



Prevalence of Migraine in Patients with Psoriasis: A Prospective Study

Psoriasis Tanılı Hastalarda Migren Görülme Sıklığı: Bir Prospektif Çalışma

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ABSTRACT

Objective: The aim of this prospective study was to investigate the prevalence of migraine in patients with psoriasis.

Material and Methods: A total of 163 patients who presented at our clinic between November 2017 and May 2018 and were diagnosed with psoriasis through histopathological examination were included in our study. Patients with Psoriasis Area Severity Index (PASI) scores ≤ 10 were considered to have mild psoriasis, and those whose PASI scores were >10 were considered to have moderate/severe psoriasis. Patients with Dermatology Life Quality Index (DLQI) scores ≤ 10 were considered mild, while those with DLQI scores >10 considered moderate/severe. Patients diagnosed with migraine by the neurology clinic pursuant to the diagnostic criteria of the International Headache Society were recorded.

Results: The prevalence of migraine was found to be 8.5% in patients with psoriasis. No significant difference was found between patients with and without migraine in terms of disease severity and joint involvement (p values= 0.43, 0.84, respectively). Patients with migraine were classified into two groups as mild and severe according to PASI and DLQI scores and no statistically significant difference was found between the two groups (p values: =0.164, 0.34, respectively).

Conclusion: In conclusion, although the prevalence of migraine was not found to be high in psoriasis patients in our study, we suggest that psoriasis may be accompanied by migraine and a neurological examination should be carried out for all psoriasis patients suffering from headache for early diagnosis and screening.

Key Words: Aura, Headache, Leptin, Migraine, Psoriasis

ÖZ

Amaç: Bu prospektif çalışmamızdaki amacımız kliniğimize başvuran psoriasis tanılı hastalarda migren görülme sıklığını araştırmaktır.

Gereç ve Yöntemler: Çalışmamıza Kasım 2017 ve Mayıs 2018 tarihleri arasında, kliniğimize başvuran ve histopatolojik incelemeyle psoriasis tanısı konulan 163 hasta dahil edildi. Psoriasis Area Severity Index (PAŞİ) skoru ≤ 10 olanlar hafif, >10 olanlar ise orta/şiddetli psoriasis olarak değerlendirildi. Dermatology Life Quality Index (DLQI) ≤ 10 olanlar hafif, DLQI >10 olanlar orta/şiddetli psoriasis olarak kabul edildi. Nöroloji kliniği tarafından Uluslararası Baş Ağrısı Derneği'nin tanı kriterlerine göre migren tanısı konulan hastalar kaydedildi.

Bulgular: Psöriazisli hastalarda migren görülme sıklığı %8.5 olarak saptandı. Migreni olan ve olmayan hastalar hastalık şiddeti ve eklem tutulumu açısından karşılaştırıldığında anlamlı bir fark saptanmadı (p değeri sırasıyla=0.43, 0.84). Migreni olan hastalar PAŞİ ve DLQI'ye göre hafif ve şiddetli olarak sınıflandırıldığında da her iki grup arasında istatistiksel olarak anlamlı bir fark saptanmadı (p değeri sırasıyla=0.164, 0.34).

Sonuç: Sonuç olarak yaptığımız çalışmada psoriasis hastalarında migren sıklığı fazla saptanmamışsa da, psoriasisle migrenin eşlik edebileceğini ve baş ağrısı olan tüm psoriasis hastalarında erken tanı ve tarama amaçlı nörolojik değerlendirme yapılması gerektiğini düşünmekteyiz.

Anahtar Sözcükler: Aura, Baş ağrısı, Leptin, Migren, Psoriasis

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INTRODUCTION

Psoriasis is a chronic inflammatory disease that affects the knees, elbows and extensor side of the extremities, and occurs in about 2-3% of the population. The inflammatory nature of the disease is caused by overexpression of tumor necrosis factor TNF alpha (TNF- α), interferon IFN- γ , and various proinflammatory cytokines (1,2). Studies have shown that psoriasis is associated with various comorbidities such as obesity, diabetes, hypertension, dyslipidemia and metabolic syndrome. Increased incidence of comorbidity in psoriasis patients is thought to be associated with the inflammatory effect in psoriasis (1-4).

Migraine is a common neurological disorder resulting from increased cortical stimulation and sensitization of afferent trigeminovascular system. Migraine affects 15-20% of the world's adult population and is more common in women than men. There has not been a clarifying explanation on pathophysiological mechanisms of migraine yet. However, the relationship between inflammation and migraine has been known for a long time (5-7).

Some cytokines, which have an important role in the pathogenesis of psoriasis, have also been found to cause vasospasm, meningeal inflammation and hypersensitivity in pain pathways in patients with migraine. In addition, nitric oxide (NO), TNF- α and adipokines such as leptin and adiponectin have a significant role in the pathogenesis of both diseases (8,9). A recent study found that the risk of migraine increases in psoriasis patients (9).

This prospective study aimed to investigate the prevalence of migraine in patients with psoriasis.

MATERIAL and METHODS

One hundred sixty three patients who presented at our Dermatology and Venereal Diseases clinic between November 2017 and May 2018 and were diagnosed with psoriasis through histopathological examination were included in our study.

The parameters of age, gender, duration of disease, Psoriasis Area Severity Index (PASI) score, Dermatology Life Quality Index (DLQI) score, presence of arthritis, nail involvement, moderate or severe headache, presence of migraine, if any, and migraine with/without aura were recorded.

Patients with PASI score ≤ 10 were evaluated as mild and those whose score was >10 were evaluated as moderate/severe psoriasis. Patients with DLQI scores ≤ 10 were considered mild, and those with DLQI scores >10 as moderate/severe psoriasis.

The neurology clinic was consulted for psoriasis patients who presented at our clinic and suffered from headache.

The patients diagnosed with migraine by the neurology clinic according to the diagnostic criteria of migraine with/without aura formulated by the International Headache Society were recorded (10).

Exclusion criteria were determined as; being under 12 years of age, presence of acute or chronic neurological diseases, anxiety disorder, presence of vascular anomalies in the patient's history such as brain tumor, cerebral hemorrhage, arteriovenous malformation in the brain, and presence of uncontrolled hypertension and cardiovascular disease.

The Mean, standard deviation, minimum, maximum values and variable value ranges for numerical variables and percentage for categorical variables were calculated. The relationship between quantitative and categorized groups was evaluated using Chi-square, Mann-Whitney and Student-t Test. Regression analysis was used to examine the quantitative variables for cause and effect relation. All statistical analysis was performed using SPSS 21.0 for Windows (SPSS Inc., Chicago, IL, USA) package program. $p < 0.05$ was accepted as a statistically significant result. The study was approved by the local ethics committee of Faculty of Medicine, Dicle University (date: 23.10.2017, number:153). The study was conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines.

RESULTS

A total of 163 patients aged 12 years and older who presented at our Dermatology and Venereal Diseases Clinic and were diagnosed with psoriasis through histopathological examination were included in the study. Eighty-four (51.5%) of the patients were male and 79 (48.5%) were female. The ages of the patients ranged from 12 to 90 years. The duration of disease ranged from 3 months to 32 years. The mean duration of disease was 10.93 ± 8.37 years.

Of the 163 patients with psoriasis, 56 (34.3%) had headache. Fourteen patients (8.5%) were found to have migraine while 25 patients (15.3%) had tension-type headache, 8 patients (4.9) had sinusitis, 3 patients (1.8%) headache due to a general medical condition, 3 patients (1.8%) had secondary headache, 1 patient (0.6%) had drug-induced headache, and 1 patient (0.6%) had acute headache.

The prevalence of migraine was found to be 8.5% in patients with psoriasis in our study. The prevalence of migraine was 16.4% in women and 1.1% in men. Thirteen out of 14 psoriasis patients with migraine were female and 1 was male; 68 psoriasis patients without migraine were female and 81 were male. In terms of the gender variable, migraine was mostly found in women and this was statistically significant ($p = 0.001$).

The mean age of the patients with migraine was 27.43 ± 10.8 years and the mean age of the patients without migraine

was 36.14 ± 16.3 years. The mean age of the patients with migraine was found to be lower than the patients without migraine and this difference was statistically significant ($p=0.05$).

The mean PASI score was 11.52 ± 7.6 in patients with migraine and 13.1 ± 10.1 in patients without migraine. No significant difference was found between patients with and without migraine in terms of disease severity ($p=0.43$).

Patients with migraine were classified into two groups as mild and severe according to PASI and DLQI scores and no statistically significant difference was found between the

two groups (p values= 0.164, 0.34, respectively). When the patients with and without migraine were compared in terms of joint involvement, no statistically significant difference was found between the two groups ($p=0.84$) (Table I).

No significant difference was found between the two groups consisting of patients suffering from migraine with/without aura in terms of PASI, DLQI, nail involvement, and arthritis (p values= 0.055, 0.36, 0.20, 0.234, respectively) (Table II).

DISCUSSION

Psoriasis is a multifactorial disease with highly complex pathogenesis that affects the skin and joints. TNF- α is a pro-

Table I: Comparison of patients with and without migraine in terms of PASI, DLQI and arthritis.

	Migraine presence				p value
	Present		Absent		
	Number (n)	Percent (%)	Number (n)	Percent (%)	
PASI					
Mild	8	10.2	70	89.7	0.164
Moderate/severe	6	8.3	66	91.6	
DLQI					
Mild	5	6.4	73	93.5	0.34
Moderate/severe	9	10.5	76	89.4	
Arthritis					
Present	1	6.6	14	93.3	0.84
Absent	13	8.7	135	92.2	

DLQI: Dermatology Life Quality Index. PASI: Psoriasis Area Severity Index

Table II: Comparison of PASI, DLQI, nail involvement and arthritis in migraine patients with/without aura.

	Migraine with aura		Migraine without aura		p value
	Number (n)	Percent (%)	Number (n)	Percent (%)	
PASI					
Mild	3	50.0	3	50.0	0.055
Moderate/severe	0	0.0	8	100.0	
DLQI					
Mild	2	40.0	3	60.0	0.36
Moderate/severe	1	11.1	8	88.8	
Nail involvement					
Present	2	40.0	3	60.0	0.20
Absent	1	11.1	8	88.8	
Arthritis					
Present	1	100.0	0	0.0	0.214
Absent	2	15.4	11	84.6	

DLQI: Dermatology Life Quality Index. PASI: Psoriasis Area Severity Index

inflammatory cytokine that plays a role in brain immune and inflammatory activities and has a significant role in the pathogenesis of psoriasis (1-4).

Although the pathophysiology of migraine is not completely known, it is considered that cytokines play a significant role in the modulation of the pain threshold and may play a role in the pathogenesis of migraine. TNF- α was found to induce headache and TNF- α antibody was found to reduce pain in clinical trials. TNF- α was also found to induce calcitonin gene-related peptide gene transcription, which plays an important role in the pathophysiology of migraine (11-15).

One of the substances thought to be involved in the pathogenesis of psoriasis is NO. Keratinocytes are known to express NOS2 protein after being exposed to inflammatory cytokines (16). In a study conducted by Aktürk et al., plasma NO levels in psoriasis patients were found to be significantly high compared to the control group (17). Gokhale et al. found significantly higher serum NO levels in 36 patients diagnosed with various types of psoriasis and they also found a significant positive correlation between disease severity and NO levels in patients with chronic plaque psoriasis (18).

Neurogenic inflammation that results in pain through the activation of the trigeminovascular system in individuals with genetic predisposition to migraine is considered as a potential pathophysiological mechanism. NO causes vasodilation in smooth muscle and has an important role in the onset of headache. Polymorphisms of genes encoding the nitric oxide synthase (NOS) enzyme was shown to affect basal NO levels. A study has revealed that NOS gene polymorphism was an independent risk factor for migraine with aura (19,20).

Leptin is a strong immune modulator that pushes both natural and acquired immunity towards a pro-inflammatory profile (21). In a study conducted by Romani et al., the serum leptin level was found to be significantly high in psoriasis vulgaris patients compared to healthy controls (22). Leptin mediates migraine-associated pathways such as nuclear factor kappa beta, AMP-activated protein kinase, mitogen-activated protein kinase and e-NOS through its receptors such as adiponectin (23). In a study by Pisanu et al., leptin levels were found to be significantly higher in migraine patients than in patients without migraine (24).

Adiponectin is an adipokine predominantly produced by adipocytes that play a significant role in inflammation. It shows an anti-inflammatory effect by suppressing pro-inflammatory cytokines such as TNF- α , IL-6, and interferon-alpha (21). Adiponectin and migraine has some common genetic characteristics. Adiponectin receptors have been shown to be expressed in the cortex, hypothalamus, brain stem and cerebral microvascular endothelium in the brain

(25). In a study conducted by Duarte et al. to assess interictal adiponectin in migraine patients, the total adiponectin level was found to be increased in patients with migraine compared to the control group (26).

Resistin is produced mainly by mononuclear cells in circulation and white adipose tissue. Recently, it has been shown that adipocytes can lead to the induction of T-helper 17 cells (Th17). Th17 cells are involved in the pathogenesis of autoimmune diseases including secretion of IL-17 and psoriasis (22). In several studies on leptin and resistin, it was found that high concentrations of these adipokines correlate with the severity of psoriasis in obese individuals with psoriasis (27-29).

The prevalence of migraine, which is a common disease across the world, in Turkey is as follows: it is reported that lifetime prevalence of migraine is 16%; this rate is 21.8% in women, while 10.9% in men (30).

In a study conducted in Italy, the prevalence of migraine in women with psoriasis was found to be 87.5%; the rate was 11.1% in men and 47% in all psoriasis patients (9). In Taiwan, 1685 adult patients with psoriasis were compared with 5055 control group subjects; no significant difference was found in the prevalence of migraine between the two groups (31). Only four migraine cases were found in the study conducted retrospectively on 724 psoriasis patients by Topal et al. in Turkey (32).

In our study, we found that the prevalence of migraine in all psoriasis patients was 8.5%; the rate was 16.4% in women and 1.1% in men. When these results are evaluated for migraine, the rate in women is similar to that in the literature but lower than that in the literature on the basis of all patients or men. This may be due to the fact that the majority of the patients have not been treated with systemic therapy or have been misdiagnosed or also to the low number of patients in the study. It was also statistically significant that migraine was more common in women than in men. This result is consistent with the data in the literature.

The prevalence of migraine with aura in migraine patients varies between 16-20% (9). In a study conducted on 206 migraine patients in Konya, 64.4% of the patients had migraine without aura and 35.4% of them had migraine with aura (33). In a study conducted in Italy, interestingly, the rate of migraine with aura was found to be 62.5% and migraine without aura was 37.5% in psoriasis patients with migraine (9). In our study, the rate of migraine with aura was 21.4% and the rate of migraine without aura was 78.6% and this was consistent with the literature data.

In a study conducted in Denmark, an increased risk of migraine was found in psoriasis patients due to disease

severity (34). A study conducted in Italy revealed that the prevalence of migraine was found to be increased in psoriasis patients irrespective of disease severity (9).

In our study, migraine was found in 8.3% of patients with mild disease (PASI<10) and in 10.2% of patients with severe disease (PASI>10). The prevalence of migraine was found to be independent of disease severity.

Seventy-eight percent of patients with migraine were found to have had psoriatic arthritis (PsA) in a study conducted in Italy. This situation has been interpreted as systemic inflammation due to joint involvement increases the risk of migraine regardless of the PASI score (9). The rate of PsA was 7.14% in our patients with migraine and 9.3% in patients without migraine. There was no statistically significant difference between patients with and without migraine in terms of PsA.

The limitations of our study were the absence of a control group and the small number of patients.

In conclusion, although the prevalence of migraine was not found to be high in psoriasis patients in our study, we suggest that psoriasis may be accompanied by migraine and a neurological examination should be carried out for all psoriasis patients suffering from headache for early diagnosis and screening, and a multidisciplinary approach should be used for patients with migraine.

Conflicts of interest

There are no conflicts of interest.

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