

Sleep Quality and its Association with Disease Severity in Psoriasis

Uyku Kalitesi ve Psöriaziste Hastalık Şiddeti ile İlişkisi

Mehmet Melikoglu



Department of Dermatology, Atatürk University
School of Medicine, Erzurum, Turkey

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Correspondence to: Mehmet Melikoglu

E-mail: mmelikoglu@gmail.com

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ABSTRACT

Objective: The main purpose of this research was to crosscheck sleep quality in patients with psoriasis with that in healthy individuals and to evaluate a possible relationship between sleep quality and disease severity in these patients.

Materials and Methods: Fifty-eight patients with plaque psoriasis and 58 age- and gender-matched healthy individuals were included. The Psoriasis Area and Severity Index (PASI) scoring method was used to assess the disease severity in patients with psoriasis. The sleep quality of the participants was evaluated by the Pittsburgh Sleep Quality Index (PSQI). The sleep quality scores of the patients with psoriasis were compared to those of healthy controls. Pearson's correlation test and independent samples t-test and were used to interpret the data.

Results: The mean disease duration was 11.1 ± 7.4 years (mean \pm standard deviation), and the mean PASI was 14.1 ± 5.3 . In total, 60% of the patients with psoriasis ($n=35$) experienced poor sleep quality, and this frequency was considerably higher in the patients with psoriasis than in the healthy controls ($p<0.000$). Further, the mean PSQI in the patients with psoriasis (7.01 ± 4.4) was higher than that in the healthy controls (4.18 ± 2.76 , $p=0.000$). The scores of daytime dysfunction, habitual sleep efficiency, and subjective sleep quality, which are the three components of sleep quality, were considerably higher in the patients with psoriasis than in the healthy controls ($p=0.007$, $p=0.032$, and $p=0.034$, respectively).

Conclusion: Our results showing impaired sleep quality and its association with disease severity in patients with psoriasis may contribute to the management of psoriasis.

Keywords: Psoriasis, sleep quality, psoriasis severity

ÖZ

Amaç: Sağlıklı kontrollerle, psöriazis hastalarında uyku kalitesini karşılaştırmak ve uyku kalitesi ve bu hastalarda hastalık şiddeti arasında olası bir ilişkiyi değerlendirmektir.

Gereç ve Yöntem: Psöriazis hastalığı olan elli sekiz hasta yaş ve cinsiyet uyumlu 58 sağlıklı kontrol bu çalışmaya dahil edildi. Psöriazis alan ve şiddet indeksi (PASI) hastalığın şiddetini değerlendirmek için kullanıldı. Katılımcıların uyku kalitesi 'Pittsburgh uyku kalite indeksi' ile değerlendirildi. Psöriazis hastalığı olan hastaların uyku kalitesi puanları sağlıklı kontrol ile karşılaştırıldı. Bağımsız t testi ve Pearson korelasyon testi istatistikî değerlendirme için kullanıldı.

Bulgular: Ortalama hastalık süresi $11,1 \pm 7,4$ yıl (ortalama \pm standart sapma) ve ortalama PASI $14,1 \pm 5,3$ olarak değerlendirildi. Psöriazis hastalarının %60'ında ($n=35$) uyku kalitesi düşüktü ve bu sıklık hastalarda sağlıklı kontrollere göre anlamlı derecede yüksekti ($p<0,000$). Aynı zamanda hastalar için ortalama PSQI skoru ($7,01 \pm 4,4$) sağlıklı kontrollerden daha yüksekti ($4,18 \pm 2,76$; $p=0,000$). Uyku kalitesinin üç bileşeninin skorları; subjektif uyku kalitesi, alışlagelmiş uyku etkinliği ve günlük disfonksiyonu, psöriazisli hastalarda sağlıklı kontrollere göre anlamlı derecede yüksekti (sırasıyla $p=0,034$, $p=0,032$ ve $p=0,007$).

Sonuç: Sonuç olarak, Psöriazis hastalarında hastalık şiddeti ile uyku kalitesinde bozulma ilişkisini gösteren sonuçlar mevcut veriler katkıda bulunabilir.

Anahtar Kelimeler: Psöriazis, uyku kalitesi, psöriazis şiddeti

Introduction

Psoriasis is a dermatological disease that affects 1-3% of the general population [1]. It is a physically, socially, and psychologically disabling disease due to its potential to cause impairments in daily activities and occupational responsibilities [2, 3]. The physical impact of disease severity affects the quality of life (QoL), with as much as 50% of patients reporting psychosocial difficulties [4]. The effect of psoriasis on QoL has been extensively studied, and disease severity appears to be one of the main QoL issues in patients with psoriasis [2, 5-7]. Keeping these

QoL issues in mind, psoriasis can also disrupt sleep which can also be thought as a component of psoriasis-specific QoL measures. Though psoriasis is known to generally impair sleep, the relationship between sleep quality and psoriasis severity has not been fully characterized [2].

The main purpose of this study was to compare sleep quality in patients with psoriasis to that in healthy individuals and to evaluate a possible relationship between sleep quality and disease severity in these patients.

Materials and Methods

This study was conducted according to Helsinki declaration. Fifty-eight patients with plaque psoriasis were included after obtaining written informed consent from all. They were required to be over the age of 18 years. Patients with any renal disease, infectious disease, and malignant disease and who were pregnant were excluded. Fifty-eight age- and gender-matched healthy controls were included.

The Psoriasis Area and Severity Index (PASI) scoring method was used to evaluate disease severity in patients with psoriasis. It has been considered as the gold standard for evaluating disease severity. The PASI is an evaluation of the average redness, thickness, and desquamation of lesions (grades 0-4), weighted by the area of involvement [8]. PASI joins the evaluation of the lesion severity and the area affected [range from 0 (no disease) to 72 (maximal disease)].

The sleep quality of the participants was evaluated using the Pittsburgh Sleep Quality Index (PSQI) [9]. It is a self-administered questionnaire that subjectively measures sleep quality over the previous month. The questionnaire includes 19 questions that must be answered by a patient and five questions that must be rated by their bed partner or room partner (if exists). The questions form the "component" scores, each of which has a range of 0-3 points. A score of 0 indicates no difficulty, while a score of 3 indicates severe difficulty. The seven component scores finally give one total score (range, 0-21 points). A total score of ≥ 5 denotes poor sleep quality with good reliability and validity [3]. A Turkish version of PSQI has been tested and validated for our population [10].

Statistical analysis

All statistical analysis was performed using the Statistical Package for Social Sciences 20.0 (IBM Corp.; Armonk, NY, USA) software package program. Independent samples t-test was used to analyze data between the patients with psoriasis and healthy controls. Possible correlations

between PSQI components and PASI were analyzed by performing Pearson's correlation test. A p-value of ≤ 0.05 was considered statistically significant.

Results

There were 58 patients with psoriasis with an age range of 18 to 76 years (mean \pm standard deviation, 41.3 ± 12.4 years). Majority of the patients were males ($n=32$, 55%). The mean disease duration was 11.1 ± 7.4 years, and the mean PASI was 14.1 ± 5.3 . Demographic features, characteristics of the disease, and sleep quality of the patients are shown in Table 1.

In our study, 60.3% of the patients with psoriasis ($n=35$) experienced poor sleep according to the PSQI, whereas only 10.3 % ($n=6$) of the healthy controls experienced it ($p < 0.000$). The mean PSQI was found to be higher in the patients with psoriasis (7.01 ± 4.14) than in the healthy controls (4.18 ± 2.76 , $p=0.000$). The scores of subjective sleep quality, habitual sleep efficiency, and daytime dysfunction, which are the three components of sleep quality, were significantly higher in the patients with psoriasis than in the healthy controls ($p=0.034$, $p=0.032$, and $p=0.007$, respectively). The comparison of the PSQI and its components between the patients with psoriasis and the healthy controls is shown in Table 2.

Table 1. Demographic, disease, and sleep quality characteristics of patients

Age (years), mean \pm SD	41.3 \pm 12.4
Sex, n (%)	
Male	32 (55)
Female	26 (45)
Duration of psoriasis (years), mean \pm SD	11.1 \pm 7.4
PASI, mean \pm SD	14.1 \pm 5.3
SD: standard deviation; PASI: Psoriasis Area and Severity Index	

Table 2. The comparison of Pittsburgh Sleep Quality Index (PSQI) between patients with psoriasis and healthy controls

	Patients with psoriasis	Healthy controls	p
Poor sleep quality, n (%)	35 (60.3)	6 (10.3)	0.000
PSQI Components			
Subjective sleep quality (0-3)	1.34 \pm 1.29	0.91 \pm 0.75	0.034
Sleep latency (0-3)	1.29 \pm 1.13	1.25 \pm 1.10	NS
Sleep duration (0-3)	1.36 \pm 1.12	1.24 \pm 0.98	NS
Habitual sleep efficiency (0-3)	2.01 \pm 1.26	1.56 \pm 0.93	0.032
Sleep disturbances (1-3)	1.45 \pm 1.01	1.77 \pm 0.87	NS
Use of sleeping medication (0-3)	1.51 \pm 0.98	1.68 \pm 1.01	NS
Daytime dysfunction (0-3)	2.06 \pm 1.15	1.54 \pm 0.86	0.007
Global PSQI (0-21)	7.01 \pm 4.19	4.18 \pm 2.76	0.000
NS: not significant; PASI: Psoriasis Area and Severity Index; PSQI: Pittsburgh Sleep Quality Index			

Table 3. Correlation between sleep quality and disease severity in patients with psoriasis

PSQI	PASI (p)
Subjective sleep quality (0-3)	0.048
Sleep latency (0-3)	NS
Sleep duration (0-3)	NS
Habitual sleep efficiency (0-3)	0.044
Sleep disturbances (1-3)	NS
Use of sleeping medication (0-3)	NS
Daytime dysfunction (0-3)	0.012
Global PSQI score (0-21)	0.033
NS: not significant; PASI: Psoriasis Area and Severity Index; PSQI: Pittsburgh Sleep Quality Index	

In our study, the scores of subjective sleep quality, habitual sleep efficiency, and daytime dysfunction had significant correlations with PASIs ($p=0.048$, $p=0.044$, and $p=0.012$, respectively). The global PSQI and PASI were also significantly correlated ($p=0.033$). Correlations between sleep quality and disease severity in the patients with psoriasis are summarized in Table 3.

Discussion

The impact of psoriasis is related to poor QoL, including sleep impairment. Although psoriasis is known to generally impair sleep, data on components impairing sleep in cases with psoriasis are limited. In this study, sleep quality in the patients with psoriasis was compared to that in the healthy controls and a possible relation between sleep quality and disease severity in these patients were investigated.

Previous studies on sleep in patients with psoriasis showed sleep impairment. Shutty et al. [3] showed that patients with psoriasis had a 4.3-times higher insomnia category than controls after adjusting for age, body composition, and sex. Further, in another study where telephone and e-mail surveys were conducted, Callis Duffin et al. [11] found that 49.5% of patients with psoriasis claimed that their sleep was affected negatively by psoriasis at least once a month. Our results were in accordance with the results of previous studies showing sleep disturbances in patients with psoriasis [3, 12, 13]. The common conclusion in these studies was that understanding the origin of comorbidities, including sleep problems, in patients with psoriasis may help improve daily living and future treatment of the disease [3]. Several factors associated with psoriasis that could impair sleep were also investigated in previous studies [3, 6, 11]. In a review article linking sleep and psoriasis, the interactional structure of factors that affect sleep such as pruritus, depression, pain, and obstructive sleep apnea were described [6]. Callis Duffin et al. [11] also demonstrated that psoriatic arthritis, pruritus, pain, or soreness and a patient's overall emotional well-being are significant predictors of sleep disturbance in these patients. It has also been suggested that patients with psoriasis are more likely to suffer from sleep disturbances, possibly secondary to symptoms of depression associated with the state of psoriasis [3]. In an experimental model of psoriasis, it has been suggested that sleep disturbance plays a dominant role in the exacerbation of psoriasis via the dysregulation of the immune mechanisms in the epidermal barrier. Thus, sleep disturbance should be considered as a risk factor for the development of psoriasis [14]. Our study presents additional confirmation that besides

sleep disturbances, patients with psoriasis have substantially impaired sleep quality compared with general healthy people [11, 12, 15].

Disease severity may be questioned as a possible factor related to impaired sleep quality in patients with psoriasis. In previous studies, there were different results on the relationship between sleep impairment and disease severity in these patients [3, 12, 16]. Koo [16] showed that increased psoriasis severity is an associated factor in sleep impairment. However, in another study, it was concluded that total work productivity and dermatology-specific health-related QoL as subjective symptoms seemed to be more significantly correlated to sleep disturbance than objective psoriasis signs such as the PASI [12]. This may be due to the measurement of disease severity in psoriasis, which has been considered as a contentious evaluation [2]. Similarly, it has been suggested that measurements of disease severity are not correlated with the reported degree of impairment by patients [17]. In several skin disorders, it has been reported that the subjective reporting of sleep impairment may not match with the quantitative measurement of disease severity [2, 18]. In the present study, using the PASI, which is currently accepted as the gold standard tool for evaluating disease severity in psoriasis, and using a validated sleep quality questionnaire, a significant negative correlation between psoriasis severity and sleep quality was determined in patients with psoriasis [8]. Sleep disturbances have also been detected in other chronic conditions [19].

The impact of psoriasis on several components of sleep quality was also evaluated in the present study. We determined that subjective sleep quality, daytime dysfunction, and habitual sleep efficiency were impaired in patients with psoriasis. The impairment of these components was also correlated with disease severity. In another study that evaluated sleep quality by another measurement in patients with psoriasis, the PASI was found to be a significant predictor of the daytime somnolence and sleep adequacy components of sleep quality [12]. In spite of different sleep quality tools, our results may be considered to be parallel to these results. Impaired components of sleep quality, daytime somnolence and daytime dysfunction, will have an impact on daytime living. The sample size may be a limitation in our study.

In conclusion, our results showing impaired sleep quality and its association with disease severity in patients with psoriasis may contribute to current data. Our results indicate that the assessment of sleep impairment is

needed in the approach to patients with psoriasis. Understanding the origin of sleep quality impairment as a comorbidity in these patients may contribute to the management of psoriasis.

Ethics Committee Approval: Author declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the author.

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