RESEARCH ARTICLE

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Initial Signs and Symptoms in Suspected Patients Admitted to Triage Outpatient Clinic of Coronavirus Disease 2019 (COVID-19): A Single-Center Experience

ABSTRACT

Objective: Coronavirus disease (COVID-19) is a worldwide pandemic with a huge burden of illness, high economic costs, and mortality rates. This study sought to compare clinical signs and symptoms among adult COVID-19 patients admitted to triage outpatient clinics.

Methods: In this observational retrospective study, clinical symptoms, biochemical parameters, and chest computed tomography (CT) of 1745 suspected patients admitted to COVID-19 triage outpatient clinic between 01 April 2020-01 September 2020 were analyzed.

Results: A total of 650 (37.2%) of 1745 patients who were admitted to triage outpatient clinic were diagnosed as COVID-19 by PCR confirmation. Of the participants, 88.1% had at least one symptom, 11.9% were asymptomatic. Almost half of the patients (50.1%) had a history of exposure including contact with COVİD-19 confirmed cases. COVID-19 (+) patients were more diabetic and hypertensive than negative cases. In patients who underwent chest CT imaging, 40.6% (310) had pneumonic infiltrations compatible with COVID-19 pneumonia. Hemoglobin, leukocyte, neutrophil, lymphocyte, and platelet counts were lower, but CRP levels were higher in patients with COVID-19. Multivariate logistic regression analysis revealed that older age (OR=1.020; p=0.018), contact with confirmed COVID-19 patient (OR=1.907, p=0.009), fever (OR=1,588, p=0,001), fatigue (OR=2.075, p=0.009), cough (OR= 2.301, p<0.001) were significantly associated with increased odds of PCR (+) status.

Conclusions: Predictive factors associated with PCR (+) test results were older age, history of contact with confirmed COVID-19 patient, high fever, fatigue, cough in our study. Some symptoms could have a significant relationship with PCR positivity, which requires a more careful approach during the first admission to healthcare facilities.

Keywords: COVID-19 Virus, Polymerase Chain Reaction, Signs and Symptoms.

Koronavirüs Hastalığı 2019 (COVID-19) Triyaj Polikliniğine Başvuran Şüpheli Hastalarda Başlangıç Belirti ve Semptomları: Tek Merkez Deneyimi

ÖZET

Amaç: Koronavirüs hastalığı (COVID-19) Dünya çapında yaygın olarak yüksek ekonomik yük ve ölüm olanlarıyla pandemiye neden olmuştur. Bu çalışma, triyaj polikliniğine başvuran yetişkin COVID-19 hastalarında görülen klinik belirti ve semptomlar arasındaki ilişkiyi araştırmayı amaçlamaktadır.

Gereç ve Yöntem: Bu gözlemsel retrospektif çalışmada, 01 Nisan 2020-01 Eylül 2020 tarihleri arasında COVID-19 triyaj polikliniğine başvuran 1745 şüpheli hastanın klinik semptomları, biyokimyasal parametreleri ve akciğer tomografisi (BT) bulguları analiz edilmiştir.

Bulgular: Triyaj polikliniğine başvuran toplam 1745 hastanın 650'sine (%37,2) PCR testi ile COVID-19 tanısı konuldu. Katılımcıların %88,1'i en az bir semptoma sahipti, %11,9'u ise asemptomatikti. Hastaların neredeyse yarısında (%50,1) PCR test sonucu pozitif olan COVİD-19 vakalarıyla temas öyküsü vardı. COVID-19 (+) hastalar, negatif vakalara göre daha yüksek oranda diyabet ve hipertansiyon hastasıydı. Akciğer BT görüntülemesi yapılan hastaların %40,6'sında COVID-19 pnömonisi ile uyumlu pnömonik infiltrasyonlar vardı. COVID-19 hastalarında hemoglobin, lökosit, nötrofil, lenfosit ve trombosit sayıları daha düşüktü, ancak CRP seviyeleri daha yüksekti. Çok değişkenli lojistik regresyon analizi sonucuna göre, ileri yaş (OR=1.020; p=0.018), PCR (+) COVID-19 hastasıyla temas (OR=1.907, p=0.009), ateş (OR=1.588, p=0.001), yorgunluk (OR= 2.075, p=0.009), öksürük (OR= 2.301, p<0.001) ile PCR (+) olma arasında pozitif yönde anlamlı ilişki tespit edilmiştir.

Sonuç: Çalışmamızda PCR (+) test sonuçları ile ilişkili faktörler ileri yaş, COVID-19 (+) hastayla temas öyküsü, yüksek ateş, yorgunluk, öksürük olarak tespit edilmiştir. COVID-19 şüphesi olan hastalar farklı semptomlarla sağlık kuruluşuna başvursa da, bazı semptomların PCR pozitifliği ile anlamlı ilişkisi vardır, bu da sağlık kuruluşlarına ilk başvuru sırasında daha dikkatli bir yaklaşım gerektirir.

Anahtar Kelimeler: COVID-19 Virüsü, Polimeraz Zincir Reaksiyonu, Belirti ve Semptomlar.

INTRODUCTION

The new coronavirus (2019-nCoV) disease, first identified in Wuhan, China in December 2019, was declared a pandemic disease (COVID-19) by the World Health Organization (WHO) as of March 11, 2020. The WHO defined COVID-19 as a public health problem that required urgent action around the world (1). The first case of COVID-19 in Turkey was reported on March 11, 2020, and the first death due to COVID-19 was reported on March 18, 2020 (2). COVID-19 has become an important public health problem, and recognizing the disease has gained importance in Turkey and all around the world with increased case and death numbers (3).

The range of symptoms of COVID-19 cases varied from asymptomatic to severe respiratory symptoms, extrapulmonary symptoms, and even death. The first step in recognizing the disease was detecting its associated vital signs and symptoms (4). The most frequently reported signs and symptoms at the onset of COVID-19 include fever (77-98%), cough (46-82%), myalgia or fatigue (11-52%), and dyspnea (3-31%). Other less reported symptoms are sore throat, headache, sputum, loss of taste, loss of smell, diarrhea, and cough, etc (5). Although the clinical characteristics of COVID-19 patients have been examined, many features still are not fully revealed (6). The non-specificity of the symptoms detected in the studies and the variability in their incidence are remarkable. Some patients continue to present with atypical symptoms and clinical course (7).

Early diagnosis regarding baseline symptoms may ease to control of the pandemic spread and decrease morbidity and mortality rates. Preventing the dissemination has an essential role particularly in areas that have limited access to real-time reverse-transcription polymerase chain reaction (PCR) analysis (8). Chest computed tomography (CT) is highly diagnostic to demonstrate COVID-19 specific images in suspected patients. But, changes based on severe lung abnormalities caused by COVID-19 infection are distinct on chest CT images nearly 10 days after the first clinical characteristics (9). These restrictions in diagnosing increase the importance of initial symptoms to suspect from COVID-19 cases in outpatient clinics (10).

The present study sought to determine the initial symptoms of patients who applied to the Coronavirus (COVID-19) triage outpatient clinic. Besides, the relationship of the symptoms with laboratory results and imaging methods was examined.

MATERIAL AND METHODS

Study Design and Participants: This retrospective study focused on the initial clinical features of patients with suspected COVID-19 who presented to the Gulhane Training and Research Hospital Coronavirus (COVID-19) triage outpatient clinic. The data of 1745 patients who applied to the triage outpatient clinic between 01.04.2020 and 01.09.2020 were analyzed.

Patient files were scanned through the hospital database system and the necessary data were transferred to the data collection form. Patients who were thought to be suspected of COVID-19 and requested Reverse Transcription Polymerase Chain Reaction (RT-PCR) test regarding the initial evaluation were included in the study. The symptoms, examination findings, laboratory results, and CT results of the patients were obtained from the hospital database system. The relationship between symptoms and laboratory-imaging outcomes was investigated using appropriate statistical tests. Patients who were evaluated in the COVID-19 triage outpatient clinic and clinically likely to be Covid disease were included in the study. Patients under the age of 18 were not included in the study.

Ethical Approval: Written approval was obtained from the Health Sciences University Non-Invasive Ethics Committee for conducting the study. The study was started after obtaining administrative permission from Health Sciences University Gulhane Health Research and Application Center Medical Specialty Ethics Committee.

Statistical Analysis: Statistical evaluations were performed by running the SPSS (version 22.0; SPSS, INC., Chicago, IL, USA). The normality of distribution of continuous variables was evaluated using the Kolmogorov-Smirnov test, histogram, and Shapiro-Wilk test. Descriptive statistics were expressed as mean ± standard deviation or median (minimum-maximum) for continuous variables and as the number of cases and percentage for categorical variables. Quantitative data were evaluated using a Student t-test or the Mann-Whitney U test, as appropriate. Comparison of categorical variables was performed using the chi-square test. p-value <0.05 was considered statistically significant. logistic regression was used to assess the effect of signs and symptoms affecting PCR (+) status for multivariate analysis,

RESULTS

In total, 1745 patients with the suspected COVID-19 were included in the study. A total of 650 (37.2%) of 1745 patients who were admitted to the triage outpatient clinic were diagnosed as COVID-19 by PCR confirmation. Of the patients, mean age was 42.19±16.17 (17-93, median=40), and 50.8% (887) was male. The median age for COVID-19 (+) patients was 43 (18-92) years, and 38 (17-93) years for COVID-19 (-) cases ($p<0.001$) (Table 1). Of the participants, 88.1% had at least one symptom, 11.9% were asymptomatic. Almost half of the patients (50.1%) had a history of exposure including contact with COVID-19 confirmed cases. Hypertension and diabetes

mellitus were the most common chronic diseases (respectively, 41.1%, 30.4%). COVID-19 (+) patients were more diabetic and hypertensive than negative cases (respectively, 37.0% vs. 25.8%, p=0.006; 47.2% vs. 36.8%, p=0.017). The distribution of the demographic characteristics of the participants who were admitted to the triage outpatient clinic is given in Table 1.

Table 1. Comparison of demographic characteristics of the patients who were admitted to triage outpatient clinic (n=1745)

Characteristics	**All suspected patients**	**PCR-confirmed COVID-19 (-)**	**PCR-confirmed COVID-19 (+)**	**p***
	Median (min-max)	**Median (min-max)**	**Median (min-max)**	
Age (years)	40 (17-93)	38 (17-93)	43(18-92)	**<0.001¥**
	n (%)	**n (%)**	**n (%)**	
Age groups (years)				**<0.001**
<29	23.5 (402)	26.8 (289)	17.8 (113)	
29-39	25.5 (436)	26.6 (287)	23.5 (149)	
40-51	24.8 (424)	24.6 (265)	25.0 (159)	
≥52	26.3 (450)	21.9 (236)	33.7 (214)	
Gender				0.068
Male	50.8 (887)	52.5 (575)	48.0 (312)	
Female	49.2 (858)	47.5 (520)	52.0 (338)	
Contact with a COVID-19 patient	50.1 (875)	49.2 (539)	51.7 (336)	0.319
Smoking	33.2 (579)	32.7 (358)	34.0 (221)	0.575
Comorbid diseases (n=526)	30.1 (526)	28.3 (310)	33.2 (216)	**0.030**
DM	30.4 (160)	25.8 (80)	37.0 (80)	**0.006**
HT	41.1 (216)	36.8 (114)	47.2 (102)	**0.017**
Asthma/COPD	22.8 (120)	25.2 (78)	19.4 (42)	0.124
CVD	23.4 (123)	22.3 (69)	25.0 (54)	0.465
Malignancies	5.5 (29)	6.1 (19)	4.6 (10)	0.459

*Chi-square test. ¥ Mann Whitney-U test; *DM, Diabetes mellitus; HT, Hypertension; COPD, Chronic Obstructive Pulmonary Disease; CVD, Cardiovascular disease; PCR, Polymerase Chain Reaction.*

Based on patient's medical history and clinical examination, complaints including acute cough (57.6% vs. 48.7%, p=0.001), myalgia (47.6% vs. 41.5%, p=0.021), and fatigue (28.3% vs. 21.1%, p=0.001) were more common in COVID-19 patients, while sore throat (43.6% vs 34.0%, p=0.000) and diarrhea (22.1% vs. 14.9%, p=0.001) were more common in COVID-19 (-) patients. Fever (≥38 C) was higher (35.3% vs. 20.4%, p<0.000) and O_2 saturation was lower (97.59±2.331 vs. 98.07±2.122) in patients with COVID (+). The median number of days between initial symptom and outpatient clinic presentation was longer in diagnosed patients than undiagnosed patients (3 vs. 2 days, p=0.007). Other comparisons of symptoms of the PCR-confirmed COVID-19 (+) and COVID-19 (-) cases were depicted in Table 2.

Table 2. Comparison of symptoms of the PCR-confirmed COVID-19 (+) and COVID-19 (-) cases (n=1537)

Symptoms (%-n)	**All suspected patients**	**PCR-confirmed COVID-19 (-)**	**PCR-confirmed COVID-19 (+)**	**p***
	n (%)	**n (%)**	**n (%)**	
Headache	35.9 (552)	35.9 (345)	35.9 (207)	0.988
Fatigue	23.8 (366)	21.1 (203)	28.3 (163)	**0.001**
Chill	19.1 (293)	16.1 (155)	24.0 (138)	**<0.001**
Sore throat	40.0 (615)	43.6 (419)	34.0 (196)	**<0.001**
Acute Cough	52.0 (799)	48.7 (468)	57.6 (331)	**0.001**
Dyspnea	27.1 (416)	27.2 (261)	26.9 (155)	0.915
Myalgia	43.8 (673)	41.5 (399)	47.6 (274)	**0.021**
Loss of taste	15.8 (243)	13.6 (131)	19.4 (112)	**0.002**
Loss of smell	13.5 (208)	12.0 (115)	16.1 (93)	**0.020**
Diarrhea	19.4 (298)	22.1 (212)	14.9 (86)	**0.001**
Rhinore	5.1 (78)	5.0 (48)	5.2 (30)	0.854
Low-Back pain	4.0 (61)	4.4 (42)	3.3 (19)	0.297
Chest pain	4.0 (61)	4.0 (38)	4.0 (23)	0.970
Nausea	7.0 (108)	7.2 (69)	6.8 (39)	0.761
Vomitting	3.5 (54)	3.7 (36)	3.1 (18)	0.522
Sweating	2.0 (30)	1.6 (15)	2.6 (15)	0.152
Other Symptoms	3.9 (60)	3.7 (36)	4.2 (24)	0.680
Fever (≥38 C)	26.0 (363)	20.4 (179)	35.3 (184)	**<0.001**
	Mean-SD	**Mean-SD**	**Mean-SD**	
Saturation O_2	97.89±2.21	98.07±2.12	97.59±2.33	**<0.001****
	Median (min-max)	**Median (min-max)**	**Median (min-max)**	
Symptom Duration (day)	2.00 (1-30)	2.00 (1-30)	3.00 (1-10)	**0.007*****

*Chi-square test. **Student t-test. ***Mann Whitney-U test

A chest CT was performed in 763 (43.7%) patients. In patients who underwent chest CT imaging, 40.6% (310) had pneumonic infiltrations compatible with COVID-19 pneumonia. COVID-19 (+) patients had higher rates of chest CT (+) images than undiagnosed cases (49.9% vs. 31.6%; p<0.001) (Figure 1).

In cases with Chest CT, 31.6% (122) of the cases with PCR (-) had pneumonia compatible with COVID-19.

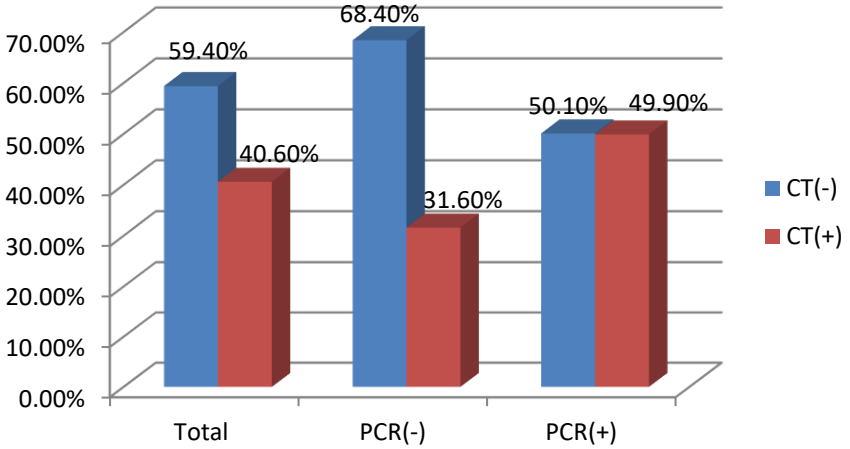

Figure 1. Distribution of CT (+) /CT (-) patients based on PCR results

Hemoglobin (13.9 vs. 14.2, p=0.010), leukocyte (5.40 vs. 6.90, p<0.001), neutrophil (3.10 vs. 4.10, p<0,001), lymphocyte (1.40 vs. 1.90, p<0.001), and platelet (202.50 vs. 233.00, p<0.001) counts were lower, but CRP levels were higher (15.00 vs. 9.05, p=0.030) in patients with COVID-19. Other laboratory parameters during admission were similar in the two groups (Table 3).

Table 3. Comparison of laboratory findings of the PCR-confirmed COVID-19 (+) and COVID-19 (-) cases (n=1167)

Parameters	All suspected patients	PCR-confirmed COVID-19 (-)	PCR-confirmed COVID-19 (+)	p*
	Median (min-max)	Median (min-max)	Median (min-max)	
WBC	6.100(0.600-25.700)	6.900 (0.6-25.700)	5.400 (0.8-16.000)	**<0.001**
RBC	4.8(1.2-50.2)	4.9(1.2-50.2)	4.78 (2.20-12.70)	**0.028**
HB	14.1(2.9-24.3)	14.2 (7.4-22.9)	13.9(2.9-24.3)	**0.010**
PLT	219.00(67.00-1401.40)	233.00 (72.00-1401.40)	202.500 (67.00-539.00)	**<0.001**
LYMP	1.60(0.10-157.00)	1.90 (0.20-5.80)	1.400(0.10-157.00)	**<0.001**
NEUT	3.600(0.1-21.6)	4.100(0.1-21.6)	3.100(0.4-14.4)	**<0.001**
CRP (n=487)	10.2(0.2-342.0)	9.050(0.2-326.0	15.00(0.2-342)	**0.030**
Troponin(n=121)	3.4(0.3-1719)	3.10(0.6-658.0)	3.45 (0.30-1719)	0.429
Ferritin(n=391)	78.8(2.3-1500)	89.0(2.3-593.0)	75.5(2.60-1500)	0.230
D-dimer (n=430)	0.39 (0.1-15.7)	0.39(0.10-14.70)	0.39(0.10-15.70)	0.125

*: Mann Whitney-U test

Variables with statistical significance based on the univariate analysis were subjected to multivariate logistic regression analysis. Based on a multivariate logistic regression analysis, age (OR=1.020; p=0.018), contact with confirmed COVID-19 patient (OR=1.907, p=0.009), fever at application (OR=1,588, p=0,001), fatigue (OR=2.075, p=0.009), cough (OR= 2.301, p<0.001) remained significantly associated with increased odds of PCR (+) status (Table 4).

Table 4. Logistic regression analysis of symptoms and signs affecting PCR (+) status

Variables	B	p	ORs	95% C.I.(Lower-Upper)
Age (years)	0.020	**0.018**	1.020	1.003-1.037
Gender	-0.215	0.343	0.807	0.517-1.258
Comorbid diseases	-0.175	0.522	0.839	0.491-1.435
Fatigue	0.730	**0.009**	2.075	1.197-3.600
Chill	0.275	0.328	1.316	0.759-2.280
Sore throat	-0.305	0.187	0.737	0.469-1.159
Cough	0.833	**<0.001**	2.301	1.452-3.646
Myalgia	0.345	0.137	1.412	0.896-2.224
Loss of taste	0.806	0.088	2.239	0.886-5.662
Loss of smell	-0.483	0.354	0.617	0.222-1.713
Diarrhea	-0.243	0.399	0.784	0.445-1.381
Saturation O_2	-0.021	0.741	0.979	0.864-1.110
Duration (day)	0.002	0.948	1.002	0.932-1.078
Fever (C)	0.463	**0.001**	1.588	1.197-2.108
Contact with a COVID-19 patient	0.646	**0.009**	1.907	1.171-3.107

DISCUSSION

More than one-third of PCR results (37.2%) in the study sample were evaluated as COVID-19 (+). Significant variables to predict COVID-19 disease confirmed by PCR test results were advanced age, symptoms of weakness and cough, high fever, and a history of close contact with a COVID-19 patient. Laboratory parameters including WBC, RBC, Hb, Platelet, lymphocyte, and neutrophil counts were significantly lower and CRP values were higher in PCR (+) cases. Based on CT evaluations, COVID 19 (+) chest radiological appearance was significantly higher in PCR (+) patients compared to PCR (-) patients.

PCR (+) Status: PCR positivity rates during the admittance to the health care services varied. In a study carried out in Turkey, the positive PCR test ratios were 16.5% during the first admissions (6). Another research from Turkey depicted that 9.8% of all cases were positive regarding RT-PCR test results (11). According to the national weekly report of the COVID-19 database from Turkey on October 16-22, 2021, the number of total tests was 2.497.723, and the total cases were stated as 199.170. The positive ratio of PCR test results performed in that week was 12.54% (12). Another study including 673 patients from Turkey stated that 29.4% of patients admitted to COVID-19 First Evaluation Outpatient Clinic were diagnosed as COVID-19 (13). Research including 116 patients with the suspect from COVID-19 disease who presented to two emergency departments in China for the first time reported 32 patients were confirmed to have COVID-19 by laboratory results. The current study found out 37.2% of all participants were diagnosed with PCR (+) (10). The positivity rate of PCR test results between countries varies according to many factors since the beginning of the pandemic. Among these factors, quarantine practices, vaccination practices and other social protective measures applied by countries in different periods can be counted.

Age: Advanced patient age is considered an important risk factor for contracting COVID-19 disease (14,15). In the study conducted in Wuhan, the initial point of the disease, the median age of COVID-19 patients was 65 years, and 38.3% of all patients were over 65 years old (15). Similar results were reported in a retrospective cohort study of approximately 90,000 people (16). In the triage study of Dizman et al. in Turkey, it was determined that the median age of COVID-19 patients was higher than those without COVID-19 (38 vs 35 years) (13). In the current study, the median age of positive cases was significantly higher than negative cases (43 vs. 38 years). In addition, it was determined that the increase in age increased the probability of having PCR positivity. The reason why the median age values in our study are lower than in other studies arises from the data were obtained from patients in the first period of the pandemic and the curfew applied to patients over 65 at that time. It is also considered that PCR positivity increases as a natural consequence of weakening of the immune system, especially in geriatric patients with advanced ages.

Symptoms: The symptoms detected during the admission of suspected patients differ in health care facilities. A metaanalysis included 45 studies, cough, fever, headache, dyspnea and diarrhea were the most common complaints (17). Sahin et al. evaluated the first and control admissions of patients who applied to the outpatient clinic with the suspicion of COVID-19 and found that 24.4% of the patients who applied for the first time were asymptomatic. Most clinical common symptoms in patients with PCR (+) test were weakness (73.0%), headache (64.9%), pain (32.2%), cough (56.8%), sore throat (51.4%), and anorexia (45.9%) (6). In another study from Turkey, Mercan et al. stated 15.2% of cases were asymptomatic, whereas 84.8% had at least one symptom. Common symptoms in adults with COVID-19 were cough (26.3%), headache (26.3%), high fever (24.1%), fatigue (21.9%), arthralgia (21.9%), myalgia (19.4%), and malaise (17.5%) (18). In an observational study of 326 COVID patients in Bangladesh, 19.02% were symptom-free. In patients with symptoms, fever was the most common symptom, followed by cough, loss of smell and taste, sore throat, and headache (19). Dizman et al. stated that the proportions of cough, myalgia, loss of smell/taste, and sore throat were more frequent in confirmed COVID-19 patients. The authors declared that the presence of these symptoms may trigger SARS-CoV-2 PCR positivity (13). In a retrospective New York study, the most common symptoms were described as fever, coughing, shortness of breath, muscle pain, and, nausea respectively (20). In a study carried out in Malaysia, though most of the confirmed cases were asymptomatic, those who presented with loss of smell/taste, fever, running nose were significantly associated with positivity due to the multivariate logistic regression analysis (21). Sahin et al. revealed odd's rates of significant complaints about PCR positivity were 2.607 for fever, 2.724 for anorexia, 2.051 for cough, 2.594 for loss of smell, and 2.243 for loss of strength (6).

Based on our patient's medical history, the most common presenting complaints were acute cough (57.6%), myalgia (47.6%), and fatigue (28.3) were common in positive patients, while sore throat (34.0% vs.43.6%) and diarrhea (14.9% vs. 22.1%) were more common in negative patients. Regression analysis demonstrated that fatigue was nearly 2-fold and cough was a 2.3-fold increased likelihood of having PCR (+) status. The fact that the frequency of symptoms observed in PCR (+) patients were observed at different rates in studies may be due to many reasons, especially geographical and ethnic reasons. Another reason for

the determination of different rates may be the difference in sample selection. While the first application was made to triage outpatient clinics in some hospitals, it was made in the emergency department in some hospitals. When similar studies were examined, while the frequency of symptoms was calculated in some studies, the calculation was made on all patients, not considering the asymptomatic patients. In some studies, consistent with our results, evaluations were made on patients with symptoms.

Fever: High fever was the most common symptom among the main symptoms of confirmed COVID-19 cases (5,22). The importance of high fever was emphasized in the effective fight against COVID-19 disease among suspected cases (18). In a meta-analysis comprising 38 studies conducted in China, the most common complaint was fever (80.4%) (23). Sun et al. informed that the rate of high fever was observed in 82.1% of their admittants (24), while Tian et al. reported fever in 82.1% (25). Another study demonstrated fever in 55% of outpatients, and 68% of inpatients. In studies conducted in our country, the frequency of high fever in COVID patients varies. (6.2% to 24.1%) (11,18). A study carried out in Malaysia showed that presentation with high fever increased almost 4-fold of having PCR (+) test results (21). In our study, the incidence of fever in patients diagnosed with COVID-19 was significantly higher than in COVID (-) cases (35.3% vs. 20.4%). Patients with a high fever at application was a nearly 1.6-fold increased risk of being PCR (+). It is considered that the most important factor in the detection rates of high fever in studies is the difference in the threshold value of body temperature determined for high fever.

Contact with a COVID-19 Patient: One of the most important risks of contracting COVID-19 disease is to be in proximity with patients in the same environment. In almost all countries, the suspected time to contact COVID-19 patients in medical history was accepted as 2 weeks before the onset of symptoms. Zhu et al. stated that history of exposure to COVID-19 patients in the previous 2 weeks was more prevalent in diagnosed patients than negative cases (63% vs. 44%) (23). A study from Turkey reported that contact history was more common in patients with COVID-19 (67.7% vs 52%,) (13). Chow et al. indicated that close exposure history to confirmed SARS-CoV-2 cases was higher in PCR (+) cases than PCR (-) ones (38.1% vs. 11.8%). The odds of being positive were increased by 3.2-fold among those who had close contact with confirmed SARS-CoV-2 cases (5). In our study, it was found that having a history of close contact with a COVID-19 patient increased the probability of PCR (+) nearly 2 times.

Comorbidities: The presence of accompanying chronic health issues can affect the outcome of COVID-19 patients. In a meta-analysis, hypertension was the most prevalent comorbid disease with a rate of 21.1% among 1576 patients. Other common comorbidities comprised diabetes mellitus, cardiovascular disease, and respiratory system disease with the prevalence of 9.7%, 8.4%, and 1.5% of the patients, respectively(26). Cheng et al. reported one-third of participants had one or more chronic diseases in laboratory-confirmed adult COVID-19 infection cases. In their study, patients with a severe or critical type of COVID-19 disease were more likely to have accompanying chronic health issues, including DM, hypertension, chronic heart disease, and chronic pulmonary disease, than a mild or moderate type of COVID-19 disease (27). In a study consisting of COVID-19 confirmed cases followed- by primary healthcare services, 25.4% of the patients had a chronic disease including hypertension (16.8%) and diabetes mellitus (7.0%) (18). Previously, one study from Iran showed that diabetes (16.3%) and cardiovascular disorder (21%) were the most frequent comorbidities among the COVID-19 patients. A study from Bangladesh depicted that hypertension (19.2%) and bronchial asthma (17.6%) were the most common co-morbidities in their sample (28), while another study in the same country stated diabetes mellitus, hypertension, and bronchial asthma were most frequently observed in both symptomatic and asymptomatic patients (19). In a study conducted in the first evaluation outpatient clinic in Turkey, 31.5% of cases had comorbid diseases, and the most common chronic conditions were diabetes mellitus and hypertension. However, although comorbid diseases were more prevalent in patients with COVID-19, no statistically significant difference was identified between the positive and negative cases (13). In our study, it was determined that having comorbid diseases increased the risk of PCR positivity approximately 2-fold. Two of the most important of these diseases were DM and HT, as emphasized in other studies. Keeping under the control of concomitant diseases that have been confirmed to have significantly increased COVID-19-related hospital admissions, intensive care rates, and deaths are an indispensable part of being up against the pandemic.

Chest CT: Recent studies emphasized the importance of chest CT in the diagnosis of COVID-19 and CT sensitivity has been described as higher than 90% (29,30). Yurt et al. reported that chest CT imaging was administered on 84.8% of the patients admitted to the hospital, and 16.4% showed COVID-19 pneumonia findings. Chest CT (+) rates of PCR (+) patients were significantly lower than PCR (-) cases (23% vs. 15.7%) (11). Dizman et al. stated their local guideline suggested chest CT for the cases with comorbid diseases and/or respiratory symptoms during the evaluation of suspected COVID-19 applicants. By this clinical management, they diagnosed 56 patients whose SARS-CoV-2 PCR was negative, but CT findings

were consistent with COVID-19 among 421 chest CTs (13). In a study conducted in two emergency departments, chest CT scans of suspected patients on their first admission exposed the presence of COVID pneumonia in most of the laboratory diagnosed patients (94%) and 67% of negative cases (10). In our study, CT was performed in 43.7% of the patients. Among those who had a CT scan, 40.6% (310) were evaluated as having COVID-19 radiological appearances. In approximately one-third of the PCR (-) cases, there was an infiltration appearance compatible with COVID-19.

Laboratory Parameters: In COVID-19 disease, laboratory parameters, especially complete blood count, are generally compatible with viral infections. It has been stated that it may differ according to the progression and severity of the disease (31). Lymphopenia and high D-dimer levels were reported to be subjected to poor outcomes due to mortality and morbidity (32,33). Dizman et al. stated that their facility was able to analyze the complete blood cell (CBC) in 571 patients and D-dimer in 353 patients. COVID-19 patients compared to negative patients were more likely to have lower lymphocyte and platelet counts. D-dimer values did not differ between the two groups, but ferritin values were higher in COVID-19 (+) cases (13). A China study reported that CBC test results on admission displayed that 22% of positive cases and 5% of negative cases had leukopenia (white blood cell count $<3.5\times10^9$/L), 9% positive cases, and 19% negative cases had neutrophilia (neutrophil count $>6.3\times10^9$/L) and 59% positive cases and 29% negative cases had lymphopenia (lymphocyte count $<1.1\times10^9$/L) (10). In a study from Turkey stated that the mean leukocytes, neutrophils, and platelet counts of COVID patients were lower than those who were not (11). In our study, Hemoglobin (13.9 vs.14.2), leukocyte (5.40 vs. 6.90), neutrophil (3.10 vs. 4.10), lymphocyte (1.40 vs. 1.90), and platelet (202.50 vs. 233.00) counts were lower, but CRP levels were higher (15.00 vs. 9.05) in patients with COVID-19 compared to those of negative cases. Our results were consistent with other studies in the literature. Differences between results may be due to the reference ranges of test kits or the time at which patients are evaluated.

Study Strengths: Studies of COVID-19 disease symptoms are generally based on retrospective evaluation of patients' recalled symptom states after hospitalization. Our study, on the other hand, was evaluated by examining the symptoms of the patients who were referred directly to the triage outpatient clinic due to the suspicion of the disease at the time of their admission. Recall bias is minimal. Second, in similar studies, the relationship between symptoms and PCR positivity was evaluated by bivariate analysis. A limited number of studies, including ours, include regression analysis in which ORs are calculated.

Study Limitations: Our study has some limitations. Since the study is a single-center study, the participants' COVID-19 symptoms, laboratory parameters, and chest CT results cannot be generalized to all patients. Second, because the study was based on the onset of pandemic data, symptoms, laboratory parameters, and chest CT results may differ, especially in the post-vaccination period.

CONCLUSION

Early diagnosis of COVID (+) patients and application of adequate isolation or quarantine measures are crucial factors to control the spread of the COVID-19 pandemic. Triage outpatient clinics provide safe healthcare services to suspected patients separating them from other patients admitted to the emergency department.

Risk factors associated with PCR (+) test results were older age, history of contact with confirmed COVID-19 patient, high fever, fatigue, cough in our study. In studies, especially some symptoms and medical history components have a significant relationship with PCR positivity, which requires a more careful approach to these points in terms of COVID-19 disease in the first applications. This situation is important in cases which PCR test could not be performed or in cases with delayed diagnosis.

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