SLEEP-DISORDERED BREATHING UYKU BOZUKLUKLARI

Clinical Profiles of Obstructive Sleep Apnea Syndrome

Obstrüktif Uyku Apne Sendromunun Klinik Özellikleri

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ABSTRACT

Introduction: To evaluate the clinical profiles of obstructive sleep apnea syndrome.

Material and Method: Sixty two consecutive patients who were diagnosed as having obstructive sleep apnea syndrome were included in the study.

Results: The male/female ratio of patients with an apnea-hypopnea index of over 5 was 2.64. A family history of the syndrome was present in 43.5% of the patients. Of the 62 patients, 35% were diagnosed as having an overlap syndrome due to the coexistence of chronic obstructive pulmonary disease. The mean Epworth Sleepiness Scale score in mild, moderate and severe obstructive sleep apnea syndrome patients were 8.81±6.46, 10.38±5.14, 15.34±5.44, respectively (p=0.001). Hypertension, diabetes mellitus, coronary artery disease, subclinical hypothyroidism and cerebrovascular accidents were detected in 35.5%, 11.3%, 16.1%, 5.9%, and 1.6% of the cases, respectively. No correlation was identified between groups with respect to smoking habits, fasting blood glucose, triglyceride, LDL, HDL and total cholesterol levels. We detected a significant difference in neck and waist circumferences and hematocrit values in those having severe obstructive sleep apnea syndrome (p<0.05). Although the Epworth Sleepiness Scale score, smoking habit, gender distribution, neck circumference, fasting blood glucose, triglyceride, LDL, HDL and total cholesterol levels did not differ significantly between those having obstructive sleep apnea syndrome and overlap syndrome, body mass index, waist circumference and hematocrit values were significantly higher in overlap syndrome patients (p<0.01).

Conclusion: Study showed that many OSAS patients have comorbid diseases, and taking a family history of patients suspected as having OSAS is essential. Also, severe obstructive sleep apnea syndrome patients have a higher Epworth Sleepiness Scale score, and neck and waist circumference.

(Tur Toraks Der 2008;9:113-6)

Key words: Family history, neck circumference, sleep apnea syndrome, waist circumference

Received: 02. 11. 2007 Accepted: 15. 05. 2008

ÖZET

Giriş: Çalışma obstrüktif uyku apne sendromunun klinik özelliklerini değerlendirmek için yapıldı.

Gereç ve Yöntem: Obstrüktif uyku apne sendromu tanısı alan 62 ardışık hasta çalışmaya dahil edildi.

Bulgular: Apne hipopne indeksi 5'ten büyük olan hastalarda erkek/kadın oranı 2.64 idi. Hastaların %43.5' inde aile öyküsü mevcuttu. 62 hastanın %35'i kronik obstrüktif akciğer hastalığının birlikteliğinden dolayı overlap sendromu olarak değerlendirildi. Obstrüktif uyku apne sendromlu hastaların ortalama Epworth Uykululuk Skalası Skoru sırasıyla 8.81±6.46, 10.38±5.14, 15.34±5.44 idi (p=0.001). Hipertansiyon, diabetes mellitus, koroner arter hastalığı, subklinik hipotiroidi ve serebrovasküler olay varlığı sırasıyla hastaların %35.5, %11.3, %16.1, %5.9 ve %1.6'sında mevcuttu. Gruplar arasında sigara içme alışkanlığı, açlık kan şekeri, trigliserid, LDL, HDL ve total kolesterol düzeyleri açısından fark tespit edilmedi. Ağır dereceli obstrüktif uyku apne sendromu olan hastalarda boyun ve bel çevresi ve hematokrit düzeyleri arasında anlamlı fark tespit edildi (p<0.05). Epworth Uykululuk Skalası Skoru, sigara içme alışkanlığı, cinsiyet dağılımı, boyun çevresi, açlık kan şekeri, trigliserid, LDL, HDL ve total kolesterol düzeyleri obstrüktif uyku apne sendromu ve overlap sendromu olanlarda farklılık göstermemesine rağmen vücut kitle indeksi, bel çevresi ve hematokrit düzeyleri overlap sendromlu hastalarda daha yüksekti (p<0.01).

Sonuç: Çalışmada OSAS hastalarının çoğunda komorbid hastalıkların bulunduğu, OSAS şüphesi olan hastalardan aile öyküsünün alınmasının önemli olduğu gösterilmiştir. Ayrıca ciddi obstrüktif uyku apne sendromlu hastalarda daha yüksek Epworth uykululuk skalası skoru, boyun ve bel çevresi tespit edilmiştir. *(Tur Toraks Der 2008:9:113-6)*

Anahtar sözcükler: Aile öyküsü, boyun çevresi, uyku apne sendromu, bel çevresi

important pub-lic health problem. Male sex, obesity, older age and family history are all known risk

factors for OSAS [2]. In this paper we reported

clinical profiles such as risk factors and comorbid

Geliş Tarihi: 02. 11. 2007 Kabul Tarihi: 15. 05. 2008

INTRODUCTION

Obstructive sleep apnea syndrome (OSAS) is a disorder which can cause significant morbidity and mortality. Patients with OSAS are at increased risk of having accidents [1], therefore OSAS is an extremely

Presented At: 10th Annual Congress of Turkish Thoracic Society

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diseases in OSAS.

MATERIAL AND METHOD

The study population consisted of patients admitted to the Gaziantep University Sleep Laboratory during the period between July 2006-March 2007, who were diagnosed as having OSAS. The study population included those over 18 years of age. Apnea was defined as cessation of airflow for at least 10 seconds via mouth or nose, whereas hypopnea was defined as at least 50% flow limitation with 3% desaturation. The apnea hypopnea index (AHI) was the total number of apnea or hypopnea incidents per hour. An AHI of ≥5 was necessary for OSAS criteria. Patients were classified as having mild, moderate and severe OSAS by AHI of 5-15, 15-30, ≥30, respectively. Patients having chronic obstructive pulmonary disease (COPD) were subgrouped as overlap syndrome. Sleep studies were performed using the guidelines of Rechtschaffen and Kales [3]. All patients underwent

evaluation including polysomnography, lung function testing, arterial blood gas analysis, echocardiography, total blood count, biochemical analysis including fasting blood glucose, blood urea nitrogen, triglyceride, LDL, HDL and total cholesterol levels and thyroid function tests (TSH, FT4). The Epworth sleepiness scale (ESS) score wascalculated for each patient and ≥ 10 was evaluated as excessive daytime sleepiness. Body mass index (BMI) (kg/m²) was calculated for each patient. Neck and waist circumferences were measured and the family history obtained for each patient.

Statistics: Data was recorded to SPSS 9 statistical software (Statistical Package for Social Science). Comparisons between groups were achieved by one way ANOVA test. p<0.05 was accepted as significant.

RESULTS

We evaluated results of 62 consecutive patients who were diagnosed as having OSAS. Of the 62 patients, 45 were male. The mean age of males was 49.02±11.79 (22-75) and 52.06±13.49 (19-74) for females (p=0.339). Hypertension was detected in 35.5% of patients, diabetes mellitus in 11.3%, coronary artery disease in 16.1%, hypothyroidism in 5.9% and cerebrovascular accident in 1.6% of patients. Distribution of patients evaluated as mild, moderate and severe OSAS with respect to AHI was established as 27%, 21%, and 52%, respectively. A family history compatible with OSAS was present in 43.5% of the study population. Symptoms





were evaluated for each patient and 75% had snoring, 50% had witnessed apnea, 6% had headache, 69% had excessive daytime sleepiness, 42% had dyspnea, 3% fatigue and 3% had chest pain. Patients were asked about their smoking habits, and 53.2% of them were smokers and, when subsets of the patients were evaluated, 30.3% those having mild OSAS, 21.6% moderate OSAS and 48.5% of severe OSAS had a history of smoking (χ^2 =0.35, p=0.84).

The ESS score was evaluated for each patient and the mean ESS for mild, moderate and severe OSAS groups were 8.81 ± 6.46 , 10.38 ± 5.14 and 15.34 ± 5.44 , respectively. The ESS score was higher in severe OSAS patients (p=0.001) (Figure 1). Neck circumferences for each group were measured and the mean neck circumferences for mild and moderate OSAS were 41.00 ± 3.94 and 42.80 ± 2.53 , respectively, whereas severe OSAS patients had a higher mean neck circumference of 45.50 ± 3.86 (p=0.009). Waist circumferences for each group were 108.11 ± 21.72 , 116.67 ± 17.66 , 125.75 ± 15.39 respectively (p=0.049) (Figure 2).

Hematocrit levels were 43.00 ± 3.11 for mild OSAS, 46.25 ± 3.52 for moderate OSAS and 47.21 ± 6.20 for severe OSAS patients (p=0.038). Fasting blood glucose levels, triglyceride, LDL, HDL and total cholesterol levels between groups were not statistically significant (p>0.05) (Table 1).

When patients were separated according to having OSAS or additional COPD (overlap syndrome), 35% of the study population had overlap syndrome. No statistically significant difference was detected between OSAS and overlap syndrome in respect to comorbid diseases (p>0.05).

We detected statistically significant differences in BMI, waist circumference and hematocrit levels between OSAS and overlap syndrome patients (p<0.05) (Figure 3,

Table1. Characteristics of the study population				
	Mild OSAS	Moderate OSAS	Severe OSAS	р
	(n=17)	(n=13)	(n=32)	
Smoking history (%) 30.3		21.6	48.5	0.84
Fasting blood	102.85±22.85	103.27±47.53	107.39±33.66	0.913
glucose				
Triglyceride	212.87±153.31	142.27±87.73	106.0 ±25.60	0.285
LDL	109.0±27.27	103.45±36.31	106.0±25.60	0.893
HDL	41.50±11.58	45.18±9.65	47.33±12.17	0.316
Total cholesterol	183.60±27.79	172.33±47.36	192.22±29.49	0.239



Figure 2. Neck and Waist Circumferences of OSA and Overlap Syndrome

4). We found no difference between sex, smoking habit, neck circumference, ESS, fasting blood glucose, triglyceride, LDL, HDL, total cholesterol levels of OSAS and overlap syndrome patients (p>0.05).

DISCUSSION

In this study we found that many OSAS patients have comorbid diseases, severe OSAS patients had higher ESS, neck and waist circumferences and patients with overlap syndrome had higher BMI, waist circumference and hematocrit values.

The prevalence of OSAS is reported to be 3-4% in some studies [4,5] and 4-6% of all middle aged men and 2% of all middle aged women [2]. We found a predominance in male subjects as a 2.64 fold increase. This result is compatible with the literature findings of OSAS being more prevalent in males [6,7]. The mean age distributions of our study population for male and female subjects were found to be 49.02±11.79 and 52.06±13.49, respectively and were similar to the literature and we found no difference between the sexes in mean ages [6].

We found the hypertension rate to be 35.5% in our study population as a comorbid disease. Kokturk et al have reported 38 of 94 OSAS patients (40.4%) as having cardiovascular diseases in their study population [8]. Sasanabe et al have shown that hypertension was more common in their patients with OSAS than in the controls, and another study found this ratio to be 45% in patients with OSAS [9,10]. Also, studies have revealed that of patients with essential hypertension, 34.8% had OSAS [4] and, in patients who have hypertension resistant to drug therapy, OSAS should have been sought [11]. There is increased risk of diabetes mellitus in OSAS patients, being compatible with our findings, as the







Figure 4. Hematocrit Values of OSA and Overlap Syndrome Patients

incidence of diabetes mellitus was 11.3% in our study population [7]. We detected coronary artery disease in 16.1% of our OSAS patients, which is similar to a study by Peker et al [12]. We detected a cerebrovascular accident in one patient. Increasing medical evidence suggests that OSAS is an independent risk factor for cerebrovascular accidents, and conversely, those with cerebrovascular accidents are also at increased risk of having OSAS [13,14]. A study demonstrated that platelet activation, epinephrine, and high blood pressure play a role in the high prevalence of erebrovascular events in patients with OSAS [15]. Although a study by Resta et al have shown that subclinical hypothyroidism did not influence the prevalence and severity of OSAS [16], we detected subclinical hypothyroidism in 5.9% of our study population.

More than 2/3 of our study subjects had moderate or severe OSAS. Kjelsberg et al have found similar results in their study group [17]. This may be due to symptoms that cause advanced disease leading to patient admission.

We detected a family history of OSAS in 43.5% of the study population. A study by Guilleminault et al has shown disproportionate craniofacial anatomy as a risk factor for familial groups with OSAS [18]. Patients were asked about their smoking habits, and 53.2% were smokers and we did not detect any difference in the smoking habits of OSAS and overlap syndrome patients. Our result is higher than Kjelsberg et al., as they found the current smoker rate as %23 of their study population [17].

When we evaluated the symptoms of the study population, we found the most frequent symptom to be snoring, while excessive daytime sleepiness and witnessed apnea are the other common symptoms of our cases. The leading symptoms of Kjelsberg et al were similar [17].

The ESS score is a score that is widely used to evaluate sleepiness state. An ESS score greater than 10 suggests significant daytime sleepiness [19]. The scores of our study population of mild, moderate and severe OSAS patients were 8.81±6.46, 10.38±5.14, 15.34±5.44, respectively and we detected a statistically significant correlation between ESS scores and the severity of OSAS. This result shows that the sleepiness state may be increased by the severity of OSAS. Our results are compatible with a study showing that ESS scores were significantly correlated with AHI [20], although another study reported contradicting data that ESS is not influenced by AHI stratum [9].

Hora et al reported that OSAS patients had higher BMI, waist-to hip ratio and neck circumference as compared to controls [21]. We did not use a control group but we showed a significant difference in neck and waist circumferences and hematocrit values in those having severe OSAS. Similar results to those of our study were found by Ferguson et al concerning neck circumference, as AHI is influenced by the thickness of the neck [22].

We did not identify any difference among the study population regarding fasting blood glucose, triglyceride, LDL, HDL and total cholesterol levels. A study by Sasanabe [9] did not detect a significant difference in HDL levels, whereas they detected differences in severe OSAS patients in their fasting plasma glucose, LDL and lipid profiles.

We detected overlap syndrome in 35% of patients referred to our clinic, although a recent study by Bednarek et al [23] declared that COPD in subjects with OSAS was as frequent as in the general population. This can be partially attributed to the patients who were referred from our chest clinic. We detected a statistically significant difference in BMI, waist circumference and hematocrit levels between OSAS and overlap syndrome patients. In contrast to our study, Radwan et al did not show any statistically significant difference between OSAS and overlap syndrome patients in BMI [24].

In conclusion, many OSAS patients have comorbid diseases, including hypertension, diabetes mellitus, and coronary artery disease at diagnosis. Taking the family history of patients suspected as having OSAS is essential because about half of them have a positive family history. We found that patients who had severe OSAS had higher ESS, neck and waist circumferences, and patients with overlap syndrome had higher BMI, waist circumference and hematocrit values. We suggest that we should be more aware in evaluating those patients with higher ESS, neck and waist circumference. If we consider the burden in sleep studies, those patients with a high probability of having OSAS, especially those having comorbid diseases, could be assessed earlier.

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