of Tertiary care hospital after approval of institutional ethics committee. An informed consent was obtained from the patient prior to inclusion in the study. A total of 100 patients who were diagnosed with Type 2 Diabetes Mellitus were included in the study. These patients were evaluated for presence of symptoms like snoring, hyper somnolence, nocturia, irritability, non refreshing sleep and morning headaches. All these patients were subjected to whole night polysomnography study in our sleep lab. Sleep studies were performed using Embla S 7000 system. Obstructive Sleep apnea was defined as Apnea hypopnea index (AHI) of more than 5/hour. The severity of OSA was graded as mild (AHI 5-14/ hour), moderate (AHI 15-29/hour) and severe (AHI >= 30/hour).

INCLUSION CRITERIA

Either gender
Adults above the age of 18 years
Patients diagnosed as cases of Diabetes Mellitus type 2

EXCLUSION CRITERIA

Patients diagnosed with Type 1 Diabetes Mellitus.
Any respiratory exacerbation/ worsening of symptoms in the last 4 weeks
Poor subject co-operation.
Debilitated patients.
Congestive cardiac failure, coronary artery disease, valvular heart disease.
Sputum positive pulmonary tuberculosis.

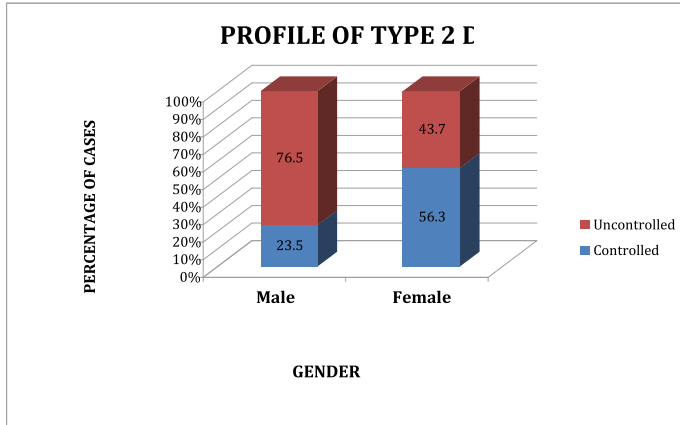
RESULTS

1) Genderwise distribution

Gender	No. of Cases	Controlled No. %	Uncontrolled No. %
Male	68	16 23.5	*52 76.5
Female	32	18 56.3	14 43.7

(Table 1) By Chi Square Test the p value was found to be 0.042, which is statistically significant

* Corresponding Author : RR Hegde
e mail- drgrhegde@gmail.com

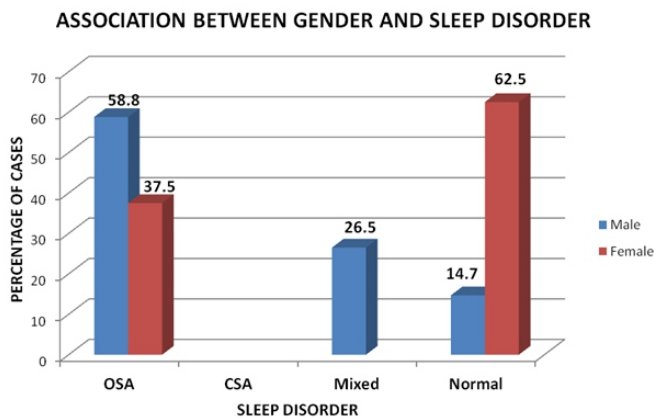


Graph no 1

2) ASSOCIATION BETWEEN GENDER AND TYPE SLEEP DISORDERS

Gender	No. of Cases	Sleep Disorder							
		OSA		CSA		Mixed		Normal	
		No.	%	No.	%	No.	%	No.	%
Male	68	40	58.8	L? -	18	26.5	10	14.7	
Female	32	12	37.5	L? -	L? -	20	62.5		
P values	NA	0.1592	-		*0.0230		*0.0006		

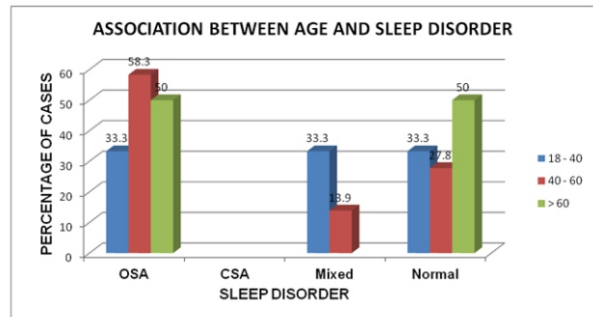
(Table 2)By Chi square test , the association was found to be statistically significant.



3) ASSOCIATION BETWEEN AGE AND SLEEP DISORDER

Age group (in years)	No. of Cases	Sleep Disorder							
		OSAS		CSA		Mixed		normal	
		No.	%	No.	%	No.	%	No.	%
18 - 40	24	08	33.3	L? -	08	33.3	08	33.3	
40 - 60	72	42	58.3	L? -	10	13.9	20	27.8	
>60	04	02	50.0	L? -	L? -	L? -	02	50.0	
P values	NA	0.182		L?		0.334		0.612	

(Table 3)By Chi Square Test the association was found to be not significant

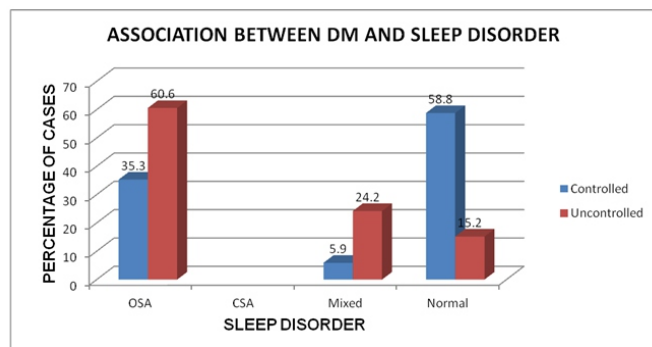


Graph no 3

4) ASSOCIATION BETWEEN DM AND SLEEP DISORDER

DM	No. of Cases	Sleep Disorder							
		OSAS		CSA		Mixed		Normal	
		No.	%	No.	%	No.	%	No.	%
Controlled	34	12	35.3	L? -	02	05.9	20	58.8	
Uncontrolled	66	40	60.6	L? -	16	24.2	10	15.2	
P values	NA	0.0897		-		0.1094		*0.0014	

(Table 4)By Chi Square test , the association was found to be statistically significant



Graph no. 4

DISCUSSION

The study was conducted on 100 patients attending our OPD who were diagnosed with Diabetes Mellitus. The patients were evaluated for the presence of sleep disorders by sleep studies. Apnea hypopnea Index(AHI) was used to define the presence of OSA, an AHI of more than 5 was considered to be suggestive of OSA. Out of 100 patients included, 68 were males and 32 were females. It was found that out of 68 males, 40 (58.8%) had OSA, 18 (26.5%) CSA and 10 (14.7%) had normal sleep study. Of the 32 females, 12 had OSA and 20 had normal sleep study. Chi square test was applied to find out statistical correlation of gender and sleep disorders. Males showed a higher occurrence of OSA as compared to females, however the difference was not statistically significant (p value= 0.1592) However, the occurrence of Mixed sleep apnea was statistically higher in males ($p=0.0230$) as compared to females. Okada T(1) et al carried out a study to compare incidence of OSA in males and females. Study found that 35 Sleep Apnea syndrome (0.53%) among 6554 males and 5 sleep apnea syndrome patients (0.08%) among 6233 females. Our study corroborates the findings of this study.

Adults were selected for our study. A correlation was sought between Sleep disorders and age. It was observed that OSA was more common in 40-60 yrs age group but the difference was not significant ($p=0.182$). However the findings of study by Bixler et al(2) found that OSA is more common in older age groups as compared to middle age. The findings in our study were not significant probably because of the small sample size.

Our study attempted to find correlation of Diabetes Mellitus with sleep disorders. 100 patients having Type 2 Diabetes Mellitus were selected and they were subjected to polysomnography study.

Of the 100 patients included in our study 66 had uncontrolled Diabetes Mellitus and 34 had controlled DM. Of the subjects with uncontrolled DM 40(60.6%) had OSA. Thus we observed that Sleep Disorders were more common in patients of uncontrolled DM and amongst the sleep Disorders, OSA was the most frequent.

Out of the 34 patients who had controlled DM, 20 (58.8%) had a normal polysomnography study, 12 (35.3%) had OSA and 2 (5.9%) had mixed sleep apnea. Thus we observed that patients with controlled Diabetes Mellitus had a statistically significant occurrence of Normal polysomnography study.

West et al reported a the prevalence of sleep apnea syndrome was 23% in a cohort of 938 Diabetic men.(3)

Jorge Vale et al(4) conducted a study in which it was observed that obstructive sleep apnea is more severe in type 2 DM patient with poor glycemic control. Similar findings were obtained in our study.

REFERENCES

1. Prognosis of the middle-aged and aged patients with obstructive sleep apnea syndrome. Noda A1, Okada T, Yasuma F, Sobue T, Nakashima N, Yokota M. *Psychiatry Clin Neurosci*. 1998 Feb;52(1):79-85.
2. Effects of age on sleep apnea in men: I. Prevalence and severity. Bixler EO1, Vgontzas AN, Ten Have T, Tyson K, Kales A. *Am J Respir Crit Care Med*. 1998 Jan;157(1):144-8.
3. Prevalence of obstructive sleep apnoea in men with type 2 diabetes SD West, D J Nicoll, and J R Stradling *Thorax*. 2006 Nov; 61(11): 945-950.
4. Obstructive sleep apnea and diabetes mellitus JorgeValeaPaulaManuelbEuricoOliveirabAna Rita Oliveiraa Eloisa Silvaa Vitor Melo Revista Portuguesa de Pneumologia (English Edition) Volume 21, Issue 2, March-April 2015, Pages 55-60