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Post-Covid pain frequency and affecting factors

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Abstract

Covid-19 disease was believed to be a short-term disease. However, as the disease was continuing to spread, it was understood that, it can continue for a long time. The aim of this study is to determine the symptoms of individuals with Coronavirus disease 2019 (Covid-19) and those who recovered from the disease and whether they have ongoing symptoms after recovery and the factors affecting of their pain complaints. This descriptive study included 152 patients who admitted to our hospital and diagnosed with Covid-19 and those recovered. The patients were interviewed by telephone and were questioned about their symptoms and conditions when they had Covid-19 and after recovering from Covid-19, by questions based on the literature as well as sociodemographic characteristics. The mean age of the patients was 44.9±13 (min=20, maks=83) and 66 (43.4%) were female and 86 (56.6%) were male. It was determined that 43 patients (28.3%) had and recovered from Covid-19, 1-2 months ago, 60 (39.5%) 2-3 months ago, 36 (23.7%) 3-4 months ago, and 13 (8.8%) 4-5 months ago. During the Covid-19 disease period, pain conditions were listed as 112 had body pain, 94 had headache, 36 had back pain, 35 had joint pain and 13 had lumbar pain. Post-Covid pain was detected in 12 people (7.9%). Body pain was reported in 5 people, headache in 2 people, lumbar pain in 4 people, and both body and joint pain in 1 person. It was observed that as the age group increased, the incidence of post-Covid pain increased. It was determined that the post-Covid pain rate was 7.9% and the patients experienced long-term body, head, lumbar and joint pain. Post-covid pain syndrome was more common in older ages. We suggest that a follow-up algorithm for post-recovery period should be developed.

Keywords: Covid-19, long-Covid, post-Covid, post-Covid pain, prolonged Covid

Introduction

The first cases of coronavirus started to be seen the wild animal market in Wuhan, China, in December 2019, and spread rapidly [1]. The World Health Organization named the disease as Covid-19, which refer to "2019 coronavirus disease", in January 2020, and declared a pandemic on March 11, 2020 [2]. In Turkey, the first case was detected on the same day, 11 March 2020 [3]. The most common symptoms of the disease are fever, fatigue, and cough. In a study conducted in China, it was reported that common clinical symptoms include fever (88.7%), cough (67.8%), fatigue (38.1%), shortness of breath (18.7%), sore throat (13.9%), myalgia (14.9%) and, headache (13.6%). In the same study, diarrhea (3.8%) and vomiting (5.0%) were found as gastrointestinal symptoms [4]. In addition, Covid-19 patients are at risk for coagulopathy, hypoxia, and neurological complications due to metabolic disorders. In cases with severe disease, acute ischemic stroke, cerebral hemorrhage, and impaired consciousness may be observed due to coagulopathy [5].

Initially, Covid-19 disease was believed to be a short-term disease. However, as the disease was continuing to spread, it was understood that, it can continue for a long time. Consequently, the term "long-Covid", which means "prolonged Covid" has emerged [6]. The term "Prolonged Covid" is used to describe the disease in people who recovered from Covid-19 disease but still report persistent effects of the infection or have symptoms for longer than expected. The term “Prolonged Covid” is defined as the persistence of symptoms for longer than a month [7]. After excluding serious ongoing complications or comorbidities and until the results of long-term follow-up studies are available, patients should be supported for symptomatic complaints. There is not yet a consistent approach for the diagnosis, management and follow-up of patients with Covid-19 whose complaints persist for a long time [8]. In our

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study, it was aimed to determine whether patients with Covid-19 disease have ongoing pain symptoms related to Covid-19 disease after recovery and to examination the factors affecting ongoing pain symptoms.

Materials and Methods

This study was designed to be a descriptive study and conducted on patients who were diagnosed with Covid-19 and recovered, in a university hospital in eastern Turkey. Data were collected retrospectively between March and April 2021. Patients who applied to the covid-19 outpatient clinic of the relevant hospital in the last 6 months were included in the study (N=798). When power analysis is conducted, sample size was determined as at least 137 with 0.05 level of significance, 80% power to represent the population and 80% confidence interval. The contact numbers of the patients were obtained from the hospital automation system. A total of 208 patients were contacted. 21 patients were excluded from the study because their contact numbers were incorrect and 35 patients did not want to participate in the study. The study was completed with 152 volunteer patients (n=152). After the questions regarding the time when the patients get Covid-19, the symptoms of the patients during the disease process and if there is, ongoing symptoms after the recovery, and post-Covid pain syndromes, as well as questions about sociodemographic characteristics, were prepared by the researchers, based on the literature; the patients were interviewed by phone. Inclusion criteria for the research;

- Patients diagnosed with covid-19 at least a month ago and healing were included in the study.

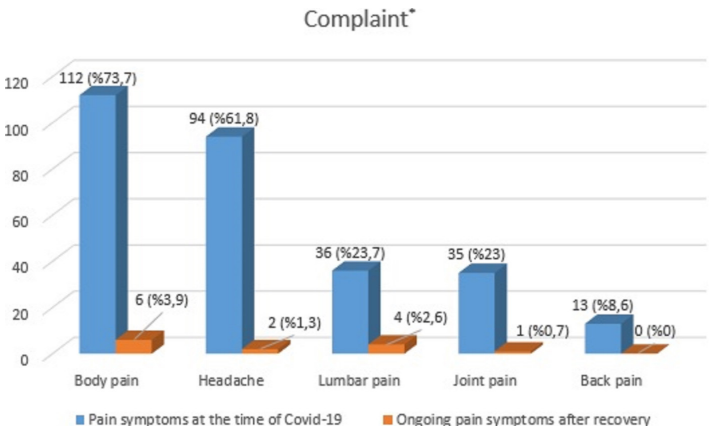
The data were evaluated by using SPSS 22 package program. The descriptive data were expressed as numbers and percentages and the continuous data were expressed as mean ± standard deviation. The categorical variables were compared by using Chi-square analysis (Pearson Chi-square). After the chi-square analysis, paired comparisons were made and Bonferroni correction was used to determine the group from which the difference originated. A value of $p<0.05$ was accepted to be statistically significant. Before the study was started, permission of Republic of Turkey Ministry of Health Covidien-19 Scientific Research committee was obtained (Form Number: 2021-04-14T21_47_07). In addition ethical approval was obtained from Inonu University Health Sciences Non-invasive Clinical Research Ethics Committee (Approval Number: 2021/2024).

Results

This study included 152 patients; 66 (43.4%) of them were females and 86 (56.6%) males. The mean age of the patients was 44.9 ± 13 (min = 20, max = 83), and 46 (30.3%) patients were in the 20-35 age group, 51 (33.6%) were in the 36-50 age group, and 55 (36.2%) were 50 years or older. The mean Body Mass Index (BMI) was 26.8 ± 3.9 (min = 18.6-max = 35.5) and 48 (31.6%) patients were normal weight, 74 (48.7%) were overweight and 30 (19.7%) were obese. When the patients were evaluated in terms of comorbidities, it was found that 50 (32.9%) patients have chronic diseases. The most common comorbidities were Diabetes Mellitus (DM) and Hypertension (HT). It was found that 43 (28.3%) patients had Covid-19 1-2 months ago, 60 (39.5%) had 2-3 months ago, 36 (23.7%) had 3-4 months ago and 13 (8.8%) had 4-5 months ago. The most common complaints of the patients were fatigue, shortness of breath, and general body pain (Table 1).

During the Covid-19 disease period, pain conditions were listed as 112 had body pain, 94 had headache, 36 had back pain, 35 had joint pain and 13 had lumbar pain. There were no significant differences between gender, age, BMI, presence of chronic diseases, presence of DM, presence of HT and Coronary artery disease (CAD) in terms of body pain, joint pain, headache, back pain and lumbar pain ($p> 0.05$) (Table 2).

Post-Covid pain symptom was observed in 12 (7.9%) of the patients included in the study. We found that complaint of body pain was present in 5 patients, lumbar pain in 4, headache in 2, and both body and joint pain in 1 person. The distribution of pain symptoms at the time of Covid-19 disease and ongoing pain symptoms after recovery are shown in Figure 1.



*There are patients with multiple complaints.

Figure 1. The distribution of pain symptoms at the time of Covid-19 disease and ongoing pain symptoms after recovery

There were no significant differences between gender ($p=0.09$), BMI ($p=0.454$), presence of chronic diseases ($p=0.210$), the time of getting Covid-19 ($p=0.843$), in terms of post-Covid pain symptoms (Table 3).

When the post- Covid pain symptoms of the patient were compared according to the age groups, it was observed that as the age group increased, the incidence of post-Covid pain increased, however the difference between the group over 50 years of age and the other two groups was significantly higher ($p = 0.025$) (Figure 2).

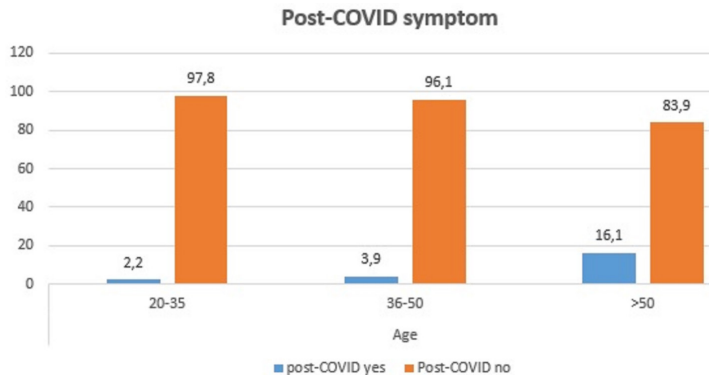


Figure 2. The comparison of post-Covid pain status of the patients according to the age groups

Table 1. Socio-demographic and Covid-19 disease related characteristics of patients

		n	%
Gender	**Female**	66	43.4
	Male	86	56.6
Age	**20-35**	45	29.6
	36-50	51	33.6
	>50	56	36.8
BMI	**Normal**	48	31.6
	Overweighed	74	48.7
	Obese	30	19.7
Presence of chronic comorbid diseases	**Yes**	50	32.9
	No	102	67.1
Distribution of chronic diseases*	**DM**	17	11.2
	HT	17	11.2
	CAD	11	7.2
	Liver diseases	5	3.3
	Thyroid diseases	4	2.6
	Hyperlipidemia	3	2.0
	Rheumatic diseases	3	2.0
	Cancer	2	1.3
	Other diseases	10	6.6
Time of getting Covid-19	**1-2 months ago**	43	28.3
	2-3 months ago	60	39.5
	3-4 months ago	36	23.7
	4-5 months ago	13	8.8
Most disturbing complaint	**Fatigue**	35	23.0
	Shortness of breath	24	15.8
	Body pain	22	14.5
	Fever	13	8.6
	Chough	13	8.6
	Back pain	9	5.9
	Joint pain	9	5.9
	Headache	9	5.9
	Loss of appetite	4	2.6
	Throat ache	3	2.0
	Loss of taste	3	2.0
	Chills	2	1.3
	Loss of smell	2	1.3
	Nausea	2	1.3
	Vomiting	1	0.7
	Dry mouth	1	0.7

*More than one chronic disease is present
DM: Diabetes Mellitus, HT: Hypertension, CAD: Coronary artery disease

Table 2. Comparison of pain complaints during Covid-19 disease according to various variables

		Body pain		Joint pain		Headache		Back pain		Lumbar pain	
		Number	%	Number	%	Number	%	Number	%	Number	%
Gender	Female	50	75.8	14	21.2	45	68.2	20	30.3	6	9.1
	Male	62	72.1	21	24.4	49	57.0	16	18.6	7	8.1
	p	0.611		0.642		0.159		0.093		0.835	
Age	20-35	29	64.4	6	13.3	29	64.4	14	31.1	3	6.7
	36-50	39	76.5	16	31.4	35	68.6	10	19.6	5	9.8
	>50	44	78.6	13	23.2	30	53.6	12	21.4	5	8.9
	p	0.237		0.111		0.253		0.368		0.876	
BMI	Normal	33	68.8	6	12.5	32	66.7	13	27.1	5	10.4
	Overweighed	54	73.0	20	27.0	47	63.5	17	23.0	7	9.5
	Obese	25	83.3	9	30.0	15	50.0	6	20.0	1	3.3
	p	0.357		0.106		0.310		0.758		0.640	
Chronic disease	Yes	37	74.0	12	24.0	31	62.0	11	22.0	3	6.0
	No	75	73.5	23	22.5	63	61.8	25	24.5	10	9.8
	p	0.951		0.842		0.978		0.732		0.547	
DM	Yes	13	76.5	4	23.5	9	52.9	3	17.6	1	5.9
	No	99	73.3	31	23.0	85	63.0	33	24.4	12	8.9
	p	0.782		0.958		0.423		0763		0.676	
HT	Yes	13	76.5	4	23.5	9	52.9	4	23.5	0	.0
	No	99	73.3	31	23.0	85	63.0	32	23.7	13	9.6
	p	0.782		0.958		0.423		0.987		0.363	
CAD	Yes	9	81.8	5	45.5	8	72.7	4	36.4	2	18.2
	No	103	73.0	30	21.3	86	61.0	32	22.7	11	7.8
	p	0.729		0.128		0.534		0.291		0.239	

BMI: Body Mass Index, DM: Diabetes Mellitus, HT: Hypertension, CAD: Coronary artery disease

Table 3. Comparison of pain complaints after recovery from Covid-19 according to various characteristics of the patients

		Post-Covid pain symptoms				p
		Present		None		
		Number	%	Number	%	
Gender	Female	8	12.1	58	87.9	0.09
	Male	4	4.7	82	95.3	
Age	20-35	1	2.2	44	97.8	0.025
	36-50	2	3.9	49	96.1	
	>50	9	16.1	47	83.9	
BMI	Normal	3	6.3	45	93.8	0.454
	Overweight	5	6.8	69	93.2	
	Obese	4	13.3	26	86.7	
Chronic disease	Yes	6	12.0	44	88.0	0.210
	No	6	5.9	96	94.1	
Time of getting Covid- 19	1-2 months ago	3	7.0	40	93.0	0.843
	2-3 months ago	6	10.0	54	90.0	
	3-4 months ago	3	8.3	33	91.7	
	4-5 months ago	0	.0	13	100.0	

BMI: Body Mass Index

Discussion

The Covid-19 pandemic, which emerged in Wuhan, China at the end of 2019, was declared a global pandemic by the World Health Organization on March 11 2020, and was shown to be caused by SARS-CoV-2 virus, still continues to be a serious public health problem [2]. In a meta-analysis conducted by Yang et al, on 1576 Covid-19 patients, 56.5% of the participants were male and 53.5% were female [4]. Similarly, in our study, 56.6% of the participants were male. In the study of Parlak et al., which investigated the relationship between age, CT findings and the severity of the disease, the average age was 47.50 [9]. In our study, the median age of the participants was 46 and the average age was 44.9. The fact that the average age of the patients was at the middle age level may be due to the fact that the social workforce is mostly provided by middle age individuals.

In a cohort study conducted by Petrille et al, it was reported that 35.3% of the patients were obese according to the BMI values. In the same study, it was shown that the rate of getting the disease and the severity of the disease increase as the BMI increases [10]. In our study, 68.4% of the patients were overweight and obese according to the BMI values. Consistent with the literature, high BMI values were observed in our study.

In Covid-19 disease, the presence of a chronic disease is a factor that affects the prognosis. In a study conducted on 1590 patients in China, it was reported that 25.1% of patients had at least 1 chronic disease. In the same study, the most common chronic disease was HT (16.9%) and the second most common chronic disease was DM (8.2%) [11]. In our study, in line with the literature, the most common chronic diseases in patients with Covid-19 disease were DM and HT.

In order to diagnose the Covid-19 disease correctly, to prevent its spread, and to apply the treatment correctly, determining the symptoms caused by the disease is very important. The symptoms caused by coronavirus reveal that the disease involves many organs by affecting the lungs, gastrointestinal system, nervous system, and musculoskeletal system [12]. Pain is one of the important symptoms in Covid-19 disease. Many factors are thought to play a role in the pathogenesis of the pain in Covid-19 patients. Widespread tissue and organ damage caused by infection, damage to tissues such as muscles and joints, and increase in cytokines are suggested factors in the pathogenesis of pain [13]. In a meta-analysis of 51 studies, the most common musculoskeletal symptom was myalgia and the most common neurological symptom was headache. In the same study, headache was observed in 12% of the patients, and back pain was observed in 10% [14]. In a cohort study conducted by Qu et al, 3.8% of the participants with Covid-19 had back pain symptoms during the disease period [15]. Murat et al. in their study, investigated the pain symptoms in patients with Covid-19 and reported that 69.3% (n=133) of the patients experienced pain symptoms during the disease period. The distribution of symptoms were myalgia / arthralgia in 69.2% of the patients, headache in 50.4%, back pain in 43.6%; lower back pain in 33.1%, and common body pain in 25% of the patients, respectively. In the same study, a statistically significant relationships were found between the presence of pain and female gender, back pain and female gender, and headache and age [16]. In a retrospective cohort study by Trigo et al. investigating the factors associated with headache symptoms in Covid-19 patients and their effect on prognosis, headache symptoms were observed in 23.7% of the patients. In the same study, it was found that headache was more common in women, and headache was associated with female gender independently [17]. In our study, 73.7% of the patients who felt pain stated that they had common body pain, 61.8% headache, 23.7% back pain, 23% joint pain, and 8.6% back pain. In our study, no significant relationship was found between the types of pain felt during the disease period and age, gender, BMI, and the presence of chronic diseases.

In the earlier days of the pandemic, Covid-19 disease was believed to be a short-term viral infection. But later it was seen that symptoms persist for weeks or even months in some patients. Thus, the term “Long COVID' has emerged. The terms Prolonged (Long) Covid, Chronic Covid, Chronic Covid Syndrome, and post-acute Covid -19 have been used to refer the symptoms persist for more than 1 month [18]. In the study conducted by Şahin et al., it was determined that the pain symptoms associated with Covid -19 continued between 7 and 78 days [19]. Similarly, in our study, it was observed that post-Covid (lasting for more than 1 month) pain symptoms continued in 12 (7.9%) patients. It was found that common body pain ongoing after recovery was present in 5 patients, lumbar pain in 4, headache in 2, and both body and joint pain was present in one patient. In addition a significant difference observed between the age groups and the presence of post-Covid pain symptoms ($p = 0.025$). It was observed that as the age group increased, the presence of post-Covid pain symptoms increased and the difference between the group over 50 years of age and the other two groups was significant.

Conclusion and Recommendation

In conclusion, pain symptoms such as headache, joint pain, lumbar pain and common body pain are common components continue for a long time of Covid-19 disease. In addition, post-Covid pain symptom is more common in elderly patients. The pain symptoms continuing in the post-Covid period affect the quality of life of individuals, negatively. There is need for more comprehensive studies investigating the pain symptoms in Covid-19, during the disease period and post-Covid period. We suggest that the development of a remote (online) or one-to-one physical rehabilitation and exercise algorithm for pain symptoms can increase the quality of life of patients in the post-Covid period.

Limitation

This research is limited to patients who have had Covid-19 disease in a province in eastern Turkey.

Conflict of interests
The authors declare that they have no competing interests.

Financial Disclosure
The financial support for this study was provided by the investigators themselves.

Ethical approval
Ethical approval was obtained from Inonu University Health Sciences Non-invasive Clinical Research Ethics Committee (Approval Number: 2021/2024).

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