



Evaluation of fibromyalgia symptoms in patients with nasal septum deviation

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Abstract

Aim: Examining the symptoms and effects of fibromyalgia in patients with nasal septum deviation which is an important cause of nasal deformity.

Materials and Methods: Seventy eight patients with nasal septum deviation and 78 healthy volunteers similar in age and gender were included in the study. Patients with systemic rheumatic disease, cardiovascular system disease, infectious disease, any other disease that may affect the respiratory passage other than nasal septum deviation, with a history of regular drug use, and under the age of 18 were not included in the study. Widespread pain score and symptom severity score were calculated for all participants according to the fibromyalgia syndrome American College of Rheumatology 2016 diagnostic criteria, and revised fibromyalgia impact questionnaire was filled out.

Results: While the incidence of fibromyalgia syndrome was higher in patients with septal deviation, this difference was not statistically significant ($p=0.072$). There was no difference between the groups in terms of widespread pain score, symptom severity score, total score and revised fibromyalgia impact questionnaire score ($p=0.438$; $p=0.933$; $p=0.502$; $p=0.081$, respectively).

Conclusion: Although no significant relationship has been found between fibromyalgia and septal deviation, further studies on this subject should be conducted.



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Introduction

Fibromyalgia (FM) is a condition characterized by chronic widespread musculoskeletal pain. Fatigue, cognitive impairment, psychiatric and multiple somatic symptoms often accompany the disorder. Although its etiology is not known exactly, it is suggested that genetic predisposition, some infections, physical and emotional traumas, sleep disorders, neuroendocrine and neuropeptide anomalies play a role in the development of FM. FM is often classified as a form of central sensitization syndrome [1]. Some specialized brain imaging methods have revealed certain abnormalities in patients with FM. Allodynia, pericranial tenderness and widespread musculoskeletal pain are symptoms of central sensitization [2,3]. Sleep problems are also very common in FM patients [4]. Patients often complain that they cannot get enough restful sleep. In this respect, health problems that may affect sleep should be considered in detail as they may pose a risk to FM. Various criteria have been developed for the diagnosis of FM, the

most current of which is the American College of Rheumatology (ACR) 2016 Diagnostic Criteria [5]. According to these criteria, the patients' widespread pain and symptom severity scores are calculated, and those who met the diagnostic criteria are diagnosed with FM.

Nasal septum deviation (NSD), a common anatomical variation, is the asymmetrical bending of the nasal septum to one side. It can also develop as a result of various traumas. The nasal septum is defined as the midline structure of the nasal cavity that divides the nasal cavity in half and structurally supports the external nose [6]. Obliteration of the nasal passage caused by nasal septum deviation prevents optimal nasal breathing and also results in mouth breathing [7]. In people with NSD, since there will be no adequate air flow, sleep quality may also be negatively affected and it has been observed that patients with NSD have impaired sleep quality [8]. This situation may be reflected in the body as widespread pain syndrome and FM. Our study aimed to investigate the effect of NSD, which is an important airway problem, on FM.

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Materials and Methods

Seventy eight patients with NSD and 78 healthy volunteers similar in age and gender were included in the study. The diagnosis of septum deviation was made by the same otolaryngologist. Anterior rhinoscopy to visualize nasal septum and valves was used. Flexible or rigid nasal endoscopy was needed for a more comprehensive examination. Paranasal sinus computed tomography was performed for presence of accompanying nasal pathologies. Patients with NSD over the age of 18 were included in the study. Patients with systemic rheumatic disease, cardiovascular system disease, infectious disease, any other disease that may affect the respiratory passage other than NSD, with a history of regular drug use, and under the age of 18 were not included in the study. Widespread pain score, symptom severity score were calculated for all participants according to the fibromyalgia syndrome ACR 2016 diagnostic criteria and by summing these scores, the total score was obtained. Revised fibromyalgia impact questionnaire (FIQR) was filled out. Participants who met the ACR 2016 diagnostic criteria were diagnosed with FM. FIQR is a questionnaire that evaluates limitations and functional problems in patients with FM. In the study Turkish version was used which validity and reliability study have been conducted [9]. The present study was approved by the Research and Ethics Committee of Clinical Studies linked to Giresun Training and Research Hospital, under the 22.05.2023/06 approval number.

Statistical analysis

NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, ratio, minimum -maximum) were used when evaluating the study data. The suitability of quantitative data for normal distribution was tested with the Shapiro-Wilk test and graphical evaluations. Mann Whitney U test was used for two-group comparisons of quantitative data that did not show normal distribution. Pearson Chi-Square test was used to compare qualitative data. Significance was evaluated at $p < 0.05$ level. G*Power (V3.1) software (Informer Technologies, Inc., Los Angeles, USA) was used to calculate the required sample size. We determined the effect size 0.50. Based on a power of 80% and a 5% level of significance, the total sample size required was calculated as 65 for each group.

Results

The study was conducted with a total of 156 cases, 78 subjects in the patient group and 78 subjects in the control group with similar age and gender. No statistically significant difference was found between the average ages and gender distributions according to groups ($p=0.120$, $p=0.165$, respectively) (Table 1). While the incidence of FM syndrome is 15.4% in patients with septal deviation, this rate is 6.4% in the control group and although it is higher in patients with septal deviation, this difference is not statistically significant ($p=0.072$). There was no difference between the groups in terms of widespread pain score, symptom severity score, total score and FIQR score ($p=0.438$; $p=0.933$; $p=0.502$; $p=0.081$, respectively) (Table 2).

Table 1. Evaluation of demographic characteristics by groups.

		Patient group	Control group	p
		(n=78)	(n=78)	
Age (year)	AVG±SD	29.31±9.49	30.73±8.51	0.120 ^a
	Median (Min-Max)	26.5 (18-60)	28 (20-57)	
Gender	Female	20 (25.6)	28 (35.9)	0.165 ^b
	Male	58 (54.4)	50 (64.1)	

^a: Mann Whitney U Test; ^b: Pearson Chi-Square Test.

Table 2. Evaluation of fibromyalgia scores by groups.

		Patient group	Control group	p
		(n=78)	(n=78)	
Fibromyalgia syndrome	No	66 (84.6)	73 (93.6)	0.072 ^b
	Yes	12 (15.4)	5 (6.4)	
Widespread pain score	AVG±SD	1.49±2.57	1.55±2.28	0.438 ^a
	Median (Min-Max)	0 (0-10)	0 (0-10)	
Symptom severity score	AVG±SD	3.59±3.02	3.47±2.45	0.933 ^a
	Median (Min-Max)	3 (0-10)	3 (0-11)	
Total score	AVG±SD	5.08±4.99	5.03±3.94	0.502 ^a
	Median (Min-Max)	4 (0-20)	5 (0-17)	
Fibromyalgia impact score	AVG±SD	10.90±14.08	9.46±8.00	<0.081 ^a
	Median (Min-Max)	4.67 (0-55.5)	7.03 (0-47.7)	

^a: Mann Whitney U Test; ^b: Pearson Chi-Square Test.

Discussion

The nasal septum is an important anatomical structure that divides the nasal cavity into two, supports the nasal roof and nose tip and contributes to the shape of the nose, and plays a role in nasal airflow turbulence. It consists of an osseocartilaginous skeleton, including a membranous component, and is covered with nasal respiratory and partially olfactory mucosa. Bony septum, septal cartilage, membranous septum and columella are the structures that make up the nasal septum. Septum deviation, which causes obstruction in the air passage, is the abnormal orientation of the septum to the right or left. NSD is a nasal anatomical deformity that is very common in the general population [10]. NSD negatively affects the respiratory system by causing nasal obstruction, which paves the way for sleep disorders. FM is a common disease associated with sleep disorders. Many factors related to sleep disorders are blamed in the etiology of FM [11].

This study is an important study in terms of examining the frequency and effects of FM in patients with NSD. In a study investigating the prevalence of fibromyalgia in 115 patients with NSD, similar results had been found with the control group [12]. Although we found the frequency of FM to be more common in patients with NSD, it was not statistically significant and this result supported the previous study. There are studies showing the relationship between nasal airway obstruction and orofacial pain [13,14]. In present study, there were index areas including

the jaw area in the widespread pain score evaluation and this score of patient group was similar to the control group. This result may suggest that although patients experience pain in the facial area, NSD does not cause widespread pain in the body.

Studies support that NSD is a condition associated with anxiety and depression [15,16]. In our study, depression findings were evaluated within the symptom severity scale and FIQR and no difference was found in these scores. Nasal obstruction is also an important condition that affects quality of life. Dąbrowska-Bień J et al. evaluated the quality of life of patients with nasal obstruction with the Clinical Global Impression Scale and they showed that there was a positive change in the patients' quality of life after septoplasty [17]. In another study, when patients' sleep quality was evaluated with the Pittsburgh sleep quality index, significant positive changes were observed after nasal septal surgery [18]. The NOSE score (Nasal Obstruction Symptom Evaluation) is an important instrument reported by the patient to evaluate the quality of life in nasal obstruction [19]. It is supported in the literature that there is an improvement in NOSE scores after surgeries for nasal obstruction [20,21]. FIQR, a scale that measures functional capacity and disease severity in FM patients, the score of this scale was similar to controls in patients with septum deviation. This may be due to the similar frequency of FM between the two groups.

The study has some limitations. While FM is a condition more common in female gender, most of the patients diagnosed with septum deviation in our study were men. FIQR, a measure that evaluates the functionality of FM patients, has also been applied to patients without FM. It is also a limitation that patients cannot be evaluated according to the severity of their septal deviations. Additionally, small sample size can also be considered a limitation for this study.

In summary, we could not show a relationship between NSD and FM. Further studies are needed on this subject, including a larger number of patients to determine severity of nasal obstruction and NSD.

Conclusion

In our study, septum deviation, which may be a risk factor for FM, was investigated, but according to the results of our study, it cannot be said that fibromyalgia is more common in these patients.

Conflict of interest declaration

There is no conflict of interest between the authors.

Financial disclosure

The authors declared that this study received no financial support.

Ethical approval

The present study was approved by the Research and Ethics Committee of Clinical Studies linked to Giresun Training and Research Hospital, under the 22.05.2023/06 approval number.

Authors' contribution

The authors contributed equally to the study.

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