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THE RELATIONSHIP BETWEEN ALEXITHYMIA AND SLEEP DISORDERS IN PATIENTS WITH KNEE OSTEOARTHRITIS

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ABSTRACT

Background: Among patients with knee osteoarthritis (OA), sleep disorders is highly prevalent and significant due to chronic pain. This pain is more obvious in patients who display the characteristics of alexithymic personality (AP).

Aim: To evaluate sleep disorders and its relationship to alexithymia in patients with knee OA.

Materials and Methods: The study comprised 305 patients aged 60 years and older diagnosed with knee OA. The data scales used in the study comprised 18 questions including the socio-demographic characteristics, general health status, and sleeping habits of the participants, the Toronto Alexithymia Scale (TAS) and the Pittsburgh Sleep Quality Index (PSQI).

Results: A total of 305 patients were included in the study, comprising 122 (40%) males and 183 females (60%). AP was present in 179 (58.7%) of the participants and the PSQI score was over 5 in 175 participants (57.4%). A significant positive correlation was observed between the total sleeping score and the alexithymia score of patients with knee OA ($r=0.270$ $p=0.046$)

Conclusions: The application of scales such as the PSQI or TAS in patients with knee OA may be instructive in the management of the disease. Patients with knee OA should be regularly screened for sleep quality and alexithymic personality as part of routine care.

Key words: Alexithymia, knee, osteoarthritis, sleep disorder.

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Introduction

Osteoarthritis (OA) is a degenerative disorder of the joint characterized by progressive and irreversible loss of cartilage and subsequent pain and dysfunction of the joint⁽¹⁾. According to the estimates of the WHO (World Health Organization), approximately 25% of the elderly population aged over 60 suffer from osteoarthritis-related pain and functional loss. The incidence of the disease increases with an increase in age⁽²⁾. The disease is the most important cause of physical and psychosocial disability in elderly patients due to the pain and joint dysfunction which hinders the daily and social

activities⁽³⁾. The sleep and life qualities of the individual are negatively affected by the increasing alterations in physical, social, psychological, economic and environmental factors that develop with the increase in age⁽⁴⁻⁶⁾. The total sleeping period of the individuals is shortened, while the duration of staying in bed is prolonged. They have difficulty falling asleep and frequently wake up during the night. The need for morning sleep arises⁽⁷⁻⁹⁾. In addition to the disruption of sleep in OA, impaired sleep quality may cause an increase in the perceived pain or make it a chronic pain⁽¹⁰⁻¹¹⁾. It is known that the symptoms of the disease may be related to social, emotional and personal factors, as well as organic

factors in elderly patients with chronic pain and sleep disorders⁽¹²⁻¹⁴⁾. Emotional states are usually perceived and interpreted as physical diseases by mistake in alexithymic personality (AP), which is defined as inadequacy in determining, discriminating and defining the emotions^(15,16). AP is especially more frequent in patients with chronic pain⁽¹⁷⁻¹⁹⁾ and there is also a significant correlation between AP and sleep disorders⁽²⁰⁻²²⁾.

The purpose of this study was to identify the role of alexithymic personality on sleep disorders among the patients with osteoarthritis and chronic pain. In this study, evaluations were made of the correlation between AP and sleep disorders in elderly OA patients with concurrent chronic pain and sleep disorders.

Materials and methods

The study comprised consecutive 305 patients (122 males, 183 females), mean aged $69,68 \pm 5,12$ (60-85 years) diagnosed with knee OA according to the criteria of the American College of Rheumatology who presented at the Hydroclimatology, Physical Medicine and Rehabilitation cure central for thermal spring and physiotherapy with health committee reports. Patients who could communicate verbally, who were literate and without dementia were included in the study, while those with severe depression or psychiatric disorders were excluded.

This study was conducted in compliance with the principles of the Helsinki Declaration. Written informed consent was obtained from each participant. The data were obtained by surveys filled out by the patients themselves. The data scales used in the study were a data collection form that was created by the investigators, which comprised 18 questions including the socio-demographic characteristics, general health status, and sleeping habits of the participants, the Toronto Alexithymia Scale (TAS) and the Pittsburgh Sleep Quality Index (PSQI).

Pittsburgh Sleep Quality Index: This is a screening and evaluation test composed of 19 questions that are based on self-declaration of the sleep quality and types and severities of disorders in the previous month. Each item is evaluated as 0-3 points. The scores of 7 components are obtained, including subjective sleep quality, duration of falling asleep, duration of sleep, habitual sleeping activity, sleeping disorder, use of sleeping drugs and daily dysfunction. The total of these 7 compo-

nents gives the PSQI score. The total PSQI score may be between 0 and 21. Scores of 5 and lower are evaluated as "good sleep quality" and scores of 6 and higher are evaluated as "bad sleep quality". The validity and reliability study of this scale was conducted by Ağargün et al.⁽²³⁾.

Toronto Alexithymia Scale: This is a self-declaration test consisting of 26 questions answered in the form of "yes" or "no". Scores higher than 11 are evaluated as alexithymic. The validity and reliability study of this scale was conducted by Dereboy et al.⁽¹⁵⁾.

According to the TAS scores, the participants were divided into two groups, as AP, or non-AP.

The sleeping habits of the groups were compared using the Chi-square test. The independent samples t test was used for the evaluation of the differences between the groups in the total and sub-scores of PSQI. The correlation between TAS and PSQI was evaluated using the Pearson correlation test.

Results

A total of 340 patients were admitted to be included in the study. 35 patients were excluded from the study for not filling out the questionnaire forms completely. The demographic and general sleeping habits of the participants are presented in Table 1. AP was present in 179 (58.7%) of the participants and the PSQI score was over 5 in 175 participants (57.4%).

No significant difference was observed between the patients with or without AP with respect to age and duration of education (Table 2). The comparison of two groups according to the surveys evaluating the general sleeping habits, demonstrated that alexithymic patients could not return to sleep easily when they woke up in the middle of the night, they encountered problems of insomnia, snoring, frequent movements of the legs and difficulty in staying awake during the daytime (Table 1). The averages of all the sub-scores together with the total sleep quality score obtained in the PSQI of patients with AP were different to those of the patients without AP, which supported the finding of sleep disorders (Table 2). A significant positive correlation was observed between the total sleeping score and the alexithymia score of patients with OA ($r=0.270$ $p=0.046$).

Discussion

	Alexithymic group				Non-Alexithymic group				
	n	Maximum	Minimum	Mean ± SDn	n	Minimum	Maximum	Mean± SD	p
Age	179	60	84	69.88±5.23	126	60	85	69.39±5.14	,000**
ED (years)	179	5	15	8.31±3.10	126	5	15	8.55±3.24	,000**
TAS	179	11	19	13.26±2.19	126	4	10	8.54±1.37	,000
PSQI	179	1	20	8.41±3.54	126	1	19	5.13±2.85	,000**
VAS	179	3	8	6.03±1.18	126	2	9	6.10±1.46	,647
SD(hours)	179	0	3	0.91±0.98	126	0	3	0.48±0.78	,000**
SDs	179	0	3	1.81±0.68	126	0	3	1.44±0.55	,001**
SL	179	0	3	1.68±0.83	126	0	3	1.11±0.70	,000**
DD	179	0	3	1.00±0.82	126	0	3	0.51±0.71	,000**
HSE	179	0	3	1.08±1.11	126	0	3	0.52±0.79	,000**
SQ	179	0	3	1.27±0.73	126	0	3	0.89±0.71	,000**
USM	179	0	3	0.65±0.97	126	0	3	0.31±0.74	,000**

Table 1: Sleep quality differences between the Alexithymic group and the Non-Alexithymic group.

ED: Education Duration, TAS: Toronto Alexithymia Score, PUQI: Pittsburg Sleep Quality Index, VAS: Visual Analog Scale, SD: Sleep Duration, SDs: Sleep Disturbances, SL: Sleep Latency, DD: Daytime Dysfunction, HSE: Habitual Sleep Efficiency, SSQ: Subjective Sleep Quality, USM: Use of Sleep Medication

**P<0.01 *P<0.05

Osteoarthritis affects more than half of all older adults, many of whom experience co-morbid sleep disturbance. Pain initiates and exacerbates sleep disturbance, whereas disturbed sleep maintains and exacerbates pain. Personal traits are other decisive factors that cause an increase in the severity and chronicity of pain. These traits may affect the quality of life adversely by impairing the quality of sleep. The purpose of this study was to identify the role of alexithymic personality on sleep disorders among the patients with osteoarthritis and chronic pain; and as a result, significant correlation between AP structure and sleep disorders was determined.

OA is the most common cause of disability worldwide, particularly in developed countries. It is observed in 52% of the elderly population aged over 65, and the incidence increases with increased age⁽²⁾. The increase in the elderly population in developed countries and our country has necessitated new approaches to their health problems. In particular, as more attention has recently been paid to healthcare in elderly people and the prevention of possible problems, more studies have been conduct-

ed on this subject. Many patients have complaints of sleep disorders in the presence of musculoskeletal system pain⁽²⁴⁾. Sleep disorders were reported in 63% of the patients with rheumatoid arthritis (RA) in a study by Solak et al.⁽²⁵⁾, in 71% of patients with fibromyalgia syndrome (FMS) in a study by Sivas et al.⁽¹⁷⁾, and in 81% of patients with OA of the knee in a study by Wilcox et al.⁽²⁶⁾. In the current study, 57.4% of the elderly patients with OA had sleep disorders. The rate of stage 1 sleep was increased, stage 2 sleep decreased, and the disruption of sleep increased⁽⁸⁾. The relationship of pain to sleep disorders in OA patients has been confirmed by the improvements in sleep disorders following total hip arthroplasty in a study of 48 patients⁽²⁷⁾. The time taken to fall asleep and the continuity of the sleep are impaired due to pain. Sleeplessness in turn, decreases the threshold of pain and the hyperalgesia causes the pain to become chronic. The emotional and personal characteristics of a patient may be definitive in the onset of sleep disorders as well as chronic pain^(10,11,28-31).

The personal characteristics have been investigated in several disorders such as FMS, irritable colon, insomnia, sleep apnea and restless leg syn-

		Non- Alexithymic n(%)	Alexithymic n(%)	p
Time of going to bed	Before 22:00	19 (15.1)	21 (11.7)	0.85
	22:00-23:00	40 (31.7)	57 (31.8)	
	23:00-24:00	51 (40.5)	76 (42.5)	
	After 24:00	16 (12.7)	25 (14)	
Time taken to fall asleep	0-30 minutes	69 (54.8)	76 (42.5)	0.03
	30 minutes and more	57 (45.2)	103 (57.5)	
Waking up time	5:00-6:00	15 (11.9)	37 (20.7)	0.11
	6:00-7:00	63 (50.0)	75 (41.9)	
	7:00 and after	48 (38.1)	67 (37.4)	
Sleeping duration	Less than 5 hours	13 (10.3)	20 (11.2)	0.63
	5-7 hours	37 (29.4)	63 (35.2)	
	7-9 hours	65 (51.6)	85 (47.5)	
	More than 9 hours	11 (8.7)	11 (6.1)	
Waking up during the night	Usually	45 (35.7)	77 (43.0)	0.44
	Rarely	75 (59.5)	95 (53.1)	
	Never	6 (4.8)	7 (3.9)	
Falling asleep again easily after waking up during the night	Yes	64 (35.7)	64 (35.8)	0.01
	No	37 (29.4)	57 (31.8)	
	Sometime	25 (18.8)	58 (32.4)	
Snoring	Rare or never	56 (44.4)	79 (44.1)	0.34
	1 per month	10 (7.9)	6 (3.4)	
	2-3 days per week	35 (27.8)	54 (30.2)	
	Everyday	25 (19.8)	40 (22.3)	
Sleep apnea	Rare or never	111 (88.1)	114 (80.4)	0.34
	1 per month	5 (4.0)	12 (6.7)	
	2-3 days per week	7 (5.6)	18 (10.1)	
	Everyday	3 (2.4)	5 (2.8)	
Leg complaints starting at night (pain, tingling)	Rare or never	59 (46.8)	61 (34.1)	0.11
	1 per month	3 (2.4)	7 (3.9)	
	2-3 days per week	34 (27.0)	51 (28.5)	
	Everyday	30 (23.8)	60 (33.5)	
Leg movements at night	Rare or never	74 (58.7)	66 (36.9)	0.002
	1 per month	10 (7.9)	18 (10.1)	
	2-3 days per week	16 (12.7)	41 (22.9)	
	Everyday	26 (20.6)	54 (30.2)	
Insomnia	Rare or never	79 (62.7)	74 (41.3)	0.002
	1 per month	12 (9.5)	20 (11.2)	
	2-3 days per week	24 (19.0)	53 (29.6)	
	Everyday	11 (8.7)	32 (17.9)	
Activities for coping with insomnia	Nothing	48 (38.1)	37 (20.7)	0.03
	Drinking milk or eating yoghurt	17 (13.5)	21 (11.7)	
	Watching TV or listening radio	17 (13.5)	34 (19.0)	
	Walking in the house	9 (7.1)	20 (11.2)	
	Take sleep medication	4 (3.2)	18 (10.1)	
	Reading a book	13 (10.3)	21 (11.7)	
	Praying	15 (11.9)	26 (14.5)	
	Doing handicrafts	2 (1.6)	1 (0.6)	
	Smoking	1 (0.8)	1 (0.6)	
Falling asleep during the day	Rare or never	97 (77.0)	96 (53.6)	0.02
	1 per month	8 (6.3)	17 (9.5)	
	2-3 days per week	14 (11.1)	45 (25.1)	
	Everyday	7 (5.6)	21 (11.7)	

Table 2: Sleep habits of the Alexithymic group and the Non-Alexithymic group.

drome with symptoms of chronic pain and sleep disorder and AP^(19,22). OA is generally accepted as an aspect of aging and epidemiological studies have

usually been conducted on certain physical factors such as height or weight^(32,33). Although personal characteristics have no effect at the beginning of the

disorder, they are related to the symptoms and diseases that are concomitant with OA. Sayar et al.⁽³⁴⁾ translated the term alexithymia as “emotional deafness” in Turkish, and defined people with AP as robotic and with cold behaviour, and added that these people display more somatization than others. The lexical meaning of the word alexithymia is the absence of expressions for emotions. In AP, the person has difficulties in defining and discriminating the emotions from bodily sensations, expressing feelings and thinking concretely. The inability to express the feelings coming from the body may appear mistakenly as the sense of pain.

There is a consensus on the definition and clinical properties of alexithymia. However, there are controversies on some subjects such as whether alexithymia is a fixed personality structure, or a temporary situation that appears in conditions of psychological stress related to an acute disease, or a defence in response to chronic diseases⁽¹⁶⁾. Despite AP having been reported as common in patients with chronic pain, there are still studies that do not support this finding. Sayar et al.⁽³⁴⁾ reported that patients with FMS comprised more individuals with AP, whereas no significant difference was observed in patients with RA. A study by Kaya et al.⁽¹⁹⁾ also demonstrated more patients with AP in FMS. However, Malt et al.⁽³⁵⁾ reported no difference when compared to healthy controls. In the current study, 58.7% of the patients with OA had AP, but this rate could not be statistically compared as there was no healthy control group.

Elderly OA patients with AP experience more sleep disorders than non-AP groups. It has been shown in clinical studies that patients may have sleep disorders due to the pain they experience, and that sleep disorders in turn may lead to an increase in the severity of the pain. Since not all the patients with OA in the current study suffered from a sleep disorder at a pathological level, it may be concluded that AP is related to the quality of sleep and the severity of the pain. Pain induces sleep disorders, and sleep disorders in turn lead to an increase in the perception of pain⁽¹⁰⁾. Breaking this cycle at some point will improve the quality of life for patients with OA. It is obvious that this cycle is more evident in individuals with AP. Physical treatment supported by psychological therapy would enhance the response of the patient⁽³⁶⁻³⁸⁾. Behavioural and medical treatments directed towards the regulation of sleep patterns in patients with impaired sleep quality would contribute to the control of pain in the

treatment.

The most serious limitation of the study was the reciprocal influence between the couples included in the study while filling out the forms. Another limitation was filling out the forms incompletely, which is parallel to the education level of the patients included. Also, one of our limitations was the inability of using objective methods like polysomnography (PSG) while determining the sleep disorders.

Apart from the osteoarthritis diagnosis and spa treatment planning of the participating patients given by another medical center, the secondary examination by the research doctors increased the reliability of the study in terms of diagnosis and follow-up.

In conclusion, it is known that patients with OA experience sleep disorders due to chronic pain. This pain is more obvious in patients who display the characteristics of AP. The application of scales such as the PSQI or TAS that yield the co-morbid conditions that increase the severity of symptoms in patients with OA during their evaluation, may be instructive in the management of the disease. Patients with knee OA should be regularly screened for sleep quality and AP as part of routine care.

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