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Original Article / Çalışma - Araştırma

Neuropsychiatric symptoms, quality of sleep and quality of life in patients diagnosed with nasal septal deviation

Nazal septal deviyasyon tanısı olan hastalarda nöropsikiyatrik belirtiler, uyku ve yaşam kalitesi

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Objectives: This study aims to evaluate the psychiatric symptoms, quality of sleep, quality of life and the predictive factors affecting quality of sleep in patients diagnosed with nasal septal deviation (NSD).

Patients and Methods: Forty male patients (mean age 22.3±1.4 years; range 21 to 26 years) who admitted to the otorhinolaryngology (ORL) clinic of the Ağrı Military Hospital and diagnosed with NSD as a result of a through ORL examination between February 2009 and April 2009 and 36 healthy volunteer (mean age 21.7±1.0 years; range 21 to 25 years) controls, were included in this study. Pre- and postoperative evaluations were performed using the Quality of Life Scale (Short Form-36/SF-36), the Pittsburgh Sleep Quality Index (PSQI) and the Symptom Check List Revised (SCL-90-R).

Results: All patients and controls completed pre- and postoperative evaluations. No complications occurred. There was a statistically significant difference between the groups in the quality of sleep measures, in the SCL-90-R subscales of somatization, obsession, interpersonal sensitivity, depression, anxiety, phobic anxiety, hostility, paranoid thought, and psychoticism, additional scales and in physical health dimension of SF-36 Quality of Life Scale.

Conclusion: Psychiatric symptoms are more common in patients with nasal septal deviation when compared to healthy controls. The impairments in nasal breathing in patients with NSD may cause a decline in the physical dimension of quality of life and a marked impairment in sleep quality.

Key Words: Nasal septal deviation; psychiatric symptoms; quality of life; quality of sleep.

Amaç: Bu çalışmada nazal septal deviyasyon (NSD) tanısı konulan hastalarda psikiyatrik semptomlar, uyku kalitesi, yaşam kalitesi ve uyku kalitesini etkileyen öngörü sağlayıcı faktörler araştırıldı.

Hastalar ve Yöntemler: Şubat 2009 - Nisan 2009 tarihleri arasında Ağrı Asker Hastanesi Kulak Burun Boğaz (KBB) Kliniğine başvuran ve kapsamlı bir KBB muayenesi sonucunda NSD tanısı konan 40 erkek hasta (ort. yaş 22.3±1.4 yıl; dağılım 21-26 yıl) ile sağlıklı 36 gönüllü kontrol (ort. yaş 21.7±1.0 yıl; dağılım 21-25 yıl) bu çalışmaya dahil edildi. Ameliyat öncesi ve sonrası değerlendirmeler Yaşam Kalitesi Ölçeği (Short Form-36/SF-36), Pittsburgh Uyku Kalitesi İndeksi (PSQI) ve Revize Semptom Kontrol Listesi (SCL-90-R) kullanılarak yapıldı.

Bulgular: Tüm hastalar ve kontroller ameliyat öncesi ve sonrası değerlendirmeleri tamamladı. Herhangi bir komplikasyon meydana gelmedi. Gruplar arasında uyku kalitesi, SCL-90-R testinin alt ölçeklerinde; somatizasyon, obsesyon, kişiler arası duyarlılık, depresyon, anksiyete, fobik anksiyete, düşmanlık, paranoid düşünce, psikotizm, ek ölçekler ve SF-36 yaşam kalitesi ölçeğinin fiziksel sağlık boyutunda istatistiksel olarak anlamlı fark vardı.

Sonuç: Sağlıklı kontrollerle karşılaştırıldığında, psikiyatrik semptomlar nazal septal deviyasyonlu hastalarda daha fazladır. Nazal septal deviyasyonlu hastalarda nasal solunumla ilgili bozukluklar, yaşam kalitesinin fiziksel boyutunda azalmaya ve uyku kalitesinde belirgin kötüleşmeye neden olabilmektedir.

Anahtar Sözcükler: Nazal septal deviyasyon; psikiyatrik semptomlar; yaşam kalitesi; uyku kalitesi.

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Nasal septal deviation (NSD) is a common health problem in otorhinolaryngology clinics, leading to presentation to the hospital with symptoms such as nasal obstruction, snoring and nasal bleeding.[1]

The etiology of NSD is associated with developmental problems and trauma. Nasal septal deviation causes impaired nasal breathing, and several pathologies such as developmental disorders, frequent infections, mental disorders, olfactory and gustatory disorders may develop as a result of impairment in respiration, which is one of the most significant functions of the nose.[1]

Septal deviation as a cause of sleep disturbance has been reported in numerous, mainly anecdotal publications.[2] Patients may be asymptomatic during the daytime, but may present with complaints of nasal obstruction that are particularly troublesome at night.[3] It is known that with nasal obstruction the quality of sleep and life are impaired. However, the number of studies and publications on neuropsychiatric evaluations of this frequent and intervention-requiring disorder are restricted.

The present study evaluated the psychiatric symptoms, quality of sleep and quality of life (QoL) in patients diagnosed with NSD based on the assumption that NSD may increase neuropsychiatric symptoms due to nasal obstruction, snoring and subsequent impaired quality of sleep.

PATIENTS AND METHODS

A total of 76 participants [40 patients with NSD (mean age 22.3±1.4 years; range 21 to 26 years), 36 healthy controls (mean age 21.7±1.0 years; range 21 to 25 years)] admitted to the otorhinolaryngology clinic of the Ağrı Military Hospital between February 2009 and April 2009 were involved in the study. Forty patients were diagnosed with NSD as a result of through otorhinolaryngology examination.

All participants completed the Quality of Life Scale-Short Form-36 (SF-36), Pittsburgh Sleep Quality Index (PSQI) and Symptoms Check List Revised (SCL-90-R). All patients were duly informed about the objectives and methods of the study, and those who agreed to participate signed a consent form. Each test lasted approximately for 30 minutes, and they were all completed within one day.

Data Collection Instruments

Demographic Information Form

A sociodemographic data form was prepared by researchers to collect information on variables such as participants' age, gender, education, working status, and marital status.

Quality of Life Scale Short Form-36

Originally developed and introduced by Rand Corporation to evaluate QoL,[4] it has already been translated into Turkish, followed by an appropriate validity and reliability study.[5] It is a short questionnaire consisting of 36 items which can be used both in clinical and healthy populations.[6,7] Except for a few items, evaluations are based on a Likert scale, taking the last four weeks into consideration. The subscale scores range from 0 to 100 and higher scores define a more favorable QoL. The evaluations on health are based on eight domains: Physical functioning (PF), social activities (SA), role limitations due to physical problems (RP), bodily pain (BP), mental health (MH), role limitations due to emotional problems (RE), vitality and general health perceptions (GHP). Physical functioning assesses physical restrictions. Role limitations due to emotional problems and RP measure the extent to which emotional and physical problems interfere with patient's activities, respectively. The body pain scale (BP) evaluates the extent of bodily pain and its influence on daily life of patients. General health perception measures how patients perceive their present and future health. Vitality scale assesses their energy and fatigue level. Social activities measures the extent to which physical and emotional problems interfere with the relationship with family members, friends and other groups. Mental health assesses mental status in terms of anxiety, depression, emotional disorder and psychological well being. Short Form-36 scores are positively weighted, i.e. as subscale scores are increased, health-related QoL is increased. For instance; a higher score in the pain subscale indicates improved pain. The scale is scored based on two dimensions, mental and physical dimensions, which consist of subscales. Analyses on subscales of SF-36 demonstrated that the scale has two dimensions, with a mental dimension (MD) accounting for 51.5% of the total change, and a physical dimension (PD) accounting for 67.6% of the total change similar to the original scale, and that RE and MH subscales have significant positive correlation with MD while PF, RP and BP subscales have a significant position

correlation with PD,[5] and this scoring has been preferred in some studies.[6,7] Mental dimension is a mean score value of total RE and MH subscale scores while PD is a mean score value of total PF, RP and BP subscale scores.

Pittsburgh Sleep Quality Index

It was developed by Buysse et al.,[8] and the Turkish validity and reliability study of the test was carried out by Agargün et al.[9] The Pittsburgh Sleep Quality Index is a self-rated questionnaire which assesses sleep quality and disturbances over a one-month time interval, including 19 items. Each item on the test is scored equally between 0 and 3. The scale consists of seven subscales which evaluate subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of subscale scores yields a global PSQI score, ranging from 0 to 21. A PSQI score greater than five indicates poor quality of sleep with a sensitivity of 89.6% and 86.5%, and shows the presence of a severe disturbance at least in two domains, and a moderate disturbance in three domains.[8,9]

Symptom Check List Revised

It is a 90 item self-rated psychiatric screening tool, rated on a five-point Likert scale, which was developed by Derogatis and Clearly[10] It has some subscales which evaluate somatization, obsessive-compulsive behaviors, interpersonal sensitivity, depression, anxiety, hostility, phobic paranoia, psychoticism, eating and sleeping attitudes with 90 items about psychiatric signs and complaints. Other than these subscales, the main functionality of the scale is the Global Severity Index (GSI). An increased GSI, which is the overall mean score of the scale, indicates more psychiatric symptoms, and it is the best indices of the scale. Scoring ranges from 0 to 4 for each item. The validity and reliability study of the scale in Turkish was carried out by Dag.[11]

Statistical methods

Statistical Package for Social Sciences (SPSS) 10.0 software (SPSS Inc., Chicago, IL, U.S.A) was used for statistical analysis. Of the sociodemographic data, the categorical variables were stated as numbers and percentages while the quantitative data were presented as mean ± standard deviation. Group comparisons were made using the chi-square test. While comparing the mean scores of patients with nasal septal deviation with a healthy control group, independent t-test was used for those with a normal distribution, and Mann-Whitney U-test was used for those without a normal distribution. The correlation between all scores of the scale was evaluated using the Pearson's product moment correlation. A logistic regression analysis was performed to evaluate the effect of physical and MH dimensions of the QoL and SCL-90-R GSI on the quality of sleep. For all data, $p<0.05$ was considered statistically significant.

RESULTS

Ten percent of the patients who received a diagnosis of NSD were married, and 90% were single. Of these patients, 52.5% (n=21) had graduated from primary school, 40% (n=16) from high school, 2.5% from college, and 5% from university. Sixty-five percent (n=26) were living in a city, 25% (n=10) in a village, and 10% (n=4) in a town. An analysis of global PSQI scores showed that the global PSQI score of 39 patients (97.5%) in the NDS group was greater than 5, with poor quality of sleep.

In the control group, 63.9% were living in a city, 25% in a village, and 11.1% in a town. Of these controls, 52.8% (n=19) had graduated from primary school, 36.1% (n=13) from high school, 8.3% (n=3) from college, and 2.8% (n=1) from university. Only 8.3% (n=3) were married. An analysis of PSQI scores showed that only 15 (41.7%) of patients in the control group had a PSQI score of five and above, with poor quality of sleep.

A statistically significant difference was found between the two groups in quality of sleep when a comparison was made between the groups as those with a global PSQI score of five and above, and those with a global PSQI score of 5 and below (chi-square=28.718, p=0.000). The number of cases with poor quality of sleep was higher in the NSD group.

Comparisons

According to the t-test results of the PSQI data, there was a statistically significant difference between the two groups in subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, daytime dysfunction ($p<0.05$). However, no statistically significant difference was found in use of sleep medication ($p>0.05$; Table 1).

An analysis of SCL-90-R subscale scores by t-test showed that there was a statistically

Table 1. Comparison of mean scores in the Pittsburgh Sleep Quality Index

	Patient (n=40)	Control (n=36)	t/z	*p*
	Mean±SD	Mean±SD		
Subjective sleep quality	2.00±0.6	1.16±0.7	5.130	0.01*
Sleep latency	1.90±0.7	1.08±0.8	4.310	0.01*
Sleep duration	1.60±0.8	0.66±0.7	5.066	0.01*
Habitual sleep efficiency	1.50±0.8	0.50±0.7	5.165	0.01*
Sleep disturbances	2.12±0.5	1.16±0.5	7.422	0.01*
Use of sleep medication	0.35±0.7	0.25±0.6	0.625	0.53
Daytime dysfunction	1.9500±0.8	0.69±0.8	6.309	0.01*
Total PUKI	11.42±3.3	5.63±3.3	7.575	0.01*

* p<0.05; t/z: Student t-test/Mann-Whitney U-test; SD: Standard deviation; PUKI=PSQI (Pittsburgh Sleep Quality Index).

significant difference between the two groups (p<0.05) in symptoms of somatization (p=0.000), obsession (p=0.000), interpersonal sensitivity (p=0.000), depression (p=0.001), anxiety (p=0.001), phobic anxiety (p=0.001), hostility (p=0.007), paranoid thought (p=0.007), psychoticism (p=0.008), additional scale (p=0.000). Furthermore, a statistically significant difference was found between the two groups in the mean scores of SCL-90-R GSI (p=0.000; Table 2).

An analysis of SF-36 QoL subscale scores by independent t-test showed that there was a statistically significant difference between the two groups (p<0.05) in the subscales of PF (p=0.001), RP (p=0.001), pain (p=0.002), and social functioning (p=0.017). However, no statistically significant difference was found between the two groups (p>0.05) in the subscales of GHP (p=0.274), vitality (p=0.815), RE (p=0.987), and MH (p=0.774).

An analysis of physical and MH dimensions of the SF-36 QoL scale showed that there was a statistically significant difference between the two groups only in the physical health dimension (p=0.000; Table 3).

Results of logistic regression analysis

A logistic regression analysis was performed to evaluate if SCL-90-R GSI and physical health and MH dimensions of the QoL scale was able to predict good or poor quality of sleep (based on the global PSQI score) in the group with nasal septal deviation. It appears that only the PD is effective in describing the total variance of QoL (R2=.535, p=0.000; Table 4).

Post hoc analyses showed that this equation resulted in good prediction of the patients with poor quality of sleep by 88.9%, the patients with good quality of sleep by 54.5% and all patients by

Table 2. Comparison of mean scores in the Symptom Check List

	Patient (n=40)	Control (n=36)	t/z	*p*
	Mean±SD	Mean±SD		
Somatization	1.17±0.69	0.50±0.49	4.916	0.000
Obsession	0.94±0.69	0.39±0.40	-3.792*	0.000*
Interpersonal sensitivity	1.00±0.77	0.42±0.55	-3.799*	0.000*
Depression	0.89±0.60	0.46±0.45	3.467	0.001
Anxiety	0.91±0.71	0.44±0.45	-3.112*	0.002*
Hostility	0.88±0.71	0.49±0.48	-2.582*	0.010*
Phobic anxiety	0.73±0.71	0.2686±0.3200	-2.920*	0.003*
Paranoid thought	0.83±0.72	0.43±0.49	-2.647*	0.008*
Psychoticism	0.61±0.59	0.30±0.35	-2.464*	0.014*
Additional items	1.28±0.73	0.45±0.44	-4.404*	0.000*
GSI	0.929±0.553	0.411±0.372	-4.182*	0.000*

* Mann-Whitney U-test; t/z: Student t-test/Mann-Whitney U-test; SD: Standard deviation.

Table 3. Comparison of mean scores in the Short Form-36 Quality of Life Subscales

	Patient (n=40)	Control (n=36)	t/z	*p*
	Mean±SD	Mean±SD		
Physical component	71.23±2.29	73.43±2.34	-4.130	0.000
Physical functioning	80.97±5.65	85.11±5.25	-3.294	0.002
Role limitations due to physical problems	65.65±1.58	66.83±1.42	-3.100*	0.002
Bodily pain	67.18±1.79	68.47±1.76	-3.170	0.002
General health perceptions	74.03±2.87	74.75±2.85	-1.103	0.274
Mental component	71.18±3.28	71.46±2.63		0.695
Vitality	74.73±3.59	74.53±3.75	0.234	0. 815
Social functioning	66.95±1.74	68.22±2.73	-2.450	0. 017
Role limitations due to emotional problems	64.93±2.77	64.92±1.08	-1.110*	0. 267
Mental health	77.60±6.27	77.97±4.80	-0.394	0. 695

* Mann-Whitney U-test; t/z: Student t-test/Mann-Whitney U-test; SD: Standard deviation.

78.9%, and the Nagelkerke R square value (0.37) explained the good-poor quality of sleep of this equation by 37%.

DISCUSSION

Nasal obstruction is a very common problem in otorhinolaryngology clinics. The most frequent pathological cause of this complaint is NSD. Nasal septal deviation is the most common nasal deformity. A study with computed tomography (CT) found that its prevalence is around 40%.[12-14] Of those patients who were diagnosed with NSD, 97.5% had poor quality of sleep, and when compared to healthy subjects (41.7%), a significant difference was found in quality of sleep between the two groups (p=0.000). As one of the major causes leading to abnormalities of nasal respiration, septal deviations have a negative effect on the quality of sleep.[15] The present study was designed to assess the quality of sleep in patients with NSD compared to healthy subjects in order to determine its effect both on the quality of sleep and other domains of life. The subscale scores obtained in the present study showed that these patients experienced significant problems in each of these domains except the use of sleep medication. Studies demonstrated that NSD was associated particularly with obstructive sleep apnea, and there was a reduction in symptoms following the operations for deviation correction.[13-15]

To our knowledge, no study in the literature has evaluated psychiatric symptoms in patients with NSD and compared it to healthy subjects. Based on the SCL-90-R inventory, it appears that patients with NSD had higher scores in subscales of somatization, obsession, interpersonal sensitivity, depression, anxiety and phobic anxiety compared to healthy subjects. Somatopsychic disorders are mental disorders which have a major impact on a patient's life, that occur in reaction to an organic disease. They restrict or are likely to restrict their quality of life. It is reported that the primary disease is organic, while the mental disorder is secondary.[16] Higher rates of psychiatric symptoms in patients with NSD compared to healthy subjects can be considered indicative of NSD-associated somatopsychic reactions.

Based on the results obtained from the QoL scales, patients with NSD had problems in physical functioning, role limitations due to physical problems and bodily pain, with an impact on their QoL in these domains. Dereköylü et al.[17] similarly found that the QoL of patients with nasal polyposis was adversely influenced according to subscales of SF-36, particularly including the scores for

Table 4. Factors which have an effect on the quality of sleep in patients with nasal septal deviation

Variable	Beta	Standart error	Wald	R square	*p*
Physical dimension	-,625	,165	14,275	0.535	,000

role limitation caused by emotional problems, general perception of health, vitality, and role limitation caused by physical problems. Similar studies highlighted that this impact was reduced particularly following an operation.[15,18,19]

A gradual regression analysis based on physical health and emotional health dimensions of the QoL scale and SCL-90-R global severity index, which was conducted to determine the variables predicting the quality of sleep in patients diagnosed with NSD showed that only the PD of the QoL scale was effective. In this case, the PD which consists of problems in PF, RP and feeling of pain seems to be a predictor of the quality of sleep. A similar study on patients with a physical disorder other than NSD (hemodialysis patients) also found that the PD of the QoL is a predictive factor of the quality of sleep.[20]

Evaluation of quality of sleep, QoL and psychiatric symptoms in 40 patients who received a diagnosis of NSD in the Ağrı Military Hospital and 36 subjects without any physical and mental disorder, who had similar characteristics in terms of age, education, marital status and location showed that there was a significant difference between the two groups in quality of sleep, PD of QoL, and mean global severity index of Symptom Check List scale. Presence of more psychiatric symptoms in patients with NSD compared to the healthy subjects may be associated with NSD-related abnormalities of nasal respiration, subsequent impairment in the PD of QoL and remarkable worsening in the quality of sleep.

Our study shows that in cases with severe NSD, the decision to perform septoplasty depends on its potential effect on psychiatric symptoms, sleep disorders and life quality. A complete therapeutic approach to patients affected by NSD should also consider significant sleep abnormalities in the criteria for perform septoplasty. Our results indicate that an objective evaluation of psychiatric symptoms, sleep disorders and life quality helps the specialist in the management of the patients. Further studies are needed to clarify these relationships.

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