

## Reflections of Covid-19 pandemic: Turkey's results during the first month of the pandemic

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### ABSTRACT

**Objective:** This study aims to evaluate the clinical and epidemiological findings of patients with suspected COVID-19 admitted to the emergency service of a 3rd step training and research hospital.

**Material and Methods:** Patients older than 18 years of age, suspected COVID-19 disease and received diagnostic combined nasal and oropharyngeal swab between April 1, 2020 and April 30, 2020 were evaluated retrospectively. Demographic, laboratory, radiological findings and PCR results of the patients were recorded. In addition, the patients' home isolation, hospitalization, intensive care follow-up requirements and 28-day mortality were analyzed.

**Results:** Total 3020 patients were included in the study, and the mean age of the patients was found to be  $41 \pm 16.22$ . 55.4% (n = 1673) of the patients were female and 83.0% (n = 2508) of them were found to have negative PCR results. Mortality occurred in 3.5% of the patients (n = 107) within 28 days. The relationship between the PCR results, pneumonia status and type of hospitalization and 28-day mortality results were compared, and a statistically significant relationship was found. [(p<0.001), (p<0.001), (p<0.001)].

**Conclusion:** In line with these data obtained at the beginning of the pandemic, positive PCR results, presence of pneumonia and the history of intensive care unit hospitalization are risk factors for mortality.

**Keywords:** Covid-19, coronavirus infection, pandemic, emergency

### INTRODUCTION

In December 2019, the acute respiratory disease, now known as the novel coronavirus infection, emerged in Wuhan, Hubei district, China. The disease quickly spread around Wuhan (1, 2). On January 30, 2020, the World Health Organization recognized this rapidly spreading infectious disease as an international public health emergency, currently known as coronavirus disease 2019 (COVID-19), and then defined it as a COVID-19 pandemic on March 11, 2020 (3).

Coronavirus disease was firstly diagnosed on March 11, 2020 in Turkey. From this period on, the guidelines covering the viral characteristics of COVID-19 disease, patient diagnosis and treatment have been published and updated by Republic of Turkey Ministry of Health General Directorate of Public Health under the title of COVID-19 Scientific Committee Study. Follow-up and treatment schemes in our country were created in line with these guidelines.

In the period of about 1 year spent with the virus, many publications including the characteristics of the virus and the disease, as well as many studies including the differences between countries and geographical distribution have contributed to the literature. According to the data of the World Health Organization, the Covid-19 pandemic continues its current spread today with 79 million definite diagnoses and 1.7 million deaths (4). Clinical involvement, symptomatology, treatment protocols, and patient perspective about the disease are evaluated with the help of shared data from different continents all over the world.

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Today, it is known that Sars-Cov2 is transmitted through droplets and causes lower respiratory tract infection that develops as a result of the increase in cytokine-mediated immune response characterized by fever, cough, and shortness of breath. Hematological examinations and Real-time PCR performed in the presence of contact with infected persons and symptoms associated with Covid provide guidance during the diagnosis phase. Despite standard supportive and antiviral treatment, according to Chinese data mortality rates in critically ill patients are still 62% in critically patients and 81% in patients who require mechanical ventilation (5).

The aim of our study is to evaluate the characteristics of patients affected by COVID-19 disease and determine the follow-up rates of patients with asymptomatic, or mild, moderate, and severe pneumonia, and to obtain epidemiological data of our country in the light of the data of a tertiary education research hospital.

## MATERIAL AND METHODS

Patients older than 18 years of age who were evaluated for suspected COVID-19 disease in the emergency department of our hospital between April 1, 2020 and April 30, 2020 and who received diagnostic combined nasal and throat swab were screened retrospectively.

PCR results obtained in the emergency department at the time of first admission were evaluated and test positivity depends on this first test result. On-control swabs of outpatients at 14th day or 3rd day follow-up swabs from hospitalized patients were not included in the study. Patients under the age of 18 and pregnant women were excluded from the study. During the planning stage, permissions were obtained from the ethics committee of our hospital (2011-KAEK-25 2020 / 05-15).

Patients' age, gender, chronic disease history, and admission complaints were recorded. Complete blood count, biochemistry, CRP, d-Dimer and ferritin values, and thorax computed tomography findings of the patients, which were made at the first admission in the emergency department, were evaluated through the patient records in the hospital automation system. Patients were divided into two groups as positive and negative according to real-time COVID PCR test results.

Also, the patients' home isolation or hospitalization status, length of stay and intensive care follow-up requirements and 28-day mortality were analyzed.

**Statistical analysis:** The data of the study were analyzed using the SPSS 21.0 for Windows (SPSS Inc., Chicago, IL, USA) computer program. Descriptive statistics; categorical variables were shown as numbers and (%), while continuous numerical variables were expressed as mean  $\pm$  standard deviation. Kolmogorov-Smirnov test was used for normality distribution of the data. Chi-square and Fisher's exact test were used to analyze whether there was a relationship between categorical variables.  $P < 0.05$  was considered statistically significant.

## RESULTS

A total of 3020 patients were included in the study, and the mean age of the patients was found to be  $41 \pm 16.22$  years. 55.4% (n = 1673) of the patients were female and 83.0% (n = 2508) of them were found to be negative for PCR results. 3.5% (n = 107) of the patients developed mortality within 28 days. According to the computerized thoracic CT findings, no typical finding was found in 75.6% of them. Typical findings such as ground glass opacity and patchy infiltration were found at only 5.6%.

While 81.5% of the patients were follow with home isolation, only 2.1% of them needed intensive care hospitalization. The need for mechanical ventilation developed in 39 (1,29 %) among 3020 patients. Clinical and demographic data of the patients are given in Table 1.

No statistically significant correlation was found in the Chi-square test analysis conducted to determine the relationship between the gender of the patients and the 28-day mortality results ( $p > 0.05$ ).

The relationship between the PCR results, pneumonia status and hospitalization type and 28-day mortality results were compared and a statistically significant relationship was found respectively. [ $p < 0.001$ ], ( $p < 0.001$ ), ( $p < 0.001$ )]. It was determined that this difference was caused by those who had positive PCR results, those who had negative pneumonia and those admitted to intensive care. (Table: 2)

When the laboratory results of the patients were evaluated, the mean lymphocyte count was 2.67 in the PCR-group and 2.04 in the PCR + group. CRP, D-dimer, Ferritin and Troponin values were relatively high in PCR + group. Laboratory testing results are given in Table: 3.

**Table 1:** Clinical and demographic characteristics of Covid-19 patients

		Frequency (n)	Percent (%)
<b>Sex</b>	Female	1673	55.4
	Male	1347	44.6
<b>Symptoms</b>	More than 2 symptoms	1898	62.8
	Cough	377	12.5
	Weakness	54	1.8
	Shortness of breath	149	4.9
	Fever	372	12.3
	Sore throat	20	0.7
	Nausea Vomiting	39	1.3
	Fever + Cough	100	3.3
	Loss of Taste	11	0.4
<b>PCR</b>	Positive	512	17.0
	Negative	2508	83.0
<b>Pneumonia</b>	typical	170	5.6
	Intermediate	335	11.1
	Atypical	233	7.7
<b>Final Status</b>	Negative	2282	75.6
	Home isolation	2460	81.5
	Hospitalization	496	16.4
<b>28-Day Mortality</b>	Intensive care unit admissions	64	2.1
	Alive	2913	96.5
	Exitus	107	3.5
<b>Total</b>		3020	100.0

**Table 2:** Comparison of the current status of the patients with the PCR results.

		28 day mortality			Total	Chi square test
		Alive	Exitus			
<b>Sex</b>	Female	n	1617	56	1673	x <sup>2</sup> =0.42, p>0.05
		%	96.7%	3.3%	100.0%	
	Male	n	1296	51	1347	
		%	96.2%	3.8%	100.0%	
<b>PCR</b>	Positive	n	442	70	512	x <sup>2</sup> =185.08, p<0.001
		%	86.3%	13.7%	100.0%	
	Negative	n	2471	37	2508	
		%	98.5%	1.5%	100.0%	
<b>Pneumonia</b>	Typical	n	156	14	170	x <sup>2</sup> =51.30, p<0.001
		%	91.8%	8.2%	100.0%	
	Intermediate	n	312	23	335	
		%	93.1%	6.9%	100.0%	
	Atypical	n	213	20	233	
		%	91.4%	8.6%	100.0%	
	Negative	n	2232	50	2282	
		%	97.8%	2.2%	100.0%	
<b>Admission</b>	Home isolation	n	2435	25	2460	x <sup>2</sup> =1519.28, p<0.001
		%	99.0%	1.0%	100.0%	
	Hospitalization	n	473	23	496	
		%	95.4%	4.6%	100.0%	
	Intensive care unit admissions	n	5	59	64	
		%	7.8%	92.2%	100.0%	
<b>Total</b>	n	2913	107	3020		
	%	96.5%	3.5%	100.0%		

PCR: Polymerase chain reaction

**Table 3:** Laboratory values of Covid-19 patients at the time of admission

Variables	Total			PCR(+)			PCR(-)		
	n	mean	Std.Dev.	n	mean	Std.Dev.	n	mean	Std.Dev.
<b>WBC</b>	2968	9.36	4.20	512	8.05	5.60	2456	9.63	3.66
<b>Lymphocyte</b>	2957	2.56	5.03	511	2.04	2.97	2446	2.67	5.36
<b>Platelet</b>	2969	248.38	70.06	512	221.68	75.61	2457	253.94	67.54
<b>CRP</b>	2870	19.21	42.45	487	29.63	54.53	2383	17.08	39.20
<b>TROPONIN</b>	1598	75.38	448.46	163	91.08	506.50	1435	73.59	441.55
<b>D-DIMER</b>	2148	0.80	3.56	187	2.06	7.32	1961	0.68	2.94
<b>FERRITIN</b>	2004	123.14	203.13	137	233.15	382.32	1867	115.07	180.78

PCR: Polymerase chain reaction WBC: White blood cell, CRP: C-reactive protein

## DISCUSSION

Covid-19 maintains its importance as a national public health problem despite the active struggle we carry out with the whole world today. Our study reveals our patient profile and results in the first month of the struggle against the Covid pandemic in our hospital.

Studies have shown that the most important symptoms associated with covid-19 are fever, cough and fatigue, and this was frequently followed by headache, hemoptysis and dyspnea (6-8). In our study, especially when the patients presented with multiple symptoms, the most common symptoms were cough (15.8%) and fever (7-9).

In addition to the laboratory tests that support the diagnosis in a patient presenting with Covid-19 symptoms, nasopharyngeal and oropharyngeal swab tests are the standard approach for diagnosis.

With the Real Time-PCR test, it is aimed to identify RNA-dependent RNA polymerase nucleocapsid genes belonging to Sars COV2.

However, the positivity rates of the RT-PCR test vary between 21.4% and 38% (10, 11). In our study, the positivity rate was found to be 17% in our patients who had typical symptoms associated with Covid, had contact with a Covid + person, or had a history of traveling abroad, and who were treated with a possible case definition with laboratory tests. This difference may have developed as a result of quantifying the probable case definition by us on a wide margin.

Typical CT findings such as peripheral and subpleural ground-glass opacities, often in the lower lobes were detected in approximately 5.6% of our patients who were evaluated for Covid-19 and scheduled for treatment, while intermediate findings were found in 11.1%. In our PCR positive patients, this rate was 91.8%, and typical pneumonic involvement was correlated with PCR results. The association of PCR positivity and the presence of typical findings in CT is observed with a rate that reaches 98% in the literature (12).

Fang et al. Reported that the sensitivity of thorax CT for COVID-19 was 98%, while PCR test sensitivity was 71%. In addition, due to the false negative results of RT-PCR, it was recommended to isolate the patient and repeat the PCR test result in the presence of typical BT findings (13).

Lymphopenia is accepted as a cardinal finding in Coronavirus disease, which plays an active role in the hematopoietic system. (9, 14). In the studies conducted, lymphopenia in Covid-19 patients confirmed by RT-PCR accompanies the current diagnose in approximately 80% -90% cases (9, 15). In our study, especially in the PCR positive group, the tendency for lymphopenia draws attention similar to the literature.

In addition to hematological parameters, acute phase reactants such as ferritin, CRP and Troponin, d-dimer markers indicating thrombosis are high in Covid-19 patients whose diagnosis was confirmed by RT-PCR. Ferritin is an important poor prognostic marker followed especially in patients with Covid-19. A significant relationship has been found between ferritin level and the development of Covid-associated ARDS (16, 17). Similarly, in our study, ferritin level was found to be high in the PCR positive patient population.

81.5% of our patients were isolated and treated at home with outpatient follow-up. Our intensive care hospitalization rate is 2.1%. In studies conducted in China, outpatient follow-up rates are at the level of 92.3%, and these rates indicate the need for a healthy regulation of social isolation and quarantine prevention (18).

In a study of 222 patients conducted in our country in March 2020, mortality rates were found to be 5.4%, and it was stated that this rate was lower than 6.9% worldwide (19). In our study, our 28-day mortality rate is 3.5%, and it can guide us that we can provide effective follow-up and treatment considering our number of patients and pneumonia rates.

**Limitations:** Our study includes the first days of the Covid 19 pandemic and includes the diagnosis, treatment and hospitalization indications and patient management used in that period. In the course of time, in line with the changes in literature, both treatment and home follow-up or hospitalization practices have changed.

## CONCLUSION

In our study, we examined a period that included the first days of the Covid-19 pandemic with the data of our hospital. Thanks to the nationwide implementation of the diagnosis, treatment and isolation measures determined by the central administration of our country's healthcare system and the guidance of Covid-19, we found lower mortality and intensive care needs

The key point in the pandemic is the early diagnosis of patients with current symptomatology, contact with the patient or a history of traveling abroad, and early isolation with appropriate tests and laboratory tests. Our fight against the pandemic continues and our study can form a basis for multi-center studies that reflect our country's data.

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