Quality of Life, Frequency of Anxiety and Depression in Obstructive Sleep Apnea Syndrome

Obstruktif Uyku Apne Sendromlu Olgularda Yaşam Kalitesi, Anksiyete ve Depresyon Sıklığı

Sibel Şahbaz[1], Oya İtil[2], Handan İnönü[1], İbrahim Öztura[3], Beyazıt Yemez[4], Barış Baklan[3], İlker Etikan[5], Zehra Seyfikli[1]

[1]Gaziosmanpaşa University, Pulmonary Medicine, Tokat, Turkey
[2]Dokuz Eylül University, Pulmonary Medicine, İzmir, Turkey
[3]Dokuz Eylül University, Neurology, İzmir, Turkey
[4]Dokuz Eylül University, Psychiatry, İzmir, Turkey
[5]Gaziosmanpaşa University, Bioistatistics, Tokat, Turkey

ABSTRACT

Introduction: To determine frequency of anxiety and depression according to severity of OSAS and to evaluate quality of life.

Material and Method: Polysomnographic evaluation was performed in a total of 80 cases. The 'Hospital Anxiety Depression Test', 'Medical Outcome Short Form 36' and 'Epworth Sleepiness Scale' were applied to all cases.

Results: The mean age was 49.4±10.9 (65 male, 15 female). The mean apnea hypopnea index (AHI) was 35.2±24.9. 17 cases had anxiety, 21 cases had depression and 25 cases suffered from excessive daytime sleepiness (EDS). The evaluation cases suffering and not suffering from EDS in respect of their quality of life has shown differences in the vitality, social and mental functions. There was no difference between the groups with low and high sleep effectiveness in respect to quality of life, existence of anxiety and depression. There was no significant relation between the OSAS severity, depression, anxiety and EDS. There was no difference between the groups with low and high sleep effectiveness in respect of existence of EDS.

Conclusion: OSAS will lead to EDS caused by sleep separation. This may result in the decline of quality of life and development of anxiety and depression. *(Tur Toraks Der 2008;9:141-5)*

Key words: Quality of life, SF 36, anxiety, depression, OSAS

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ÖZET

Giriş: Obstruktif Uyku Apne Sendromlu (OSAS) olgularda hastalığın ağırlığına göre anksiyete ve depresyon sıklığını belirlemek ve yaşam kalitesini değerlendirmek.

Gereç ve Yöntem: Polismonografi incelemesi toplam 80 olguya yapıldı. 'Hastane Anksiyete Depresyon Testi', 'SF 36 Yaşam Kalitesi Anketi' ve 'Epworth Uykululuk Testi' tüm olgulara uygulandı.

Bulgular: Olguların yaş ortalaması 49.4±10.9 idi (65 erkek, 15 kadın). Ortalama apne hipopne indeksi 35.2±24.9 idi. 17 olgunun anksiyetesi ve 25 olgunun depresyonu vardı ve 25 olgu gündüz aşırı uykululuk halinden (GAUH) yakınmakta idi. GAUH olan ve olmayan olgular yaşam kalitesi açısından karşılaştırıldığında vitalite, sosyal ve mental fonksiyonlar açısından karşılaştırıldığında iki grup arasında farklılık saptandı. Yüksek ve düşük uyku etkinliği olan gruplar arasında yaşam kalitesi, anksiyete ve depresyon varlığı açısından fark yoktu. OSAS ağırlığı ile depresyon,anksiyete ve GAUH varlığı arasında anlamlı ilişki yoktu. Düşük ve yüksek uyku etkinliği olan gruplar arasında GAUH varlığı açısından farklılık yoktu.

Sonuç: OSAS uyku bölünmeleri nedeni ile GAUH 'ne neden olacaktır. Bu durum yaşam kalitesinde bozulma, anksiyete ve depresyon gelişmesi ile sonuçlanabilir. *(Tur Toraks Der 2008;9:141-5)*

Anahtar sözcükler: Yaşam kalitesi, SF 36, anksiyete, depresyon, OSAS

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INTRODUCTION

Obstructive Sleep Apnea Syndrome (OSAS) is a common disease among adults and children, and it is characterized by recurrent complete or partial obstruction of the upper airways, mainly oropharynx, during sleep, deterioration of artery blood gas and increasing inspiratory effort to provide airway permanence [1]. Various studies have indicated that it affects 4% of men and 2% of women within the range of 30 to 60 years of age [2].

OSAS is clinically suspected when a patient presents with both snoring and excessive daytime sleepiness (EDS) [3]. EDS occurs due to recurrent arousals during sleep and causes decreased quality of life [4-6]. Tiredness, daytime sleepiness and headache are common symptoms of OSAS and most of cases are obese [7].

Apart from serious and life threatening disorders such as hypertension, acute myocardial infarction, cerebrovascular accident and heart failure, it causes defects

Address for Correspondence / Yazışma Adresi: Sibel Şahbaz, GOU, Pulmonary Medicine, Tokat, Turkey
Phone: +90 356 212 95 00 E-mail: sibelsahbaz@yahoo.com

in character and mood and it mimics major depression [3-5,8,9]. Neuropsychological disorders affect daily life activities and the ability to set up regular social life, and decreased in quality of life is more severe in OSAS than the normal population [4,8,10]. Although some studies report that anxiety and depression are more common among OSAS patients, and impairing the quality of life is much severe compared to normal population, other studies report no relationship between OSAS and anxiety and depression. The aim of this study is to examine the general characteristics of cases diagnosed with OSAS by PSG, to determine the frequency of anxiety and depression according to the severity of thedisease and to evaluate quality of life.

MATERIAL and METHOD

All cases clinically suspected as OSAS were hospitalized for one night at the 'Sleep Disorders Laboratory' of our hospital. Polysomnographic (PSG) evaluation of a minimum of 8 hours was performed on Embla A 10 (Flaga, Reyjavick, Iceland) and Schwarzer Comlab 32 polysomnographic device (Comlab 32; Schwarzer Medical Diagnostic Equipment, Baermannstr, Germany) sleep systems. The following variables were monitored: 4 EEG (C_3/A_2-C_4/A_1-O_1/A_2-O_2/A_1 according to the 10-20 international electrode placement system), right and left electrooculogram, chin electromyogram and electrocardiogram. Airflow was monitored by a nasal pressure cannula. Respiratory movements were assessed by thoracic and abdominal strain gauges. Snoring was evaluated with a neck microphone. The oxygen saturation during sleep was measured continuously using a pulse oxymetry. Leg movements were recorded by left and right tibial electromyograms. PSG recordings were scored according to the standard criteria of Rechtschaffen and Kales as epochs of 30 seconds [11]. The cases with an AHI >5 were included in the study.

The cases with severe airway diseases such as chronic obstructive pulmonary disease and asthma, chronic organ failure (kidney failure, heart failure, cirrhosis), diabetes mellitus regulated with insulin, disease causing chronic pain, cases with psychiatric disorders and receiving anti-depressant treatment or psychotherapy were not included in the study. The cases were classified into two groups according to AHI. The cases AHI ≤30 were defined as mild-moderate OSAS and AHI >30 were defined as severe OSAS.

The cases were classified in two groups as high (sleep efficiency ≥90%) and low sleep efficiency (sleep efficiency < 90%) groups. The cases were categorized into two groups according to duration of complaints; the cases suffering for a long time (≥5 years) and for a short time (<5 years).

General demographic properties, histories, complaints associated with OSAS and the duration of these complaints were examined.

The'Hospital Anxiety Depression Test' (HADT) which is a questionnaire consisting of 14 questions was applied to all patients [12]. The complaints associated with anxiety and depression were evaluated. In our study the anxiety score of ≥10 and depression score of ≥7 were defined positive.

All cases completed the 'Medical Outcome Short Form 36' (SF 36) which the most reliable, valid and easily answered test for the evaluation of quality of life in OSAS cases. This test evaluates 8 different aspects of the daily life: physical function, physical role, pain, general health, vitality, social function, social role and mental health [13]. High and low function limits were determined as: physical function (65≥ high, 64≤ low), physical role (26≥ high, 25≤low), pain (52≥ high, 51≤ low), general health (53≥ high, 52≤ low), vitality (51≥ high, 50≤ low), social function (51≥ high, 50≤ low) and mental function (34≥ high, 33.9≤ low).

Excessive Daytime Sleepiness (EDS) was evaluated with 'Epworth Sleepiness Scale' (ESS). All cases were asked about the possibility of sleepiness in 8 different cases [14]. ≥10 of ESS was deemed as EDS in the study.

All data were analyzed with the SPSS 11.0 software. Arithmetic average and standard deviation (X ± SD) were calculated for all values. For the correlation analysis, Pearson correlation coefficients and t test (the importance test of the difference of 2 averages) were used, while χ^2 test was used for the analysis of numerical variations between the cohorts. Results of $p<0.05$ were accepted as significant.

RESULTS

A total of 80 cases (65 male and 15 female) were included in the study. The mean age of all cases was 49.4±10.9 [29-69]. 46 cases (57.5%) were suffering from hyperlipidemia, hypertension (n=29, 36.3%), diabetes mellitus (n=3, 3.8%) treated with diet or an oral antidiabetic agent.

The mean body mass index (BMI) of the cases was 31.6±5.7 (19.0-46.5), in 7 cases (8.8%) BMI was ≤25. Eleven cases drank alcohol regularly (13.8%), while 28 cases (35.0%) were smokers. 10 cases (12.5%) were treated with an anti depressant agent before >5 years previously.

Snoring was the most frequent complaint (n=43 53.8%). Other frequent complaints were apnea with witness and EDS. The mean duration of complaints was 5.6±6.2 years (3 months-40 years). 37 cases (46.3%) were suffering for <5 years, 36 cases (45.0%) were suffering for ≥5 years. No information was obtained for the complaint time of 7 cases (8.7%).

The mean AHI of the cases was 35.2±24.9 (5.7-99.2), 41 cases had mild-moderate diseases, and 39 cases had severe diseases.

The average anxiety score for all cases was 6.4±4.2 (0-17). 17 cases (21.3%) had complaints associated with anxiety (anxiety score ≥10). 21 cases (26.3%) had complaints associated with depression (depression score ≥7) and the mean depression score was 4.4±3.6 (0-14).

According to ESS, 25 cases (31.3%) suffered from EDS (ESS ≥10) and the mean ESS of all cases was 7.8±5.6 (0-21). General characteristics of the cases have been shown in Table 1.

The evaluation of cases suffering and not suffering from EDS in respect of their quality of life has shown a difference in the vitality, social and mental functions of the two groups. In cases ESS ≥10 vitality (p=0.007), social function (p=0.013) and mental function (p=0.018) was lower than the cases with ESS <10 (t test) (Table 2). Symptoms associated with anxiety (χ^2=4.728 p=0.030) and depression (χ^2=5.918 p=0.015) were more frequent in cases with EDS than those without EDS.

There was no difference between the groups classified according to the OSAS severity in respect of EDS (χ^2=1.842 p=0.175), anxiety (χ^2=0.025 p=0.875) and existence of depression (χ^2=0.396 p= 0.529) and quality of life standards (t test). The quality of life scores according to OSAS severity have been shown in Table 3.

The duration of the complaint, sleep efficiency, OSAS severity and the effect of EDS on anxiety and depression have been shown in Tables 4. No effect of the duration of the complaint on the quality of life (t test) and depression of existence (χ^2=2.711 p=0.100) have been observed. However, anxiety has been frequently observed for the cases with long-lasting complaints (χ^2=7.112 p=0.008). There was no difference between the groups with low and high sleep efficiency in respect of quality of life (t test), anxiety (χ^2=0.483 p=0.487) and existence of depression (χ^2= 0.099 p=0.753).

There was no significant relation between the OSAS severity, depression, anxiety and EDS (Table 5) (Pearson Correlation Analysis).

There was no difference between the two groups with low and high sleep effectiveness in respect of existence of EDS (χ^2= 0.083 p=0.773).

Table 1. General Characteristics of the Cases

Age	49.4±10.9 (29-69)
BMI	31.6±5.7 (19.0-46.5)
Complaint time (/year)	
37 cases (46.3%) ≤4	5.6±6.2 years
36 cases (45.0%) ≥5	(3 months- 40 years)
7 cases (8.7%) uncertain	
AHI	
Mild (n=26)	
Moderate (n=15)	35.2±24.9 (5.7-99.2)
Severe (n=39)	
Anxiety Score ≥10	
(n=17 %21.3)	6.4±4.2 (0-17
Depression Score ≥7	
(n=21 %26.3)	4.4±3.6 (0-14)
ESS ≥10	
(n=25 %31.3)	7.8±5.6 (0-21)

DISCUSSION

Our cases generally reflect the OSAS population. Most of the cases are male, obese and middle-aged individuals [15].

The frequent complaints of OSAS cases are EDS, fatigue, headache and obesity [4,5,7,15,]. The most frequent complaints of our cases were snoring, apnea with witness and EDS.

Clinical studies of the last twenty years have supported the relation between OSAS and depression. Ohayon has underlined the relation of these two diseases in the general population [16].

Table 2. Effects of Excessive Daytime Sleepiness on Quality of Life

	EXCESSIVE DAYTIME SLEEPINESS			
	Not available (n=55)	**Available (n=25)**	**t**	**p**
	(Ave.±SS)	(Ave.±SS)		
Physical Function	75.0±24.6	71.8 ±26.5	0.512	0.610
Physical Role	71.8±37.6	54.0±47.14	1.182	0.074
Pain	73.4±26.7	65.3±27.0	1.258	0.212
General Health	58.9±21.3	49.8±22.8	1.722	0.089
Vitality	63.6±19.8	49.6±23.2	2.778	0.007
Social Function	82.0±23.2	67.0±27.0	2.556	0.013
Mental Role	64.24±39.5	58.7±43.3	0.568	0.572
Mental Function	68.1±18.8	57.1±19.1	2.420	0.018

Table 3. Effects of the Severity of OSAS on Quality of Life

	SEVERITY OF CASES			
	Mild-Moderate (n=41)	**Severe (n=39)**	**t**	**p**
	(Ave.±SS)	(Ave.±SS)		
Physical Function	74.0±25.8	74.0±24.6	0.013	0.990
Physical Role	67.1±43.1	65.4±40.0	0.181	0.857
Pain	67.0±27.1	75.0±26.4	1.340	0.184
General Health	53.3±23.8	58.9±20.0	1.127	0.263
Vitality	59.8±22.1	58.7±21.8	0.211	0.833
Social Function	75.3±26.9	79.5±23.6	0.739	0.462
Mental Role	65.0±41.5	59.8±39.9	0.573	0.569
Mental Function	64.8±20.1	64.6±19.0	0.038	0.970

Table 4. Effects of Various Factors on the Existence of Anxiety

	EXISTENCE OF ANXIETY			
	n	%	χ^2	p
OSAS Severity				
Mild-moderate (n=41)	9	22.0	0.025	0.875
Severe (n=39)	8	20.5		
EDS				
Available (n=25)	9	36.0	4.728	0.030
Not available (n= 55)	8	14.5		
Sleep Effectiveness				
Low (n=29)	6	20.7	0.483	0.487
High (n=29)	4	13.8		
Complaint Time				
Long (n=36)	12	33.3	7.112	0.008
Short (n=37)	3	8.1		

Table 5. Effects of Various Factors on the Existence of Anxiety

	EXISTENCE OF DEPRESSION			
	n	%	χ^2	p
OSAS Severity				
Mild-moderate (n=41)	12	29.3	0.396	0.529
Severe (n=39)	9	23.1		
EDS				
Available (n=25)	11	44.0	5.918	0.015
Not available (n= 55)	10	18.2		
Sleep Effectiveness				
Low (n=29)	6	20.7	0.099	0.753
High (n=29)	7	24.1		
Complaint Time				
Long (n=36)	13	36.1	2.711	0.100
Short (n=37)	7	18.9		

Some of the symptoms of OSAS may lead to anxiety and depressive conditions. Hence differentiation of psychiatric diseases and symptoms related with organic disorders may create problems [7]. In the history, 12.5 % of our cases had been treated with antidepressant agent with the diagnosis of depression many years previously, their syptoms might be related with OSAS. Apart from several studies demonstrating a relationship between OSAS and depression, several other studies have shown that the relationship is not clear or no such relationship exists. Bliwise and colleagues have not found a significant relationship between OSAS and depression [3,7,17-19]. When compared to the general population, depression is more frequent in untreated OSAS cases, and the CPAP is effective in the treatment of complaints associated with depression. Generally, the cases with sleep disorders are more inclined to depression [7,18]. Fidan et al showed that the lowest depression score was determined in severe OSAS patients and a negative corelation was determined between the severity of OSAS and depression score [20]. In our study there were no differences detected between the groups according the severity of OSAS in respect of the existence of anxiety and depression. The study of Millman has also shown no relationship between the severity of the disease and the depression scores [18].

The scales used to evaluate the depression and anxiety with OSAS have shown different results for the same patient groups in studies [21,22]. We have used HADT in our study to evaluate the complaints of anxiety and depression. 21.3% of cases had complaints associated with anxiety, and 26.3% of cases had complaints associated with depression in our study. Guilleminault et al observed in their study that 24% of the patients with sleep apnea had complaints associated with depression [23]. Millman and colleagues had reported that 45% of the OSAS cases had complaints associated with depression [18]. Our cases with high HADT scores attended the psychiatry clinic.

As most of the cases were male, the effect of gender on the existence of anxiety and depression has not been evaluated. Pillar et al. reported that female cases with severe OSAS had a higher level of anxiety and depression than cases with moderate OSAS [21].

Few studies are available that show the relationship between OSAS and anxiety. Borak and colleagues have shown the relationship between OSAS and anxiety in 20 patients with severe OSAS; however, the anxiety scores did not decrease with CPAP treatment [24]. In our study, we could not observe any difference between the groups in respect of the existence of anxiety according to the severity of the disease. Fidan et al determined the

highest depression score in the control group and they showed that the more severe OSAS were associated with the lower anxiety score [20].

The quality of life of humans is dependent on socioeconomic, cultural and health factors. OSAS disorganizes the relational life of the patient, affecting the person's ability to maintain an adequate social life and negatively influencing the quality of life [25]. Several studies have shown a decline in quality of life of OSAS cases when compared to the normal population. The quality of life was evaluated with SF 36 in the study of Bennet and colleagues. They did not determine a correlation between the severity of OSAS and sleep interruption, but the energy and vitality scores were correlated with EDS, determined by ESS [26]. Briones and colleagues have reported a correlation between the EDS and energy score [27]. Baldwin and colleagues have found a relationship between the decreased vitality in mild-moderate sleep disorders. In the same study they reported a decline in the quality of life in severe cases [28].

In our study, we did not observe any difference in respect of EDS and quality of life between the groups according to the severity of OSAS; but vitality, social and mental functions were remarkably low in the cases with EDS. Some studies are available which reported a decline in quality of life in OSAS cases [8,9]. However there are some studies showing no relationship between the PSG indexes and quality of life [29]. In our study we did not determine any difference in respect of EDS between the groups according to the severity of OSAS.

In conclusion, except in such life-threatening situations as cardiovascular diseases and cerebrovascular events, OSAS will lead to EDS caused by sleep deprivation. This may eventually result in the decline of quality of life of the cases, and in the development of anxiety and depression.

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