

ORIGINAL ARTICLE

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Does Behcet's disease affect the quality of sleep?

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Abstract

This research aimed to evaluate the sleep quality (QoS) in individuals with Behçet's disease (BD) compared to a control group of healthy individuals. Additionally, it sought to investigate any possible correlation between BD activity and sleep quality. In this case-control study, individuals with BD and healthy controls, matched for age and gender, were enrolled. The study collected demographic information, body mass indexes (BMI), and disease durations. The BD Behçet disease current activity form (BDCAF) was employed to gauge the disease activity of BD, while the Pittsburgh Sleep Quality Index (PSQI) was utilized to evaluate the QoS. PSQI scores were compared between the patients and controls and the possible correlation between PSQI and BDCAF scores were investigated. Besides, demographic features, disease characteristics, total score and sub parameters of disease activity were compared between BD cases with and without poor QoS. Among 56 BD patients and 56 controls, there were no significant differences in age, gender distribution, or BMI. BD cases demonstrated significantly higher QoS scores than controls (PSQI score: 6.5 ± 4.84 in cases, 3.7 ± 1.48 in controls, $p=0.022$). While no correlation was observed between PSQI, demographic characteristics, and disease duration, a notable positive correlation emerged between PSQI and BDCAF total score ($p=0.037$, $r=0.458$). No statistical difference was determined between demographic data, disease duration, and BDCAF sub parameters between patients with poor (24 patients, 42%) and without poor QoS (32 patients, 58%); however, the total score of BDCAF was significantly higher than those of BD with low QoS ($p=0.021$). Our study data suggest that impaired sleep quality in BD cases may be linked to overall disease activity, irrespective of the specific form of involvement. Consideration of QoS in the management of BD will contribute to a holistic approach to the disease.

Keywords: Behçet Disease, sleep quality, disease severity

Introduction

Behçet disease (BD) is a multisystemic vasculitis that can affect vessels of any diameter [1]. The clinical manifestations of the disease are quite diverse and include a wide spectrum that can affect all systems, especially oral and genital ulcers and eye involvement [2]. The clinical course may progress with exacerbations and remissions, and this whole process may adversely affect the quality of life. In addition to clinical involvement, disease activity has been shown to be one of the parameters that adversely affect quality of life in patients diagnosed BD [3].

There are data showing that sleep quality is impaired as part of quality of life in many inflammatory and autoimmune diseases

[4]. Although there are some studies investigating the overall negative effect of BD on sleep, studies investigating sleep quality and BD disease activity are very limited [5].

This study aimed to evaluate the sleep quality in individuals with BD compared to a healthy control group and explore potential correlations between disease activity and sleep quality.

Material and Methods

Study Design

The study was conducted at a dermatology clinic within a tertiary university hospital, catering to approximately 4.5 million people in eastern Türkiye, from January 2022 to July 2022. The research adhered to the principles of the Helsinki Declaration,

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and informed consent was obtained from all participants. With approval from the Atatürk University Non-invasive Clinical Research Ethics Committee (01.12.2022/9-4). To determine the sample size [2], 56 consecutive patients diagnosed with BD and 56 age- and gender-matched healthy controls were planned for inclusion. The inclusion criteria involved individuals over 18 years of age who met the current classification criteria for BD. [6]. The exclusion criteria were defined as having additional diseases and having a history of drug and alcohol use that may affect the sleep pattern.

Evaluations

For patients diagnosed with BD, demographic information, including age and gender, as well as body mass index (BMI) and disease duration, were documented. The Turkish version of the BD Current Activity Form (BDCAF) was employed to assess disease activity [7], scoring the duration of involvement in various clinical features over the 4 weeks preceding the current date (ranging from 0 to 4). Additionally, overall impressions of disease activity were evaluated using seven different facial expressions, as reported by both the patient and clinician.

In the study, sleep quality was evaluated using the Pittsburgh Sleep Quality Index (PSQI) [8]. This questionnaire assesses the sleep quality of individuals over the past month and comprises 19 self-reported questions by the patient, as well as 5 questions to be answered by any room partner, if applicable.

Questions are scored on a scale of 0-3 points (0 represents no

difficulty at all, 3 represents severe difficulty). A total score is obtained from 7 components (between 0-21). The total score of ≥ 5 reflects poor sleep quality [9]. The questionnaire was validated to our language [10].

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics Program 20.0 (IBM Corp.; Armonk, NY, USA). The normal distribution of the data was assessed using the Shapiro-Wilk test. Descriptive statistics were presented for demographic and clinical variables, using frequencies and percentages for categorical variables and means and standard deviations for continuous variables. Categorical variables were examined using the Chi-square test. The Student’s t-test or the Mann-Whitney U test was used for the analysis of two independent continuous variables, depending on whether the distribution was normal or not. The correlation between the BDCAF scores and the PSQI scores was assessed using the Pearson correlation test, when the normal distribution was assessed. A significance level of $P<0.05$ was considered indicative of statistical significance in our analysis.

Results

Our study comprised 56 individuals diagnosed with BD (20 females, 36 males, aged 18-60 years), alongside an age- and sex-matched control group of 56 healthy individuals. Demographic details for both cases and controls are presented in Table 1.

Table 1. Demographic information, assessments of disease activity and measures of sleep quality for both Behçet's patients and healthy controls

	Behçet's disease n=56	Control group n=56	P
Age; years (mean±SD)	35.1±4.76	33.8±6.73	0.080
Gender;	Female/male	Female/male	
n	20/36	20/36	0.090
%	35/65	35/65	
BMI (kg/m²)	25.0±4.76	25.1±5.02	0.090
Duration of the disease (months)	84±6.23		
BDCAF score	6.2±3.28		
PSQI score	6.5±4.84	3.7±1.48	0.022

BMI: body mass index, PSQI: Pittsburgh sleep quality index, BDCAF: Behçet disease current activity form, Kg/m²: kilogram/square meter, SD: standard deviation

The overall PSQI score was <4 for 32 patients (58%), indicating good sleep quality, while 24 patients (42%) had a PSQI score ≥ 5 , indicating poor sleep quality. No statistical difference was determined between age, sex, disease duration and BMI values between BD with $PSQI<4$ and $PSQI\geq 5$ scores. In the comparison of disease activity of patients with and without good sleep quality according to the PSQI score, there was no statistically significant difference in terms of the sub parameters (headache, oral-genital ulcer, other skin findings, joint findings, ophthalmic findings, gastrointestinal system findings, large vessel involvement and

neurological involvement) in the BDCAF content. However, the total disease activity (BDCAF total score) of BD who exhibited poor sleep quality was statistically significantly higher than those who exhibited good sleep quality ($p=0.021$).

The correlation analyses between PSQI scores and BDCAF scores in BD patients are outlined in Table 2. PSQI and BDCAF scores were moderately positively correlated ($p=0.037$, $r=.458$). However, there was no correlation between PSQI score and age, disease duration, or BMI.

Table 2. Pearson's correlation analyses between PSQI scores and BDCAF scores in patients diagnosed with BD

	PSQI	
	p	r
Age	0.080	0.252
Duration of disease	0.070	0.176
BMI	0.070	0.181
BDCAF	0.037	0.458

BMI: body mass index, BDCAF: Behçet disease current activity form, PSQI: Pittsburgh sleep quality index, BD: Behçet disease

Discussion

In our study, which examined how to compare sleep quality with healthy controls in Behçet patients (BD) and whether there was a relationship between disease activity and sleep quality, it was shown that sleep quality of BD was significantly worse than healthy people and this situation was related to total disease activity.

It is known that sleep quality may be impaired in various autoimmune diseases [5,11]. Due to chronic, autoimmune and multisystem nature, BD may pose a risk for the occurrence of various sleep disorders and deterioration in sleep quality can be expected in BD.

In a recent review assessing sleep quality in BD, it was reported that research was mainly divided into two main axes: general sleep characteristics and specific sleep disorders. An increase in the frequency of obstructive sleep apnea and restless legs syndrome from specific sleep disorders has been reported in BD, and different methodologies seem to have been used in studies investigating general sleep characteristics [12].

In studies investigating general sleep characteristics in different diseases, the most commonly used method in the evaluation of sleep quality is PSQI. In studies comparing sleep quality with healthy ones in BD, PSQI scores were found to be statistically significantly higher in BD than in healthy ones, and impaired sleep quality was noted in these cases [2,13-19]. In our study, we used PSQI, a widely accepted method of assessing sleep quality. The findings from our study indicate that sleep quality is compromised in BD when compared to healthy controls, aligning with and reinforcing previous data on this topic.

While numerous studies have delved into sleep quality in BD, there is a limited amount of data on the link between disease activity and compromised sleep quality. Our research explored this connection, revealing a significant positive correlation between PSQI and the disease activity scale. Furthermore, our study found no notable differences in demographic and other disease-related factors between BD with poor sleep quality and those with satisfactory sleep quality. Nevertheless, individuals

with poor sleep quality exhibited a significantly higher total BDCAF score, regardless of the specific mode of involvement. Notably, few studies have explored the connection between disease activity and sleep quality in BD. A Korean study found a direct correlation between poor sleep quality, BD disease activity, depression, and quality of life [2]. Similarly, a local study revealed a link between poor sleep quality, depression, and disease activity in BD [17]. When combined with our findings, it suggests that BD individuals may experience lower sleep quality compared to healthy counterparts, related to disease activity. Our study's strength lies in being among the few to investigate the link between BD disease activity and sleep quality. However, the limitation is that our data may not fully represent all BD cases as our study focused on patients in a tertiary health facility. Therefore, further research involving a larger patient population is warranted in this context.

Conclusion

In conclusion, our study suggests that sleep quality is impaired in BD. This impact is related to overall disease activity, regardless of the specific disorder involved. The recognition and consideration of sleep quality in the management of BD may have the potential to enhance a holistic approach to the disease.

Conflict of Interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
The authors declare that they have received no financial support for the study.

Ethical Approval
Following approval from the Atatürk University Non-invasive Clinical Research Ethics Committee, the study was carried out in adherence to the Helsinki Declaration Rules (07.06.2024/332).

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