

CHARACTERISTICS OF TURKISH PATIENTS WITH OBSTRUCTIVE SLEEP APNEA SYNDROME

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ABSTRACT

Objective: Obstructive sleep apnea syndrome (OSAS) is one of the most common sleep breathing disorders characterized by nocturnal oxygen desaturation and repeated upper airway obstruction episodes during sleep. In this study, it was aimed to assess gender specific differences in the patients with OSAS in Turkish population.

Material and Method: Five hundred sixty five OSAS diagnosed patients were included into this cross-sectional study, in Istanbul between February 2000 and 2006. Diagnostic polysomnography (PSG) was performed in all patients, various factors related to gender differences in OSAS patients were analyzed retrospectively.

Results: The study group was composed of 430 men and 135 women diagnosed with OSAS. Male-female ratio was 3.1/1 in our study population. The mean age rates

of the men and the women were 50 ± 12 and 54.5 ± 13 , respectively. The men were significantly younger than the women ($p < 0.001$). BMI was parallel between women (29.6 ± 6) and men (29 ± 5). AHI was significantly higher ($p < 0.05$) in men (15.6 ± 17.2), compared to women (11 ± 11.3). The most common symptoms were snoring, non-effective sleeping, excessive daytime sleepiness, and these symptoms were found to be similar in both groups.

Conclusion: In this study, the majority of the subjects diagnosed with OSAS were primarily men, and male-female ratio was 3.1 /1. There was no statistically gender difference in the study population although AHI was significantly higher in men than in women. Turkish men diagnosed with OSAS are younger than women and have similar BMI with women.

Key Words: Obstructive sleep apnea syndrome, gender difference, obesity, hypertension. *Nobel Med 2011; 7(2): 30-33*

OBSTRUKTİF UYKU APNE SENDROMLU TÜRK HASTALARIN KARAKTERİSTİK ÖZELLİKLERİ

ÖZET

Amaç: Obstruktif Uyku Apne Sendromu (OUAS) nokturnal oksijen desatürasyonları ve tekrarlayıcı üst hava yolu obstrüksiyonu episodları ile karakterize, en sık görülen uyku solunum hastalıklarından biridir. Bu çalışmada OUAS'lı Türk hasta popülasyonunun cinsiyete özgü değişikliklerin değerlendirilmesi amaçlandı.

Materyal ve Metod: İstanbul'da Şubat 2000 ile 2006 yılları arasında yapılmış olan, bu kesitsel çalışmaya 565 OUAS tanısı konmuş hasta dahil edildi. Diagnostik polisomnografi (PSG) tüm hastalara yapıldı, cinsiyetle ilişkili çeşitli faktörler retrospektif olarak analiz edildi.

Bulgular: Çalışma grubu 430 erkek ve 135 OUAS tanısı almış hastadan oluşuyordu. Erkek kadın oranı

çalışma popülasyonunda 3,1/1 idi. Ortalama yaş erkeklerde 50 ± 12 , kadınlarda $54,5 \pm 13$ idi. Erkekler kadınlardan belirgin olarak gençti ($p < 0,001$). Vücut Kitle İndeksi (BMI) kadınlar ($29,6 \pm 6$) ve erkekler (29 ± 5) arasında paraleldi. Apne-Hipopne İndeksi (AHI) erkekler ($15,6 \pm 17,2$), kadınlarla ($11 \pm 11,3$) karşılaştırıldığında belirgin yüksekti ($p < 0,05$). En sık görülen semptomlar olan horlama, etkin olmayan uyku, artmış gündüz uykululuğu iki grupta benzer olarak bulundu.

Sonuç: Bu çalışmada, OUAS tanısı konmuş hastaların çoğu erkek ve erkek kadın oranı 3,1/1 idi. Çalışma grubunda, AHI erkeklerde kadınlara göre belirgin yüksek olmasına rağmen, istatistikî cinsiyet farklılığı yoktu. Kadınlarla benzer BMI'ye sahip olan OUAS tanısı konmuş Türk erkekleri kadınlardan gençti.

Anahtar Kelimeler: Obstruktif uyku apne sendromu, cinsiyet farklılığı, obezite, hipertansiyon *Nobel Med 2011; 7(2): 30-33*

INTRODUCTION

OSAS is a condition characterized by repetitive episodes of cessation of breathing followed by arousals during sleep. Several studies reported that gender has an effect on the severity of OSAS and the distribution of the sleep events.¹⁻⁴ The differences, such as genetic factors, craniofacial structure, upper airway anatomy, fat deposition and ethnicity may alter the risk and severity of OSAS.^{5,6} In the literature, there are limited data about gender specifications related to OSAS in Turkish population.

This study has the largest study group in the literature to be performed about gender specifications with OSAS in Turkish population so far. In this study, it was aimed to assess the factors related to gender differences in OSAS patients.

MATERIAL and METHOD

Five hundred sixty five OSAS diagnosed patients were included into this cross-sectional study, Istanbul between February 2000 and 2006. Polysomnography was performed in all of the patients. Clinical and demographic data were obtained via personal interviews. The study group was composed of 430 (76.1%) men and 135 (23.8%) women. The mean age rate of all participants was 51 ± 12 . Patients were usually referred to our clinic by general practitioners, internists, chest physicians, or otorhinolaryngologists. This study was performed retrospectively and ethic committee approval from our hospitals ethic committee were obtained before the initiation of the study.

Sleep parameters

For each subject, the overnight sleep study was recorded between 10:30 PM and 6:00 AM in a sleep laboratory under the observation of a technician. Recordings were carried out using a 28-channel polysomnograph (SOMNOmedics GmbH&Co. KG, Kist, Germany) consisting of a flow sensor for nasal and oral breath flow, a laryngeal microphone, a 3-channel electrocardiograph, 1 stress-sensitive belt each for the thorax and the abdomen, a positional sensor for determination of body movement and a PLMS (periodic leg movement syndrome). The presence and stages of sleep were monitored using two pairs of electroencephalographic (EEG) leads (C_4-A_1 , C_3-A_2) and two pairs of electrooculographic leads (EOC). Recordings were carried out by using standard methods.^{7,8} Arterial oxygen saturation was continuously recorded by pulse oximeter throughout the night.

Table 1: Distribution of demographic data of study population

	Women (135, 23.9%)	Men (430, 76.1%)	p value
Age	54.5 ± 13	50 ± 12	< 0.001
BMI	29.6 ± 6	29 ± 5	0.3
AHI	11 ± 11.3	15.6 ± 17.2	< 0.05
ESS score	14.9 ± 3.1	15.3 ± 4.6	0.8

BMI: Body Mass Index, AHI: Apnea-Hypopnea Index, ESS: Epworth Sleepiness Scale

Table 2: Comorbidities and symptoms of patients with obstructive sleep apnea syndrome

	Total number	Men	Women	p value
Comorbidity				
Obesity	213	160	53	>0.05
Hypertension	116	74	42	<0.001
Depression	28	15	13	<0.05
DM	17	12	5	>0.05
CAD	6	4	2	>0.05
COPD	10	8	2	>0.05
Asthma	26	12	14	>0.05
CVD	0	0	0	
Goiter	8	5	3	>0.05
AMI history	4	4	0	>0.05
Symptoms				
Snoring	562	430	132	>0.05
Apnea history	309	236	73	>0.05
EDS	534	399	135	>0.05
SRLS	93	65	28	>0.05
Nocturia	0	0	0	

DM : Diabetes Mellitus, CAD: Coronary Artery Diseases, CVD: Cerebro Vascular Diseases, COPD: Chronic Obstructive Pulmonary Diseases, AMI: Acute Myocard Infarctus, EDS: Excessive daytime sleepiness, SRLS: Symptoms of Restless Leg Syndrome

All polysomnography records were scored manually according to standard criteria.⁸ Apnea was defined as the absence of airflow for >10 seconds despite persistent respiratory efforts. Hypopnea was defined as a $\geq 50\%$ reduction in the amplitude of respiratory efforts for at least 10 seconds, plus a fall in arterial oxyhemoglobin saturation of at least 3%. The apnea-hypopnea index (AHI) was defined as the number of episodes of apnea and hypopnea per hour of sleep. Patients with apnea-hypopnea index $AHI < 5$ are diagnosed as OSAS negative, between 5-14 as mild OSAS, 15-29 as moderate OSAS and $AHI \geq 30$ as severe OSAS. The severity of OSAS was classified by AHI, mean and lowest arterial oxygen saturation (SaO_2) during sleep.

Statistical analysis

Clinical and laboratory data were expressed as mean \pm SD. Comparisons between groups were \rightarrow

performed using Mann-Whitney U test. Correlations between variables were investigated by Pearson correlation test. All statistical analyses were performed through a PC compatible statistics programme (SPSS v.15, Chicago, IL, USA), and values less than $p < 0,05$ were considered to be statistically significant.

RESULTS

All demographic and clinical data of the subjects were recorded by means of personal interview by clinicians, physical examination and polisomnography. The study group was composed of 430 men and 135 women diagnosed with OSAS. Male-female ratio was 3.1/1 in our study population. The mean age rates of men and women were 50 ± 12 and 54.5 ± 13 , respectively. The men were significantly younger than the women ($p < 0.001$). BMI was significantly similar between women (29.6 ± 6) and men (29 ± 5). AHI was significantly higher ($p < 0.05$) in men (15.6 ± 17.2), compared to women (11 ± 11.3). Demographic data provided were summarized in Table 1.

Symptoms

The most common symptoms were as follows: snoring (100% in men and 97.7% in women), non-effective sleeping (99.8% in men and 99.3% in women), excessive daytime sleepiness (92.7% in men and 100% in women) and apnea history (54.8% in men and 54% in women). No statistically differences were found in terms of symptoms in both groups. All symptoms are presented in Table 2.

Comorbidities

Of men and women, 74 (17.9%) and 42 (31.1%) were observed to have hypertension (HT) in the study population, respectively. The difference was statistically significant among women ($p < 0.05$). BMI was higher than ≥ 30 in 53 (39.6%) of women and 160 (37.4%) of men. There was no significant difference ($p > 0.05$) (BMI; calculated as kg/m^2). Compared to men and women, such criteria as the existence of Obesity, AMI history, Asthma, COPD, DM and Goiter were seen to be similar. Thirteen (10.6%) women and 15 (3.7%) men had depression, and in disproportionate to their lower number, the rate of depression in women was significantly higher than men.

DISCUSSION

In the present study, the data of demographic, clinical and PSG findings in Turkish population with OSAS were investigated. Majority of the subjects diagnosed with OSAS were men and male-female ratio was 3.1/1

in the study. In the literature, several studies showed similar higher ratio in men than in women.⁹⁻¹¹ The findings in our study were similar to those reported by other studies.

The most common symptoms were snoring, non-effective sleeping, excessive daytime sleepiness, and these symptoms were found to be similar in both groups. In several studies, snoring was reported to be the most frequent symptom.^{4,12,13}

The prevalence of OSAS peaks at the ages of 55 in men and 65 in women.¹⁴ The mean age rates in our study were 50 ± 12 in men and 54.5 ± 13 in women. AHI was higher in men although men were younger than women in our study. Some studies reported similar findings to those in our study that women were older than men.¹⁵ In another study from Greece with 1010 patients with OSAS, women were reported to be significantly older than men, as in our study.¹⁶ Contrary to the findings in our study, several studies from North America reported women to be about the same age as men.^{14,17}

In various studies, sex hormones were reported to have protective effects against OSAS and women to be at a greater risk for OSAS in post-menopausal period.^{18,19} Menopausal status was not questioned in our study, meaning one limitation of our study.

Obesity and hypertension were two most common comorbidities in our OSAS population. Obesity is a known predisposing factor for OSAS.²⁰ In their study, Walker et al. compared men and women at similar age with the similar severity of the sleep breathing disorders and found that women had higher BMI.¹⁷ Several other studies reported higher BMI in women than in men.^{2,20-22} In our study, obesity was diagnosed in 160(37%) of men and 53 (39%) of women. Nevertheless, BMI values differ from region to region in Turkey,²³ and the age is another factor affecting BMI. According to the study performed by Iseri,⁸ the women from the Aegean and the Marmara regions have lower obesity prevalence than women in the Black Sea, the Central Anatolia and the Southeast Anatolia regions. Whereas men from the Aegean, the Eastern Anatolia and the Mediterranean regions have lower BMI values than those from the Black Sea, the Marmara and the Southeast Anatolia, they also reported similar BMI values between men and women from the Marmara region. The findings in our study were consistent with those in the latter. BMI values in the study by Iseri were similar to those obtained in our study population. The findings expressing similar scores in terms of BMI in the Marmara region in both our study and Iseri study may be attributed to the fact →

that the population in both studies was originated from the same region, the Marmara.

Relations between hypertension and OSAS have been reported in some studies.^{24,25} HT was another most common comorbidity in our study. HT was diagnosed in 74 (17%) of men, 42 (31%) of women in our population. Prevalance of HT was 20.5% in our patient group, and HT was significantly higher in women than men.

Several studies reported an association between the existence of OSAS and depression.^{26,27} In one of these studies, Gassino et al. reported that there is a significant relation between the existence of OSAS and depression.²⁷ In our study, there was also a significant difference in terms of depression between women and men. Reporting that depression and anxiety are encountered more often in women than men, Young

et al. found similar findings to ours in their study.²¹

CONCLUSION

In this study, the majority of the subjects diagnosed with OSAS were primarily men, and male-female ratio was 3.1 /1. There was no statistically gender difference in the study population although AHI was significantly higher in men than in women. Turkish men diagnosed with OSAS are younger than women and have similar BMI with women. Despite higher AHI in men, HT is a significantly more witnessed disorder in women.

Further studies are needed to enlighten the underlying patophysiology of OSAS on the gender differences, and the clinicians should be aware that presenting symptoms and comorbidities of women can be different in clinical practice.



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