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## Fibromyalgia syndrome in patients with chronic sinusitis

**Aims:** Fatigue, diminished vitality, and increased bodily pain are common symptoms of chronic rhinosinusitis. On the other hand, there is an increased prevalence of rhinosinusitis symptoms among patients with unexplained chronic fatigue and/or bodily pain. Fibromyalgia syndrome is characterized by widespread pain and fatigue. In this study we aimed to determine the prevalence of fibromyalgia among patients with chronic sinusitis.

**Materials and Methods:** This study included 58 consecutive patients who were diagnosed as chronic rhinosinusitis (24 women and 34 men, mean age: 42.61 ± 10.97). Computed tomography (CT) imaging of the paranasal sinuses and nasal endoscopic examinations were performed for each patient. The CT scans were staged by using the Lund-Mackay staging system, and endoscopy scores were obtained according to Lund and Kennedy.

**Results:** Fibromyalgia was diagnosed in 23 patients (39.7%). Eighteen patients among 24 females (75%) and 5 patients among 34 males (14.7%) had fibromyalgia. Total endoscopy score was significantly higher in patients with fibromyalgia than patients without fibromyalgia, while CT scores were comparable between those subgroups.

**Conclusion:** Fibromyalgia syndrome is commonly present in patients with chronic sinusitis. Higher nasal endoscopy scores might predict the presence of this disease.

**Key Words:** Chronic sinusitis, fibromyalgia, computed tomography, nasal endoscopy

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### Kronik sinüzit hastalarında fibromiyalji sendromu

**Amaç:** Yorgunluk, zindekte azalma ve artmış vücut ağrısı kronik sinüzit hastalarının sık semptomlarıdır. Öte yandan nedeni açıklanmayan kronik yorgunluk ve/veya vücut ağrısından yakınan hastalarda rinosinüzit semptomlarının prevalansı artmıştır. Fibromiyalji sendromu yaygın ağrı ve yorgunluk ile karakterizedir. Bu çalışmada kronik sinüzitli hastalarda fibromiyalji prevalansını araştırdık.

**Yöntemler:** Bu çalışmaya kronik sinüzit tanısı almış ardışık 58 hasta (24 kadın 34 erkek, ortalama yaş: 42.61±10.97) dahil edildi. Her hastada paranasal sinüs bilgisayarlı tomografi (BT) ve nazal endoskopik inceleme yapıldı. BT görüntüleri Lund-Mackay evreleme sistemine ve endoskopik skorlamalar Lund ve Kennedy sistemine göre değerlendirildi.

**Bulgular:** Fibromiyalji 23 hastada (%39.7) saptandı. Yirmi dört bayan hastanın 18'inde (%75) ve 34 erkek hastanın 5'inde (%14.7) fibromiyalji vardı. Total endoskopi skorları fibromiyalji olan hastalarda fibromiyalji olmayanlara göre daha yüksek idi. BT skorları ise iki grup arasında benzerdi.

**Sonuç:** Fibromiyalji sendromu kronik sinüzitli hastalarda sıklıkla bulunur. Yüksek endoskopi skorları bu hastalığın varlığına işaret edebilir.

**Anahtar Sözcükler:** Kronik sinüzit, fibromiyalji, bilgisayarlı tomografi, nazal endoskopi

### Introduction

Chronic rhinosinusitis is a common disorder that causes major physical, emotional, and economical effects, and is associated with poor quality of life.

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The diagnosis of this disease is commonly confirmed by computed tomography (CT) scanning of the paranasal sinuses. However, the severity of patient symptoms does not always correlate well with CT stage of the disease (1,2). Hence, all symptoms of sinusitis cannot be solely attributed to the objective findings obtained by radiological examinations.

Fatigue is among the most common symptoms of chronic rhinosinusitis (3). Diminished vitality and increased bodily pain have also been well documented in chronic rhinosinusitis. Functional endoscopic sinus surgery improved vitality and reduced bodily pain, often to levels comparable to those of the general population (3-8). On the other hand, there is an increased prevalence of rhinosinusitis symptoms among patients with unexplained chronic fatigue and/or bodily pain. Rhinosinusitis symptoms are at least as common as gastrointestinal complaints, sleep disturbance, and psychiatric problems in those patients (5).

Fibromyalgia syndrome is a common rheumatologic disorder characterized by widespread pain, fatigue, sleep disturbances, tenderness at specific anatomic sites, and psychological comorbidities (9,10). To our knowledge, the association between fibromyalgia syndrome and chronic sinusitis has not been documented previously. Therefore, we designed a cross-sectional study to determine the prevalence of fibromyalgia among patients with chronic sinusitis who are candidates of endoscopic sinus surgery.

## Materials and Methods

This study included 58 consecutive patients who were diagnosed as chronic rhinosinusitis (24 women and 34 men, mean age:  $42.61 \pm 10.97$ ). All patients showed symptomatic and objective evidence of chronic sinusitis after a minimum of 3 weeks of medical therapy. The diagnoses of chronic rhinosinusitis were confirmed by CT images of the paranasal sinuses and nasal endoscopic examinations. The CT scan of each patient was staged using the Lund-Mackay CT scoring system. This system is based on the appearance of each paranasal sinus (maxillary, frontal, sphenoid, anterior ethmoids, and

posterior ethmoids) on the CT scan. Each sinus group is assigned a numeric grade: 0 = no abnormality, 1 = partial opacification, and 2 = total opacification. The ostiomeatal complex is scored as 0 when there is no opacification and 2 when it is obstructed. Thus a total score of 0 to 24 is possible, and each side can be considered separately (0-12) (4,11). Nasal endoscopy was quantified using the Lund-Kennedy scoring system. According to this system, the endoscopic appearances of the nose are quantified for the presence of polyps, discharge, edema, scarring, and crusting. The scoring was as follows: for polyps: 0 = none, 1 = confined to middle meatus, 2 = beyond middle meatus; for discharge: 0 = none, 1 = clear and thin, 2 = thick and purulent, and for edema, scarring, and crusting: 0 = absent, 1 = mild, 2 = severe. Thus a total score of 0 to 20 is possible, and each side can be considered separately (0-10) (4).

None of the patients had ever been treated with antidepressive agents. Moreover, patients with diabetes mellitus, thyroid disease, or patients with any rheumatologic disorder were excluded from the study. All subjects were questioned for the presence of widespread pain, duration of pain (months), and the characteristic features of fibromyalgia including sleep disturbance, stiffness, headache, paresthesia, fatigue, inflammatory bowel syndrome, and sicca- and Raynaud-like symptoms. Tenderness at 18 tender and 3 control points were investigated by manual pressure application and noted. The diagnosis of fibromyalgia was made by the presence of widespread pain persisting for at least 3 months and tenderness in at least 11 of 18 specific anatomic sites based on the 1990 classification criteria of the American College of Rheumatology (ACR) (9). Laboratory tests including complete blood count, erythrocyte sedimentation rate, serum glucose level, liver and renal function tests, antinuclear antibody, rheumatoid factor, and thyroid function tests were performed to exclude the presence of any chronic disorder or any rheumatic disorder. All patients were examined by the same investigator.

The prevalence of fibromyalgia between males and females was compared using Fisher's exact chi-squared ( $\chi^2$ ) test. Age of patients, nasal endoscopy scores, CT scores, body mass index (BMI) values, and education levels were compared between

patients with or without fibromyalgia by the Student's t test. A P value below 0.05 was considered significant.

## Results

Fibromyalgia was diagnosed in 23 patients (39.7%). Eighteen patients among 24 females (75%) and 5 patients among 34 males (14.7%) had fibromyalgia. The prevalence of fibromyalgia was significantly higher in females than males ( $P < 0.01$ ). Mean ages, mean BMI values, and educational levels of patients with or without fibromyalgia were comparable (Table 1).

Total endoscopy score was significantly higher in patients with fibromyalgia than patients without fibromyalgia (endoscopy scores were  $4.83 \pm 2.39$  in patients with fibromyalgia and  $3.74 \pm 1.67$  in patients without fibromyalgia,  $P < 0.05$ ). However, there was no significant difference regarding CT scores between the groups (CT scores were  $16.57 \pm 6.39$  in patients with fibromyalgia and  $16.39 \pm 6.41$  in patients without fibromyalgia,  $P > 0.05$ ) (Table 1).

## Discussion

Fibromyalgia is a common musculoskeletal disorder. Its prevalence differs in various populations, ranging between 0.7% and 13% in adult women and 0.2% and 3.9% in adult men (12). A recent Turkish study demonstrated that the prevalence of fibromyalgia in women was 3.6% (13). In this study, we demonstrated that 75% of female chronic sinusitis patients (8/24) and 14.7% of male chronic sinusitis patients (5/34) had the fibromyalgia syndrome. Overall prevalence of

fibromyalgia syndrome is 39.7% in our study group (23/54). This high prevalence of fibromyalgia syndrome in chronic rhinosinusitis patients suggests an association between these disorders. The etiopathogenesis of fibromyalgia remains unknown, and it is difficult to suggest a direct causal relationship between chronic sinusitis and fibromyalgia by a cross-sectional study like ours. However, it has also been reported that psychological distress plays an important role in the pain experience in fibromyalgia syndrome (14). Thus, chronic sinusitis as a chronic disorder may have a negative impact on the patients' psychological status and may facilitate the development of fibromyalgia.

In this study we also compared CT scores and nasal endoscopy scores of chronic sinusitis patients with or without fibromyalgia. The CT scans were staged using the Lund-Mackay staging system, because this staging system has gained widespread acceptance for the grading of CT scans for its ease of interpretation, intraobserver and interobserver reliability, and because it has been recommended by the Task Force on Rhinosinusitis of the American Academy of Otolaryngology-Head and Neck Surgery (4,11). We calculated nasal endoscopy scores according to Lund and Kennedy since this system allowed improved confidence for both intra- and interobserver reproducibility (4). There are conflicting reports regarding the correlation of objective CT grades and subjective patient symptoms in sinusitis patients in the literature (1,2,15,16). Likewise, mean CT score of our sinusitis patients with or without fibromyalgia were comparable. Nasal endoscopic work-up is an effective diagnostic tool for the diagnosis of sinusitis.

Table 1. Gender distributions, endoscopy scores, and computed tomography scores of chronic rhinosinusitis patients with and without fibromyalgia (n = 54). Values are expressed as mean  $\pm$  SD.

	Patients with fibromyalgia	Patients without fibromyalgia	P
Gender distribution (female/male)	18/5	6/29	<0.001
Age (years)	$42.18 \pm 8.62$	$42.89 \pm 12.33$	>0.05
Body mass index ( $\text{kg}/\text{m}^2$ )	$26.15 \pm 5.16$	$25.76 \pm 3.27$	>0.05
Educational level (years)	$10.28 \pm 4.42$	$7.42 \pm 3.39$	>0.05
Endoscopy score	$4.83 \pm 2.39$	$3.74 \pm 1.67$	<0.05
Computed tomography score	$16.57 \pm 6.39$	$16.39 \pm 6.41$	>0.05

There was a significant correlation between endoscopic and CT examinations for the diagnosis of sinusitis, and nasal endoscopy have become the standard method for the evaluation of patients with acute and chronic sinusitis (17-19). In this study, although no association between endoscopy scores and chronic sinusitis scores could be demonstrated in previous studies (17, 19), we demonstrated that mean endoscopy score of sinusitis patients with fibromyalgia was higher than mean endoscopy score of sinusitis patients without fibromyalgia. The reason for this interesting finding remains to be established, and our observation should be confirmed by larger studies.

In conclusion, we demonstrated a high prevalence of fibromyalgia among patients with

chronic sinusitis. Higher nasal endoscopy scores might predict the presence of this disease. Hence, we suggest that clinicians dealing with sinusitis patients must be aware of the signs and symptoms of fibromyalgia in order to provide appropriate management and better quality of life. The major limitations of our study are the cross-sectional design, small sample size, and lack of control population. Therefore, further studies with increased number of patients and control populations are needed to confirm our results. Moreover, prospective studies with pre- and postoperative evaluations of chronic sinusitis patients regarding the presence of fibromyalgia syndrome are also needed to draw more dependable conclusions.

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