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SUBJECTIVE EVALUATION OF CORONAVIRUS 2019 PATIENTS WITH AND WITHOUT VERTIGO

Koronavirüs 2019 Geçirmiş Vertigosu Olan ve Olmayan Hastaların Subjektif Değerlendirilmesi

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ABSTRACT

The purpose of the present study is to compare individuals with and without vertigo who have experienced COVID-19 in terms of their psychological, emotional, sleep quality, and concerns about the possibility of falls. A total of 30 individuals were included in the study, including the case group with 15 subjects who were diagnosed with vertigo with past COVID-19, and the control group with 15 subjects who had past COVID-19 and were not diagnosed with vertigo. The Falls Efficacy Scale-International (FES-I), Hospital Anxiety and Depression Scale (HADS), and Pittsburgh Sleep Quality Index (PSQI) were applied face-to-face to the individuals who were included in the research. Among the participants', who were included in the study; statistically significant differences in anxiety, depression, falls, and PUKI scores have been detected between the experimental and control groups ($p<0.05$). Of those in the control group; anxiety, depression, falls and PUKI scale scores have been found to be lower than the experimental group. Patients with vertigo who apply to the clinic must be evaluated in this respect, and clinicians must be careful in terms of the patients to receive psychological support.

Keywords: COVID-19, SARS-CoV-2, Vertigo.

ÖZ

Bu çalışmanın amacı; COVID 19 geçirmiş, vertigosu olan ve olmayan bireylerin psikolojik, emosyonel, uyku kalitesi ve düşme ihtimaline yönelik endişeleri açısından karşılaştırılmasıdır. Araştırmaya, COVID 19 geçirmiş vertigo tanısı almış 15 denek vaka grubu ve COVID 19 geçirmiş vertigo tanısı almamış 15 denek kontrol grubu olmak üzere 30 birey dâhil edildi. Araştırmaya dahil edilen bireylere, Uluslararası Düşme Etkinliği Ölçeği (Falls Efficacy Scale International- FES -I), Hastane Anksiyete ve Depresyon Ölçeği (Hospital Anxiety and Depression Scale-HADS) ve Pittsburgh Uyku Kalite İndeksi (Pittsburgh Sleep Quality Index-PSQI) yüz yüze uygulandı. Çalışmaya alınan katılımcıların; anksiyete, depresyon, düşme ve PUKİ ölçeğinden alınan puanlarda deney ve kontrol grupları arasında istatistiksel olarak anlamlı farklılık bulunmuştur ($p<0,05$). Kontrol grubunda yer alanların; anksiyete, depresyon, düşme ve PUKİ ölçek puanlarının deney grubuna göre düşük olduğu tespit edilmiştir. Kliniğe başvuran vertigolu hastalar bu açıdan değerlendirilmeli ve klinisyenler hastaların psikolojik destek almaları açısından dikkatli olmalıdır.

Anahtar kelimeler: COVID-19, SARS-CoV-2, Vertigo.

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INTRODUCTION

The coronavirus 2019 (COVID-19) is a single-stranded RNA virus that can cause a wide spectrum of clinical manifestations, from the common cold, pneumonia, respiratory failure and death to the much more severe lower respiratory tract diseases (Batra et al., 2020). The first case was seen in Wuhan, China and then spread to the whole world (Alhazzani et al., 2021). The reference name of the virus causing the disease was determined as severe acute respiratory syndrome-coronavirus-2 (severe acute respiratory syndrome-coronavirus-2 [SARSCoV-2]) by the World Health Organization. In clinical studies, the most common symptoms of COVID-19 were reported as fever, cough, shortness of breath, myalgia, arthralgia, headache, diarrhea, rhinorrhea, and sore throat (Wan et al., 2020; Wong, Leo & Tan, 2020). There are studies conducted on whether the SARS-CoV-2 virus has indirect or direct neurotrophic effects on the nervous system (Niazkar, Zibaee, Nasimi & Bahri, 2020; Román et al., 2020). In a study conducted with people with and without a diagnosis of COVID-19, it was reported that both the auditory and vestibular systems were affected (Tan et al., 2022). On the other hand, various neurological symptoms such as loss of consciousness, headache, and vertigo were also reported in COVID-19 patients (Ahmad & Rathore, 2020; Korkmaz, Eğilmez, Özçelik & Güven, 2021; Mao et al., 2020; Moriguchi et al., 2020). Among otological symptoms, the cases of; facial paralysis, sudden hearing loss, and vertigo were associated with COVID-19 (Sriwijitalai & Wiwanitkit, 2020; Vaira, Salzano, Deiana & De Riu, 2020).

Although it is not known how the COVID-19 virus affects both peripheral and central cochleovestibular pathways, objective findings were reported in many studies (Ahmad & Rathore, 2020; Korkmaz et al., 2021; Mao et al., 2020; Moriguchi et al., 2020; Niazkar et al., 2020; Román et al., 2020; Sriwijitalai & Wiwanitkit, 2020; Tan et al., 2022; Vaira et al., 2020; Wong et al., 2020). However, individuals who had vertigo with past COVID-19 must also be evaluated subjectively in addition to objective findings. The purpose of the present study was to compare individuals with and without vertigo with past COVID-19 in terms of psychological, emotional, sleep quality, and concerns about the possibility of falls.

MATERIAL AND METHOD

Approval was obtained from Necmettin Erbakan University Health Sciences Institute Non-Interventional Clinical Research Ethics Committee (Decisions Number: 2021/3420), and “informed consent” was taken from all individuals participating in the study.

The study was conducted prospectively in the Audiology Unit of the Ear Nose and Throat Clinic of Necmettin Erbakan University Hospital between October 2021 and December 2021. A total of 30 individuals were included in the study, the case group with 15 subjects who were diagnosed with vertigo with past COVID-19, and the control group with 15 subjects who have past COVID-19 and were not diagnosed with vertigo. Exclusion criteria were the presence of communication barrier, chronic disease, history of previously diagnosed balance problems, and other otological-neurorootological diseases. The International Falls Efficacy Scale (FES-I), Hospital Anxiety and Depression Scale (HADS), and Pittsburgh Sleep Quality Index (PSQI) were applied face-to-face to the individuals who were included in the study. International Falls Effectiveness Scale is a feedback scale on the level of anxiety about falls during activities of daily living (Yardley et al., 2005). The Turkish validity and reliability study was conducted by Ulus et al. in 2012. The scale consists of 16 questions, and the total score varies between 16 and 64 (Ulus et al., 2012).

Hospital Anxiety and Depression Scale was developed by Zigmond and Snaith in 1983 to evaluate the anxiety and depression of patients (Zigmond & Snaith, 1983). Aydemir et al. (1997) conducted the Turkish validity and reliability of the scale, which is not used to diagnose but to define anxiety and depression in a short time in patients who have physical illnesses and in those applying to primary healthcare services. The scale includes; 7 questions on anxiety (odd-numbered questions), 7 questions that evaluate depression (even-numbered questions), and consists of 14 questions in total. The responses are scored between 0 and 3. The lowest score that patients can receive from both subscales is 0 and the highest score is 21.

Pittsburgh Sleep Quality Index was developed by Buysse et al. to evaluate sleep quality and disorder in the last month (Buysse, Reynolds III, Monk, Berman & Kupfer, 1989). It was adapted into Turkish by Agargun et al. in 1996. The scale consists of 24 questions, 10 of which are answered by the individual himself, and 5 questions are answered based on the observations of his spouse or roommate. The total score ranges between 0 and 21. A total score greater than 5 indicates “poor sleep quality” (Agargun, Kara & Anlar, 1996).

Statistical Analysis

The analysis of the data of the study was made with the SPSS (Statistical Program in Social Sciences) 25 program. The Kolmogorov Smirnov Test was used to check whether the data fit the Normal distribution. Since the data were distributed normally, comparisons between the case and control (Covid (+), Covid (-)) group were made with the significance test (t-test) of the difference between the two mean values. The homogeneity of variance was

checked with the Levine's Test to decide which test result would be used in the comparison ($p>0.05$). The values of the variables are given as number, percentage, mean, and standard deviation. The Cronbach α Coefficient was used to determine the reliability analysis of the scales. The Cronbach α Coefficient of the participants was calculated as 0.89 for anxiety, 0.83 for depression, 0.92 for falls, and 0.91 for PUKI in the experimental group. The Cronbach α Coefficient of the participants was calculated as 0.91 for anxiety, 0.81 for depression, 0.94 for falls, and 0.87 for PUKI in the control group. The reliability of the scales was detected to be adequate for both groups. The correlation coefficients are the criteria that provide information on the strength (degree) and direction of the relations between variables. Values used frequently in the evaluation of the findings were interpreted as 0.40 - 0.69 moderate relation, 0.70 - 0.89 strong relation, and 0.90 - 1.00 very strong relation (Alpar, 2020). The Pearson Relation Coefficient was used as the variables included in the study showed normal distribution.

RESULTS

Demographic Data

A total of 30 participants were included in the study, of which 15 were in the experimental group, and 15 were in the control group. The mean age of the participants was 42.13 ± 9.05 in the experimental group, and the age range varied between 28 and 60. The mean age of the participants in the Control Group was 41.40 ± 10.45, and the age range varied between 24 and 63.

Comparison of Groups According to Scale Scores

It was tested whether the participants who were included in the study showed differences between the control and case groups in the scores of anxiety, depression, falls, and the PUKI scale, and the results of the analysis are given in the table below.

Table 1. Comparison of Groups According to Scale Scores

Variable	Group	Mean ± sd	Test Value	p Value
Anxiety	**Control**	6.73 ± 2.31	**-3.845**	**0.001***
	Case	11.27 ± 3.94		
Depression	**Control**	7.27 ± 2.28	**-2.486**	**0.019***
	Case	10.27 ± 4.08		
Falls Total Score	**Control**	10.67 ± 3.92	**-4.502**	**0.001***
	Case	23.2 ± 10.04		
PUKI score	**Control**	6.87 ± 2.45	**-3.109**	**0.004***
	Case	10.8 ± 4.25		

Mean; Mean, sd; standard deviation, Test value; significance test ***t*** value of the difference between the two means; p; statistical significance, *p<0.05; there is a statistically significant difference between the groups.

Statistically significant differences were detected between the experimental and control groups in the anxiety, depression, falls, and PUKI scores of the participants who were included in the study ($p<0.05$, Table 1). It was found that the scores of the control group were lower in the anxiety, depression, falls, and PUKI scales than the experimental group.

Comparison of the Relations of the Scale Scores Between Groups

The participants of the experimental and control groups were tested whether there were relations between anxiety, depression, falls, and the scores obtained in the PSQI scale, and the results are given in the table below.

Table 2. Comparison of the Relations of Scale Scores between Groups

First variable	Second Variable	Control		Experimental	
		r Value	p Value	r Value	p Value
Anxiety	**Depression**	**0.731**	**0.002***	**0.760**	**0.001***
	Falls	0.297	0.283	0.409	0.130
	PUKI	0.422	0.117	**0.705**	**0.003***
Depression	**Falls**	**0.529**	**0.042***	0.375	0.168
	PUKI	0.340	0.216	**0.766**	**0.001***
Falls	**PUKI**	0.218	0.434	-0.016	0.956

r; Pearson correlation coefficient, p; statistical significance, *p<0.05; there is a statistically significant relation between scores.

In the Experimental Group Participants

A high-level, positive (r=0.760), and statistically significant relation was detected between anxiety and depression ($p<0.05$). Statistically significant positive relations were detected (r=0.705) between anxiety and PUKI ($p<0.05$, Table 2).

No statistically significant relations were detected between anxiety and falls ($p>0.05$). Positive correlation was found (r=0.766) between depression and PUKI ($p<0.05$). No statistically significant relations were detected between depression and falls ($p>0.05$). No statistically significant relations were detected between PUKI and falls ($p>0.05$, Table 2).

In the Control Group Participants

Positive correlation was found (r=0.731) between anxiety and depression ($p<0.05$). No statistically significant relations were detected between anxiety and PUKI ($p>0.05$). No statistically significant relations were detected between anxiety and falls ($p>0.05$). Positive correlation was found (r=0.529) between depression and falls ($p<0.05$). No statistically significant relations were detected between depression and PUKI ($p>0.05$). No statistically significant relations were detected between PUKI and falls ($p>0.05$, Table 2).

DISCUSSION

Vertigo, or dizziness, has recently been identified as a clinical manifestation of COVID-19, according to studies conducted around the world (Baig, Khaleeq, Ali & Syeda, 2020; Mao et al., 2020; Wu et al., 2020). In a study conducted in China, researchers stated that the most common symptom of COVID-19 is dizziness (Mao et al., 2020). Another study by Baig et al. suggests that the virus enters neural tissue from the circulation and binds to angiotensin-converting enzyme 2 receptors located in the capillary endothelium (Baig et al., 2020). Apart from this, it is assumed that mechanisms such as direct invasion, neuronal invasion, hypoxia, and hypercoagulopathy cause dizziness (Wu et al., 2020).

Epidemic/pandemics affect both physical and mental health negatively (Xiao, Zhang, Kong, Li & Yang, 2020; Xue et al., 2020). During the SARS (severe acute respiratory syndrome) epidemic, stress, anxiety, and depression increased, and sleep quality was affected in the general population (Altena et al., 2020; Wu, Chan & Ma, 2005). Decreased sleep duration and quality increase the risk of viral infections (Gamaldo, Shaikh & McArthur, 2012; Xiao et al., 2020), and stress impairs sleep quality (Van Reeth et al., 2000). In our study which was conducted to investigate the psychological, emotional, sleep quality, and the possibility of falls in individuals with vertigo and past COVID-19, it was found that the patient group had higher anxiety, depression, falls, and sleep quality scores than the control group. It was observed in general that there were positive relations between anxiety and depression in the patient and control groups in line with the literature, and anxiety and depression negatively affected sleep in the patient group.

In the literature, there is no study evaluating mental status and falling in patients with vertigo diagnosed with COVID-19. Although delirium, depression, insomnia, anxiety, and post-traumatic stress disorder have been reported in the acute phase of COVID-19 infection, few studies are investigating long-term psychiatric symptoms after infection (Rogers et al., 2020). Studies investigating psychiatric findings in patients who recovered from COVID-19 infection reported a high rate of insomnia, post-traumatic stress disorder, depression, and anxiety symptoms (Liu et al., 2020; Mazza et al., 2020; Tomasoni et al., 2021). In a study, it was reported that more than half of those who had COVID-19 infection experienced anxiety, depression, post-traumatic stress disorder, and/or obsessive-compulsive symptoms in a month after treatment (Mazza et al., 2020). In another study, “moderate-severe” depression was reported by 10%, anxiety by 20%, and post-traumatic stress disorder by 12% in patients with COVID-19 infection approximately one month after discharge from the hospital (Liu et al.,

2020). In a study by Tomasoni et al., a statistically significant rate of anxiety and/or depression was reported in one-third of patients with COVID-19 infection, 46 days after recovery (Tomasoni et al., 2021). A study by Poyraz et al. showed that a large proportion of patients with COVID-19 infection continue to experience psychological symptoms for approximately 50 days after recovery. Moderate and severe post-traumatic stress disorder was observed in approximately one-quarter of these patients, and depression was reported in more than 40% of the patients. These study findings prove that the majority of patients with COVID-19 infection may experience psychiatric symptoms up to a few months after the illness (Poyraz et al., 2021). The findings of this study are similar to the findings of Lee et al.'s study after the SARS and MERS (Middle East respiratory syndrome) epidemics. They reported a psychiatric illness between 10% and 35% after recovery from the infection (Lee et al., 2019).

Our study is important because it is the first study to evaluate mental status and falling in patients with vertigo diagnosed with COVID-19. Patients with vertigo who apply to the clinic must be evaluated in this respect, and clinicians must be careful in terms of the patients to receive psychological support.

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