The Effect of Comorbid Disease on the Severity and Prognosis of Patients Hospitalized with SARS–Cov–2 Infection

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ABSTRACT

Objective: Patients with coronavirus 2019 (COVID-19), the disease caused by infection with severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), frequently have comorbidities and this is thought to be a risk factor for poorer outcomes. The aim of this study was to determine the prevalence and effect of comorbidities on the severity and prognosis of patients hospitalized with a diagnosis of COVID-19.

Methods: This was a retrospective, single-center, epidemiological study. Patients with a confirmed SARS-CoV-2 infection of the upper respiratory tract based on a reverse transcription-polymerase chain reaction test using throat and nasal swab samples and/or clinically diagnosed according to lung imaging features compatible with coronavirus pneumonia hospitalized between March 15 and June 15, 2020 were included in the study. The relationship between the severity and prognosis of COVID-19 and comorbidities was analyzed.

Results: A total of 258 patients diagnosed with COVID-19 were included in the study; 140 (54.3%) patients had at least 1 comorbidity and 118 (45.7%) patients were categorized as patients without a comorbidity. In the group, 134 (51.9%) patients were male and 124 (48.1%) were female, with a mean age of 54.2±16.6 years (range: 18–92 years). The most common comorbidities were hypertension (32.9%) and diabetes mellitus (22.1%). The rate of development of severe pneumonia was significantly higher in the presence of hypertension (47.0% vs. 34.1%), heart failure (66.6% vs. 36.2%), and immunosuppression (69.2% vs. 37.0%) (p<0.05). Intensive care unit (ICU) admission was necessary for 12.1% of the patients with a comorbidity and 6.8% of the patients without a comorbidity (p=0.147). While the mortality rate was 4.2% in patients without a comorbidity, mortality was observed in 8.6% of the patients with comorbidities (p=0.162). The mortality rate was 11.7% vs. 4.0% (p=0.019) for hypertension, 23% vs 5.7% (p=0.046) for immunosuppression, 22.2% vs. 5.4% (p=0.022) for heart failure, 14.0% vs. 4.4% for diabetes mellitus (p=0.029), and 33.3% vs. 5.6% for chronic kidney disease (p=0.016).

Conclusion: The findings indicated that the course of COVID-19 was more severe in patients with comorbidities, and negative effects, such as ICU admission and death, were more common. It is important to determine comorbid diseases when taking the medical history of COVID-19 patients in order to identify patients likely to have a more dangerous clinical course and to adjust the treatment plan accordingly.

INTRODUCTION

In December 2019, cases of "pneumonia of unknown cause" were reported in Wuhan, China. On January 7, 2020, the Chinese Center for Disease Control and Prevention announced the detection of a new type of coronavirus in a throat swab specimen. The virus was initially known as the novel virus 2019-nCoV. Subsequently, the World Health Organization (WHO) officially named the virus severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2) because of the close similarity to SARS CoV, and the resulting disease was recognized as coronavirus 2019 (COVID-19).[1–6] COVID-19 spread rapidly, and in March 2020, the WHO declared a global pandemic due to the uncontrolled spread of the virus across the world.[7]

Symptoms of the disease include fever, dry cough, shortness of breath, fatigue, and lymphopenia. The virus can

cause pneumonia, which may progress to SARS, and in severe cases, it may be fatal.[1,2,8]

Huang et al.[2] reported 13 (32%) of 41 confirmed COVID-19 patients had additional comorbidities, including diabetes, cardiovascular disease, hypertension, and chronic obstructive pulmonary disease (COPD). Wang et al.[8] found that 64 (46.4%) of 138 patients had a concomitant disease. Significantly, they emphasized that cases admitted to the intensive care unit (ICU) (72.2%) had more comorbidities than those not admitted to the ICU (37.3%). This suggested that comorbidities may be a risk factor for undesired outcomes.[8] The aim of this study was to determine the prevalence and effect of comorbidities on the severity and prognosis of patients hospitalized with the diagnosis of COVID-19.

MATERIALS AND METHODS

This is a retrospective, single-center, epidemiological study of patients who were infected with SARS-CoV-2 and hospitalized between March 15 and June 15, 2020. The diagnosis was confirmed with a reverse transcription-polymerase chain reaction (RT-PCR) test using throat and nasal swab samples and/or clinically diagnosed according to lung imaging features compatible with coronavirus pneumonia. Case definition was performed according to the Republic of Turkey Ministry of Health COVID-19 (SARS-CoV-2 Infection) Guide.[9]

Demographic details and clinical characteristics (exposure history, symptoms, findings, and accompanying diseases), chest computed tomography (CT) and laboratory results, treatment and outcomes (discharge, intensive care unit, or death) were recorded. The data were obtained from the hospital electronic medical record system. Medical laboratory findings, including leukocyte, lymphocyte. and neutrophil count; D-dimer, C-reactive protein (CRP), and ferritin values; and results of nasopharyngeal swab samples were documented. The nasopharyngeal smear samples were analyzed using a RT-PCR test to detect the presence of SARS CoV-2 viral nucleic acid.

The severity of the disease was defined according to the government guidelines for COVID-19.[9] Severe pneumonia was defined as a case with tachypnea (30 breaths/minute), oxygen saturation level <90% in room air, findings of pneumonia on chest X-ray or tomography, or acute organ dysfunction. The characteristic thoracic CT findings of COVID-19 pneumonia were peripherally located, patchy ground-glass opacities in a bilateral, lobular pattern.

The treatment of COVID-19 patients with indications for hospitalization was conducted according to the Ministry of Health protocol.[9] Hydroxychloroquine was administered with or without azithromycin in cases of uncomplicated, mild pneumonia. In cases of severe pneumonia, hydroxychloroquine and/or favipiravir was used with or without azithromycin. Favipiravir was added to the therapy of patients with exacerbated symptoms. Conventional low-flow oxygen (<15 L/minute) therapy techniques (nasal can-

nula, simple face mask, non-rebreather mask) or high-flow oxygen therapy with a nasal cannula were used in cases of hypoxemia. Patients were placed in the prone position for long intervals. Empiric antimicrobial therapy was initiated in cases considered to be community-acquired pneumonia, healthcare-associated pneumonia, or sepsis, according to the laboratory results and the clinical evaluation. Tocilizumab was administered in the event of macrophage activation syndrome.

Statistical analysis

SPSS Statistics for Windows, Version 17.0 software (SPSS Inc., Chicago, IL, USA) was used to perform the statistical analysis. Categorical data were evaluated with a chi-squared test and Fisher's exact test, while numerical data were evaluated with Student's t-test.

RESULTS

A total of 258 patients diagnosed with COVID-19 were included in the study. SARS-CoV-2 was clinically diagnosed with a RT-PCR test in 140 (54.3%) patients and typical thoracic CT findings were present in 118 (45.7%) patients with a negative RT-PCR test result. In all, 140 (54.3%) patients had a comorbidity and 118 (45.7%) patients were categorized as patients without a comorbidity; 134 (51.9%) of the patients were male and 124 (48.1%) were female, with a mean age of 54.2±16.6 years (range: 18–92 years) (p<.001) (Table 1).

The most common symptom was a cough (58.9%), followed by a fever (43%) and weakness (34.9%). Although there was no statistically significant difference between the rates of symptom occurrence between the patients with and without a comorbidity, a cough was more common in patients without additional disease (65.3% vs. 53.6%), and chest pain was more common in patients with a comorbidity (7.1% vs. 4.2%) (Table 2).

An underlying comorbidity was present in a total of 140 (54.3%) patients. The most common comorbidities were hypertension (32.9%) and diabetes (22.1%). Other comorbidities observed were cardiovascular diseases (congestive heart failure and ischemic heart disease) (13.2%), chronic respiratory diseases (asthma and COPD) (11.3%), immunosuppression (5%), cancer (4.7%) and chronic kidney disease (3.5%) (Table 3).

No statistically significant difference was found in the rate of severe pneumonia between patients with and without a comorbidity (41.4% vs. 34.7%; p=0.271). However, the development of severe pneumonia was significantly higher in the presence of hypertension (47.0% vs. 34.1%), congestive heart failure (66.6% vs. 36.2%), and immunosuppression (69.2% vs. 37.0%). The most common comorbidities in patients with severe pneumonia were hypertension (40.4%), diabetes (26.3%), and heart failure (12.1%) (Table 3).

An indication for ICU hospitalization developed in 25 (9.7%) patients. The rate of ICU admission was 12.1% in

Table 1. Demographic characteristics of patients diagnosed with COVID-19

	All patients (n=258)	Severity of disease		
		Patients with comorbidities, n=140 (54.3%) n (%)	Patients without comorbidities, n=118 (45.7%) n (%)	p-value
Mean age (range) (years)	54.2±16.6 (18–92)	60.5±16.2	46.7±15.1	<0.001
Age groups, n (%)				
<30 years	20 (7.8)	4 (2.9)	16 (13.6)	<0.001
30–49 years	85 (32.9)	30 (21.4)	55 (46.6)	
50–69 years	56 (21.7)	34 (24.3)	22 (18.6)	
≥70 years	97 (37.6)	72 (51.4)	25 (21.2)	
Gender, n (%)				
Female	124 (48.1)	75 (53.6)	49 (41.5)	0.054
Male	134 (51.9)	65 (46.4)	69 (58.5)	
Contact history - present, n (%)	74 (28.7)	36 (25.7)	38 (32.2)	0.479
History of travel or living abroad, n (%)	3 (1.2)	2 (1.4)	1 (0.8)	0.649

Table 2. Clinical characteristics of patients diagnosed with COVID-19

	All patients (n=258) n (%)	Patients with comorbidities n=140 (54.3%) n (%)	Patients without comorbidities n=118 (45.7%) n (%)	p-value
Signs and symptoms at admission				
Asymptomatic	15 (5.8)	8 (5.7)	7 (5.9)	0.752
Fever	111 (43)	59 (42.1)	52 (44.1)	0.756
Cough	152 (58.9)	75 (53.6)	77 (65.3)	0.057
Shortness of breath	82 (31.8)	42 (30)	40 (33.9)	0.503
Throat ache	17 (6.6)	7 (5)	10 (8.5)	0.398
Chest pain	15 (5.8)	10 (7.1)	5 (4.2)	0.320
Diarrhea	15 (5.8)	9 (6.4)	6 (5.1)	0.646
Nausea and vomiting	20 (7.8)	8 (5.7)	12 (10.2)	0.188
Weakness	90 (34.9)	43 (30.7)	47 (39.8)	0.126
Other symptoms	52 (20.2)	24 (17.1)	28 (23.7)	0.281
Chest X-ray				
Unilateral pneumonia	31 (12)	8 (5.7)	23 (19.5)	0.026
Bilateral pneumonia	61 (23.6)	33 (23.6)	28 (23.7)	
CT findings				
Unilateral pneumonia	27 (10.5)	14 (10)	13 (11)	0.228
Bilateral pneumonia	129 (61.6)	81 (57.9)	78 (66.1)	
Patients with severe pneumonia	99 (38.4)	58 (41.4)	41 (34.7)	0.271
Length of stay in hospital	5.37±2.89	5.17±2.88	5.61±2.89	0.219
Admission to ICU	25 (9.7%)	17 (12.1)	8 (6.8)	0.147
Days in ICU	8.34 ± 2.19	8.37±6.43	8.28±9.28	0.979
Discharge	234 (90.7)	124 (88.6)	110 (93.2)	0.560
Death	17(6.6)	12 (8.6)	5 (4.2)	0.162

CT: Computed tomography; ICU: Intensive care unit.

patients with a comorbidity, while it was 6.8% in patients with no comorbidity (p=0.147). Of the 25 patients who were admitted to the ICU, 15 (60%) died. Among the entire study group, mortality was observed in 17 (6.6%) patients. Thirteen (76.5%) of the patients who did not sur-vive were male. The mortality rate was 9.7% for men and 3.2% for women (p=0.036). Twelve (70.6%) of the patients who did not survive were over 65 years of age. Similarly, 12 (70.6%) of the 17 patients who died had a comorbidity. While the mortality rate was 4.2% in patients without a

Table 3. Comorbidities in patients diagnosed with COVID-19

	All patients (n=258)	The severity of the diseases		
		Patients with severe pneumonia, (n=99) n (%)	Patients without severe pneumonia, (n=159) n (%)	p-value
Any comorbidity	140 (54.3)	58 (58.6)	82 (51.6)	0,271
Hypertension	85 (2.9)	40 (40.4)	45 (28.3)	0.044
Diabetes	57 (22.1)	26 (26.3)	31 (19.5)	0,203
Heart failure	18 (7)	12 (12.1)	6 (3.8)	0,010
Ischemic heart disease	16 (6.2)	9 (9.1)	7 (4.4)	0,129
Malignancy	12 (4.7)	4 (4)	8 (5)	0.705
COPD	11 (4.3)	5 (5.1)	6 (3.8)	0.629
Asthma	18 (7)	5 (5.1)	13 (8.2)	0,338
Chronic kidney disease	9 (3.5)	6 (6.1)	3 (1.9)	0.076
Immunosuppression	13 (5)	9 (9)	4 (2.5)	0.020
Other	35 (13.6)	13 (13.1)	22 (13.8)	0.896

COPD: Chronic obstructive pulmonary disease.

Table 4. Epidemiological factors affecting the mortality of COVID-19 patients

Variable	Subgroups	All cases (n)	Deaths (n)	Case mortality rate (%)
All cases	–	258	17	6.6
	<65 years of age	188	5	2.6
	≥65	70	12	17.1
Gender	Female	124	4	3.2
	Male	134	13	9.7
Comorbidity	No comorbidity	118	5	4.2
	Hypertension	85	10	11.7
	Diabetes	57	8	14.0
	Heart failure	18	4	22.2
	Ischemic heart disease	16	1	6.2
	Chronic kidney disease	9	3	33.3
	COPD	11	1	9.1
	Asthma	18	0	0
	Malignity	12	1	8.3
	Immunosuppression	13	3	23
	Other	35	4	11.4

COPD: Chronic obstructive pulmonary disease.

comorbidity, the rate was 8.6% in patients with comorbidities (p=0.162). The presence of the comorbidities of hypertension, immunosuppression, congestive heart failure, diabetes, or chronic kidney disease was associated with a statistically significantly higher mortality rate. The mortality rate in patients with and without these comorbidities was 11.7%–4.0% (p=0.019) for hypertension, 23%–5.7% (p=0.046) for immunosuppression, 22.2%-5.4% (p=0.022) for congestive heart failure, 14.0%–4.4% (p=0.029) for diabetes, and 33.3%–5.6% (p=0.016) for chronic kidney disease. There was no significant relationship between the presence of ischemic heart disease, COPD, asthma, or malignancy and mortality (p>0.005). Mortality did not occur in any of the 18 patients diagnosed with asthma (Table 4, 5).

DISCUSSION

This study was an evaluation of the effect of comorbidities on the clinical features and prognosis in COVID-19 cases. In our patient group, hypertension was the most common comorbidity, followed by diabetes. In addition to circulatory and endocrine comorbidities, it was determined that the course of the disease was more severe in patients with accompanying respiratory diseases (especially asthma and COPD). Among the patients with a comorbidity, the rate of severe pneumonia development, ICU hospitalization, and mortality was higher. The mortality rate was statistically significantly higher in the presence of hypertension, immunosuppression, congestive heart failure, diabetes,

Table 5. Effects of comorbidity on mortality

	All patients n (%)	Survival group (n=241) n (%)	Mortality group (n=17) n (%)	p-value
Any comorbidity	140 (54.3)	128 (53.1)	12 (70.5)	0.162
Hypertension	85 (32.9)	75 (31.1)	10 (58.8)	0.019
Diabetes	57 (22.1)	49 (20.3)	8 (47.05)	0.029
Heart failure	18 (7)	14 (5.8)	4 (23.5)	0,022
Ischemic heart disease	16 (6.2)	15 (6.2)	1 (5.8)	1.000
Malignancy	12 (4.7)	11 (4.5)	1 (5.8)	0.568
Immunosuppression	13 (5)	10 (4.1)	3 (17.6)	0.046
COPD	11 (4.3)	10 (4.1)	1 (5.8)	0.536
Asthma	18 (7)	18 (7.4)	0 (0)	0.617
Chronic kidney disease	9 (3.5)	6 (2.4)	3 (17.6)	0.016
Other	35 (13.6)	31 (12.8)	4 (23.5)	0.249

COPD: Chronic obstructive pulmonary disease.

and chronic kidney disease.

In this study, 258 patients were hospitalized with the diagnosis of COVID-19, and 140 (54.3%) patients had a comorbidity. The mean age of the study patients was 54.2 years. Our age data were similar to those reported by Zhang et al.[10] (57 years), Wang et al.[8] (56 years) and Chen et al.[11] (55.5 years), but the mean was older than that reported by Huang et al.[2] (49 years). The mean age of our patients with comorbidities was 60.5 years, and 46.7 years among those without comorbidities. Zhang et al.[10] observed that patients with a severe case were much older and had a higher frequency of comorbidities. Guan et al.[12] also reported that patients with at least 1 comorbidity were older (mean age: 60.8 vs. 44.8 years).

The most common symptoms in our study were a cough (58.9%), fever (43%), and weakness (34.9%). Hypertension (32.9%) and diabetes (22.1%) were the most frequent comorbidities among the 140 (54.3%) patients with a comorbidity. The National Household Health Survey of Turkey of 2017 reported a frequency of hypertension of 16.2% and a diabetes rate in the adult population of 13.2%. The prevalence of diabetes or high blood sugar in the Turkish adult population was 9.1% and the prevalence increased with age.[13] These percentages are lower than the data in our research, which may be due to the advanced age of the patients in the present study group. Older individuals are more susceptible to COVID-19 and the disease is more likely to be severe in those over the age than 50. This may be due to more health problems and comorbidities in this population.

Zhang et al.[10] observed that 64.3% of the patients in their study had comorbidities. Hypertension (30%) and diabetes mellitus (2.1%) were the most common. Chen et al.[14] found that hypertension (15.2%) was the most common comorbidity, followed by diabetes mellitus (9.7%). In the study by Guan et al.,[12] it was noted that 399 of 1590 (25.1%) COVID-19 patients had at least 1 comorbidity. The most common was hypertension (16.9%), followed by

diabetes (8.2%). The presence of a comorbidity was more common in severe cases than in non-severe cases (32.8% vs. 10.3%). Two or more comorbidities were reported in 130 (8.2%) of the patients.

The meta-analysis published by Yang et al.[15] reported data from 7 studies that included a total of 1576 COVID-19 patients. They reported that 21.1% of the patients had hypertension, and the authors noted the presence of diabetes (9.7%), cardiovascular disease (8.4%), and respiratory system disease (1.5%). This study stated that underlying diseases may be a risk factor for severe illness.[15]

Chen et al.[11] found that 50 (51%) patients in their study group had a concomitant disease: chronic diseases, such as cardiovascular and cerebrovascular diseases (40%), endocrine system disease (13%), or digestive system disease (11%). SARS-CoV-2 infection was more likely in older men with a comorbidity and could result in severe illness and fatal respiratory distress.

Data reported by China of 1099 confirmed COVID-19 patients indicated a higher rate of comorbid diabetes in severe cases (16.2% vs. 5.7%). Similarly, hypertension was more common in severe COVID-19 cases (23.7% vs 13.4%). In this study, 58.2% of the patients admitted to the ICU had an accompanying disease. The most common comorbidity was hypertension (35.8%), followed by diabetes (26.9%), and chronic obstructive pulmonary disease (10.4%).[16]

In our study, the most common comorbidities in patients with severe illness were hypertension (40.4%), diabetes (26.3%), and heart failure (12.1%). The development of severe pneumonia was significantly higher in the presence of hypertension (47%), congestive heart failure (66.6%), or immunosuppression (69.2%) (p<0.05).

An analysis of articles selected to examine clinical determinants of severity or mortality of SARS-CoV-2 infection suggested that the association between hypertension and COVID-19 severity or mortality may be partially explained

by greater age and prevalence of cardiovascular disease. Both are recognized as well-known risk factors for mortality in critically ill patients. It has also been suggested that patients with heart damage have a worse COVID-19 prognosis, and that SARS-CoV-2 may cause specific target organ damage.[17,18]

Control of diabetes may be weakened after viral infection. In 2003, it was observed that adverse outcomes, such as death, ICU hospitalization, and mechanical ventilation, were recorded in diabetic SARS patients 3.1 times more frequently than in non-diabetic patients. Hyperglycemia was an independent determinant factor for mortality and morbidity in SARS patients.[19,20] It was reported in 2010 that the odds ratio for ICU admission was 4.29 among patients hospitalized for influenza A (H1N1) who also had diabetes. Diabetes tripled the risk of hospitalization after infection and quadrupled the risk of ICU admission once hospitalized.[21] In 2014, diabetes was determined to be a possible risk factor for severe disease development in cases of Middle East Respiratory Syndrome (MERS).[22]

Angiotensin-converting enzyme 2 (ACE2) is the functional receptor of SARS-CoV. In a study involving 385 patients infected with SARS-CoV, mortality was higher in patients with hyperglycemia (38.0% [71/187] vs. 9.8 [27/275]; p<0.0001). SARS has been thought to cause lesions in pancreatic islets.[23] The results of a large-scale, national sample study in China showed that mortality was significantly higher in patients with diabetes compared with non-diabetic patients (10% vs 2.5%; p<0.0012).[12]

In our study, 11 patients (4.3%) had COPD. The rate of physician-diagnosed COPD is 3.6% in Turkey.[13] This could mean that COPD is not a facilitating factor for COVID-19 infection. Zhang et al.[10] noted that only 2 (1.4%) patients had COPD. Although the authors found that COPD and smokers were rare among the patients studied, they observed that infection may result in more severe outcomes in patients with these characteristics.[10]

The incidence of asthma was 7% in our study group, and no mortality was seen in the asthma comorbidity group. Zhang et al.[10] and Guan et al.[12] reported no asthma patients, and only a few patients demonstrated drug hypersensitivity or urticaria. The reported rate of asthma in Turkey is 6.9%.[13] Asthma in adults may not be a risk factor for SARS-CoV-2 infection. Although respiratory viruses are one of the most common triggers of asthma exacerbations, viruses do not affect all individuals equally. In previous SARS outbreaks, patients with asthma, and particularly children, were less susceptible. Variations in the expression of viral receptors and T2 inflammation may be responsible.[10,24] A larger sample population is needed to further investigate the relationship between SARS CoV-2 infection and respiratory diseases like asthma and COPD.

Nikpouraghdam et al.[25] reported a mortality rate of 7.61% in patients without a comorbidity. Higher mortality rates were seen in patients with comorbid conditions (diabetes: 9.73%, cardiovascular disease: 10.81%, chronic

respiratory disease: 15%, hypertension: 13.55%, kidney disease: 16.66%, and cancer: 5.88%). The results of this study indicated that comorbidities had a statistically significant effect on mortality (odds ratio: 1.53, 95% confidence interval [CI]: 1.04–2.24).[25]

A national comorbidity study conducted in China revealed that patients with comorbidities had a higher mortality rate than those without comorbidities (8.8% vs. 1.3%). The hazard ratio was 1.79 (95% CI: 1.16–2.77) in patients with 1 comorbidity and 2.59 (95% CI: 1.61–4.17) in patients with 2 or more comorbidities. Among COVID-19 cases confirmed by laboratory results, patients with any comorbidity had poorer clinical outcomes. A greater number of comorbidities has also been associated with worse outcomes.[12]

In our study, the overall mortality rate was 6.6%. There was an accompanying comorbidity in 70.6% of the patients who did not survive. Mortality was 8.6% in patients with a comorbidity. While the mortality rate was 4.2% in patients without comorbidity, the mortality rate was found to be statistically significantly higher in the presence of hypertension, immunosuppression, congestive heart failure, diabetes, or chronic kidney disease. The mortality rate in patients with and without these comorbidities was 11.7%-4.0% (p=0.019) for hypertension, 23%–5.7% (p=0.046) for immunosuppression, 22.2%–5.4% (p=0.022) for congestive heart failure, 14.0%–4.4% (p=0.029) for diabetes, and 33.3%–5.6% (p=0.016) for chronic kidney disease. There was no significant relationship between the presence of ischemic heart disease, COPD, asthma, or malignancy and death (p>0.005). No mortality was seen in any of the 18 patients diagnosed with asthma.

Nikpouraghdam et al.[25] determined a mean age in 239 COVID-19 deaths of 65.38 years. The majority of the patients (66.94%) were over 60 years old. Patients over 80 had the highest mortality rate (19.27%). The mortality rate was 8.54% for men and 7.13% for women. Similarly, 70.6% of the patients who died in our study were 65 years of age and older. Of the patients who did not survive, 13 (76.5%) were male. The mortality rate was 9.7% for men and 3.2% for women.

COVID-19 has created a huge burden for healthcare facilities, and particularly with regard to patients with comorbidities. A meta-analysis revealed that ICU hospitalization was required for approximately 20% of COVID-19 patients with polymorbidity.[26] In our study, hospitalization in the ICU was ordered for 12.1% of the patients with a comorbidity and 6.8% for those without comorbidity.

A limiting factor of our study is patient self-reporting of comorbidities. Unreported comorbidities could conceal the true effect of those conditions on the clinical prognosis. However, in our study, records of all of the patients' previous diagnoses were accessible after hospitalization. Therefore, it is not thought that unreported comorbidities were significant in number.

In conclusion, our findings showed that the course of COVID-19 was more severe in patients with comorbid-

Kiral. Comorbidity and Prognosis of Hospitalized SARS-Cov-2 Patients

251

ities, and that ICU admission and death were more common in this group. Therefore, it is important to ascertain all comorbid diseases during the patient anamnesis. Such an approach will help to detect patients likely to have a more severe course early, and to adjust the treatment plan accordingly. Greater public awareness of the special need for members of the community with comorbidities to guard against infection will also be helpful. Individuals with comorbidities should also be included in the early stages of vaccination programs.

Ethics Committee Approval

This study approved by the Kartal Dr. Lutfi Kirdar Training and Research Hospital Clinical Research Ethics Committee (Date: 13.05.2020, Decision No: 2020/514/177/11).

Informed Consent

Retrospective study.

Peer-review

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Authorship Contributions

Concept: N.K., S.Ş.C., A.F.; Design: N.K., S.Ş.C., A.F.; Supervision: N.K., S.Ş.C., A.F.; Fundings: N.K., E.T.P., C.D., E.D., S.Ş.C.; Materials: N.K., E.T.P., C.D., E.D., S.Ş.C.; Data: N.K., E.T.P., C.D., E.D., S.Ş.C., A.F.; Analysis: N.K., A.F., E.D., S.Ş.C.; Literature search: N.K., E.D., S.Ş.C.; Writing: N.K., A.F., E.D., S.Ş.C.; Critical revision: N.K., A.F., E.D., S.Ş.C.

Conflict of Interest

None declared.

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Hastanede Yatarak Tedavi Gören SARS-Cov-2 ile Enfekte Hastalarda Komorbite Sıklığının Hastalığın Ağırlığı ve Prognozu Üzerine Etkisi

Amaç: COVID-19'a komorbiditelerin sık eşlik ettiği gösterilmiştir olup komorbiditelerin olumsuz sonuçlar için risk faktörü olabileceği düşünülmektedir. Çalışmamızın amacı, COVID-19 tanısı ile kliniğimize yatırılan olgularda eşlik eden hastalıkların prevalansını, komorbiditelerin hastalığın ağırlığı ve prognozu üzerine etkisini saptamaktır.

Gereç ve Yöntem: Retrospektif, epidemiyolojik, tek merkezli çalışmamıza, 15 Mart–15 Haziran 2020 tarihleri arasında SARS-CoV-2 ile enfekte olup hastaneye yatırılan, üst solunum yolundan boğaz ve burun sürüntü örnekleri kullanılarak RT-PCR (reverse transkripsiyon-polimeraz zincir reaksiyonu) testi ile ve/veya korona virüsü pnömonisi ile uyumlu akciğer görüntüleme özelliğine göre klinik olarak teşhis edilen olgular alındı. Hastalığın ağırlığı ve prognoz ile komorbiditelerin arasındaki ilişki istatistiksel olarak değerlendirildi.

Bulgular: COVID-19 tanısı alan toplam 258 hasta çalışmamıza dahil edildi. Toplam 140 (%54.3) hastada altta yatan komorbidite mevcuttu. Hastaların 134'ü (%51.9) erkek ve 124'ü (%48.1) kadın, yaş ortalamaları 54.2 (min: 18; maks: 92) yıldı. En yaygın saptanan komorbidite hipertansiyon (%32.9) ve diyabet (%22.1) idi. Ağır pnömoni gelişimi hipertansiyon varlığında (%.47.0 vs %34.1), kalp yetersizliği varlığında (%66.6 vs. %36.2) ve immünsupresyon varlığında (%69.2 vs. %37.0) anlamlı düzeyde yüksek bulundu (p<0.05). Komorbiditesi olan hastalarda YBÜ'ye yatış %12.1 iken, olmayanlarda %6.8 saptandı (p=0.147). Komorbiditesi olmayan hastalarda ölüm oranı %4.2 iken komorbiditesi olan hastalarda mortalite %8.6 idi (p=0.162). Ek hastalığı sırasıyla olanlarda ve olmayanlarda ölüm oranları, hipertansiyon (%11.7–%4.0, p=0.019), immunsupresyon (%23–5.7, p=0.046), kalp yetersizliği (%22.2–%5.4, p=0.022), diabet (%14.0–%4.4, p=0.029) ve kronik böbrek hastalığı (%33.3–%5.6, p=0.016) için anlamlı düzeyde yüksek bulundu.

Sonuç: Çalışmamızda komorbiditesi olan hastalarda hastalığın daha ağır seyrettiği, YBÜ'ye yatış ve ölüm gibi olumsuz sonuçların daha fazla görüldüğü saptanmıştır. Bu nedenle hastaların öyküleri alınırken ek hastalıklarının dikkatli sorgulanması önem taşımaktadır. Bu yaklaşım daha ağır seyredebilecek hastaları erken tespit etmemize, tedavi planını ve yatış kararını düzenlememize yardımcı olacaktır.

Anahtar Sözcükler: COVID-19; komorbiditeler, prognoz; SARS-CoV-2; sonuçlar.