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Analysis of Clinical, Laboratory and Radiological Characteristics of COVID-19 Patients Undergoing Hospital Treatment by Gender

Hastanede Tedavisi Sürdürülen COVİD-19 Hastalarının Klinik, Laboratuvar ve Radyolojik Özelliklerinin Cinsiyete Göre Analizi

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Abstract

Objective: The aim of this study is to analyze the comorbidity, lung involvement and intensive care requirement of 150 patients hospitalized due to coronavirus disease-2019 (COVID-19) by gender.

Methods: This cross-sectional study was conducted on April 15-30, 2021 in the COVID-19 clinic of Kafkas University Hospital. Patients aged 18 years or older with one or more of the symptoms of cough, shortness of breath, headache, joint pain or chest pain and positive real-time-PCR test were included in the study. Then, demographic, biochemical, clinical and radiological data were collected. Chi-square and Student's t-test were used for statistical analysis of the data. [p value < 0.05 was considered statistically significant (Confidence interval: 95%)].

Results: Of the 150 patients included in this study, 62 were women, and the comorbidity rate was higher than men (64.5% and 47.7%, respectively, p=0.042). On chest computed tomography, females were less affected by diffuse multifocal ground-glass opacities and sub pleural lesions or consolidation on the right and/or left (35.5% and 64.5%, respectively, p=0.016).The female/male ratio in intensive care admissions (ICA) was 6/10, and it was higher in males than females. However, this was not statistically significant (p=0.742). While the average of C-reactive protein level (normal range:0-0.5 mg/dL) was 5.0 mg/dL in men, it was 3.3 mg/dL in women and was higher in men (p=0.028).

Conclusion: Although the rate of comorbidity was higher in women, admission to the intensive care unit and lung involvement levels were not parallel with their comorbidities. Lung involvement, inflammatory response and need for intensive care were higher in men.

Knowing the disease characteristics, clinical features and consequences of COVID-19 will be important to understand the impacts of risk differences for genders.

Keywords: Covid-19, clinical features, radiological findings, laboratory findings, gender.

Öz

Amaç: Bu çalışmanın amacı, koronavirüs hastalığı-2019 (COVİD-19) nedeni ile hastaneye yatırılan 150 hastanın, komorbidite, akciğer tutulumu ve yoğun bakım gereksiniminin cinsiyete göre analiz edilmesidir.

Yöntem: Kesitsel tipte planlanan bu çalışma, 15-30 Nisan 2021 tarihlerinde Kars kafkas üniversitesi hastanesinde yatırılan hastalar ile yapıldı. Çalışmaya, öksürük, nefes darlığı, baş ağrısı, eklem ağrısı veya göğüs ağrısı gibi semptomlardan biri veya daha fazlası ile başvuran ve real-time-PCR testi pozitif saptanan 18 yaş ve üstü COVİD-19 hastaları dahil edildi. Daha sonra demografik, biyokimyasal, klinik ve radyolojik veriler toplandı. Verilerin istatiksel analizinde ki-kare ve student-t testi kullanıldı. [p değeri < 0,05 istatistiksel olarak anlamlı kabul edildi (Güven aralığı: %95)].

Bulgular: Bu çalışmaya 62'si kadın, 88'i erkek olmak üzere 150 hastanın komorbidite oranı sırasıyla 40/62 (%64.5) ve 42/88 (%47.7) olup kadınlarda erkeklere göre daha yüksekti (p =0.042). Akciğer bilgisayarlı tomografisinde, kadınlar sağda ve/veya solda yaygın multifokal buzlu cam opasiteleri, subplevral lezyonlar ve konsolidasyon açısından erkeklere göre daha az etkilenmişti (sırası ile;%35.5 ve %64,5 p=0.016). Yoğun bakıma alınanların kadın/erkek oranı 6/10 olup, erkeklerde kadınlara göre daha yüksekti ancak bu oran istatistiksel olarak anlamlı değildi (p=0,742). C-reaktif protein düzeyi(CRP) erkeklerde 5.0 mg/dL iken, kadınlarda 3.3 mg/dL olup erkeklerde daha yüksekti (CRP normal aralık:0-0.5 mg/dL p=0.028).

Sonuç: Kadınlarda, komorbidite oranı daha yüksek olsa da yoğun bakıma yatış ve akciğer tutulum düzeyleri erkeklere göre daha az idi.

Anahtar Kelimeler: Covid-19, Klinik özellikler, Radyolojik bulgular, Laboratuvar bulguları, Cinsiyet.

Introduction

COVID-19, a microbial disease caused by a novel coronavirus, severe respiratory difficulties have come into the limelight around the world. COVID-19 spread around the world and eventually affected people's health (1,2). In addition, during the pandemic, other diseases of the people remained in the background and caused many health problems (3). On the other hand, the presence of comorbidity in COVID-19 patients is effective on both admission to intensive care and mortality (4).

The appearance of COVID-19 varied from silent cases to severe patients. Fever, nonproductive cough, fatigue, myalgia, and radiological changes in lungs are the common clinical findings of COVID-19 patients. This virus may cause patch-like consolidated areas with the ground-glass appearance, multifocal involvement and bilateral diffuse infiltrates on lung tomography (5). Viral pneumonia with respiratory involvement and the worsening of background diseases are the main causes of death in severe patients (6,7).

COVID-19 causes damage due to uncontrolled adaptive immune response, which is also called 'cytokine storm' in the lung. The disease, which can cause shortness of breath and hypoxemia with an uncontrolled adaptive immune response. Since the number of COVID-19 rises worldwide, there is a need for investigating the laboratory, clinical, and radiological characteristics (5).

The aim of this study was to compare the clinical, radiological, and laboratory characteristics of 150 hospitalized patients with COVID-19 were analyzed to the gender. Potential risk factors and clinical findings associated with COVID-19 patients were investigated.

This is the first study to define the clinical and radiological features of COVID-19 patients in Northeast of Anatolia.

Methods

Study design:

This is a cross-sectional study that was conducted on patients who applied to the Kafkas University Hospital in Kars on April 15-30, 2021.

Patients aged 18 years and older who applied to our hospital with one or more of the symptoms determined for COVID-19 patients such as cough, dyspnea, headache, arthralgia or chest pain and were found to have a positive real-time-PCR test were included in this study. The patients who were discharged from the hospital with a positive real-time-PCR test in the last month and whose above-mentioned complaints continued were included in the study. And also, those who had the stated complaints with the positive real-time-PCR test despite having the COVID-19 vaccine and were included in the study. Those younger than 18 years of age and those with negative real-time-PCR test were excluded from the study.

The patients were diagnosed with COVID-19 by real-time-PCR obtained from nasopharyngeal swabs. Biochemical and clinical data were then collected, including gender, age, comorbidities (diabetes mellitus, hypertension, cardiovascular disease, chronic obstructive pulmonary disease, malignancy, and chronic kidney disease, and other medical conditions). In addition, patients' symptoms (cough, dyspnea, headache, arthralgia, chest pain), arterial oxygen saturation, respiratory rate per minute, blood pressure measurements, and maximum body temperature (°C) were recorded. Patients with missing data are listed below the tables.

All chest computed tomography (CT) examinations for COVID-19 pneumonia screening were performed without the use of contrast material. The lung window setting approach was used for the interpretation of the images. Chest CT images were analyzed for the presence and distribution of the following abnormalities: ground glass opacities, nodules, consolidations, pleural effusion, lymphadenopathy. The number of patients who underwent lung tomography was 143.

The patients were divided into two groups according to their lung attitudes:

First group: Those with no or mild lung involvement includes completely normal lung appearance or with a minimal focal ground glass area on the right and/or left (n:42).

Second group: Those with moderate or severe lung involvement includes diffuse multifocal ground glass area on the right and/or left,or diffuse frosted glass and consolidation on the right and/or left (n:101).

In addition, three of the patients had bilateral pleural effusion and minimal pericardial fluid, and one of these three patients had a mass on the right. Since one of these three patients had extensive metastases from hepatocellular carcinoma, these three patients were excluded from the lung involvement groups because they may have differential diagnosis stages other than COVID-19. However, these patients were included in the independent variable groups in other pairwise comparisons for statistical analysis.

In addition, 12 of the patients were vaccinated with one or two doses (Sinovac) and were not excluded from the study.Vaccination for Covid-19 in our country started 2 months before this study. Although there is not enough time for the formation of sufficient antibody levels for the vaccine response, we wanted to observe whether there are any clinical positive effects in those who have been vaccinated due to the limited data on the efficacy of vaccines worldwide. There was also no statistically significant difference between vaccination rates between women and men (Table 2, p=0.557). For all these reasons, we did not exclude 12 people who were vaccinated from the study.

Those who were given the following antibiotics (levofloxacin or Moxifloxacin or Azithromycin) were determined as the group that received antibiotics. Those who did not receive any antibiotics were named as the group that did not receive antibiotics.

Favipiravir was given to all patients as an antiviral and favipiravir treatment was extended to 5-10 days for those with oxygen saturation below 93, tachypnea, and fever exceeding 38°C. Moreover, patients who were given and not given steroids (Dexamethasone 6 mg or methylprednisolone 60-80 mg) were categorized similarly.

For all inpatients, if d-dimer was ≤1000µg/L, enoxaparin sodium 40-60 mg/0.4-0.6 ml was administered as a single daily dose to all inpatients. If the d-dimer was >1000µg/L, enoxaparin sodium 80-120 mg/0.4-0.6 ml was administered twice daily.

Ethics Committee Approval: The research was conducted according to the Declaration of Helsinki. The protocol was approved by Kafkas University Faculty of Medicine Clinical Research Ethics Committee (Approval number: 80576354-050-99/162-01.07.2021), Kars, Turkey.

Statistical Analysis:

SPSS Statistics of Windows v.21.0 (SPSS; IBM Corporation, New York, USA) was used for statistical evaluation. The normality of distribution was evaluated by the Kolmogorov-Smirnov test. For numerical variables were tested using Student's t-test. In descriptive statistics, continuous variables were considered as mean ± Standard deviation (SD) and categorical variables as frequency (n) and percentage (%). A chi-square test was used in the binary comparison of categorical variables (P <0.05 and 95% CI were considered statistically significant). Mann-Whitney U was used when binary comparison was needed, and variances were not assumed.

Results

The age range of the patients was determined as 23-94. The female-male ratio was 62/88. When Table 1 was followed, 62 of the 150 patients in the study were women. The mean age was higher in women than in men, and it was determined as 60 and 52 years, respectively (p=0.001).

While the CRP level was 5.0±4.9 mg/dL in men and 3.3±4.5 mg/dL in women, there was a statistically significant difference between them (Table1, p=0.028).

Table 1: Analysis Results of Some Laboratory Parameters of Covid 19 Patients by Gender with Student T and Mann Whitney U Test

Variables	Female			Male			P
	n	mean	SD	n	mean	SD	
Age (year)	62	60	13,6	88	52	14,7	**0,001**
Arterial O_2(%)	62	86,8	6,6	88	87,3	7,1	0,688
CRP(mg/dL)(0-0.5)ʸ	62	3,3	4,5	88	5,0	5,1	**0,028**
LDH(U/L)(0-248)ʸ	62	319	117	88	329	120	0,633
D-Dimerˣ(µg/L)(0-500)ʸ	28	749	890	31	813	1722	0,860
CK ˣ (U/L)(0-145)ʸ	57	215	296	79	283	388	0,274
Prothrombin timeˣ (second)(9.7-14.7)ʸ	57	12,7	1,6	83	13,3	2,0	0,065
Albuminˣ(g/dL)(3.5-5.2)ʸ	9	3,5	0,8	18	3,3	0,6	0,458
Hemoglobin(g/dL)(10.8-15.1)ʸ	62	13,6	1,4	88	15,1	1,6	**<0,001**
Leukocytes (10^9/L)(3.7-10.4)ʸ	62	4964	2335	88	5481	2328	0,183
Lymphocyte (10^9/L)(0.9-3.7)ʸ	62	1272	464	88	1204	470	0,385
Platelet ˣ (10^9/L)(149-371)ʸ	62	220.000	79.000	87	214000	93000	0,656
Ürea ˣ (mg/dL)(17-43)ʸ	59	30	12	88	32	11	0,380
	n	**mean rank ***		**n**	**mean rank ***		
ALTˣ (U/L)(0-35)ʸ	61	67		87	79		0,080
Body temperature(°C)	62	65.7		88	82,3		**0,021**
Ferritin ˣ (ng/mL)(11-307)ʸ	61	56,5		87	87,0		**<0,001**

SD: Standard Deviation, CRP:C-reactive protein, ʸ:Normal range,ˣ: Missing data, LDH: Lactic Acid Dehydrogenase, CK: Creatine kinase, ALT: Alanine Aminotransferase, ***:**Mann Whitney -u "mean rank" values of the tested variables

When body temperature was measured, there was a difference between mean values according to gender (Table1, p=0.021). In addition, a statistically significant difference is observed between hemoglobin and ferritin levels by gender (for both parameters, Table1, p<0.001).

When Table 2 was followed, the rate of additional disease was higher in women than in men (40/62 and 42/88, respectively, p=0.042).When lung involvement was analyzed, 35.5% of the patients with moderate or severe lung involvement on chest CT were female and 64.5% were male (p=0.016). In other words, moderate or severe lung involvement was more common in males than females. Therefore, the rate of using favipiravir for more than 5 days was also higher in males (p=0.033).

Table 2: Categorical variables by gender Chi-Square Test Result

Variables		Female n(%)	Male n(%)	Total n(%)	P
Age (year)	<60	36(37.9)	59(62.1)	150(100)	0.261
	≥60	26(47.3)	29(52.7)		
BMI(Kg/m^2) [a]	<30	27(35.1)	50(64.9)	125(100)	0,060
	≥30	25(52.1)	23(47.9)		
Covid-19 Vaccinated[x]	No	58(42.0)	80(58.0)	150(100)	0.557
	Yes	4(33.3)	8(66.7)		
Comorbidity[y]	No	22(35.5)	46(64.5)	150(100)	**0.042**
	Yes	40(48.8)	42(51.2)		
	(Comorbidity rate)	40/62(64.5%)	42/88(47.7%)		
Oxygen support[(up to 2-15ml/min),in the covid 19 clinic and without intubation]	No	33(41.8)	46(58.2)	150(100)	0.908
	Yes	29(40.8)	42(59.2)		
Intensive care support (with or without intubation)	No	56(41.8)	78(58.2)	150(100)	0.742
	Yes	6(37.5)	10(62.5)		
Second hospitalization after discharge [z]	No	54(40.3)	80(59.7)	150(100)	0.456
	Yes	8(50.0)	8(50.0)		
Lung involvement in chest computurized tomography *	None or Mild	23(57.5)	17(42.5)	147(100)	**0.016**
	moderate or common	38(35.5)	69(64.5)		
Antibiotic use **	No	46(42.2)	63(57.8)	150(100)	0.725
	Yes	16(39.0)	25(61.0)		
Number of days favipravir was used	≤5	37(50.0)	37(50.0)	150(100)	**0.033**
	>5	25(32.9)	51(67.1)		
Steroid use ***	No	27(40.9)	39(59.1)	150(100)	0.925
	Yes	35(41.7)	49(58.3)		
Hospitalized (Number of days)	1-3	39(43.8)	50(56.2)	150(100)	0.506
	4-6	16(42.1)	22(57.9)		
	≥7	7(30.4)	16(69.6)		

BMI: Body Mass Index, [a:] Missing data **[x]**:One or two doses of Sinovac vaccine, **[y]:** One or more of any systemic disease (Diabetes Mellitus, Chronic lung diseases, Cardiac diseases, Hypertension, Thyroid diseases, Malignant or Connective tissue diseases etc..),If there is no involvement in the lungs or minimal focal involvement: the none or mild group. Diffuse multifocal involvement or consolidated areas in unilateral or both lungs: moderate or common involvement. ****:** use of any of the quinolones or azithromycin. *****:**Any steroid, preferably Dexamethasone.

When admissions in the intensive care unit were examined, regardless of gender, the rate of hospitalization was 2.9% in patients without comorbidities, and 17.1% in patients with comorbid diseases, and a statistically significant difference was found (p=0.005, Table). 3). The female/male ratio in intensive care admissions (ICA) was 6/10, and it was higher in males than females. However, this was not statistically significant. (p=0.742).

Table 3:Chi-square Test Results of Factors that may Affect Hospitalization in the Intensive Care Unit, Regardless of Gender, in Covid-19 Patients.

Independent variables		Dependent variable: Admission to the Intensive Care Unit(ICU)		Total	P
		No	Yes		
		n (%)	n (%)	n(%)	
Comorbidity [x]	No	66(97.1)	2(2.9)	68(100)	**0.005**
	Yes	68(82.9)	14(17.1)	82(100)	
Gender	Female	56(90.3)	6(9.7)	62(100)	0.742
	Male	78(88.6)	10(11.4)	88(100)	
COVID-19 Vaccinated[y]	No	124(89.9)	14(10.1)	138(100)	0.483
	Yes	10(83.3)	2(16.7)	12(100)	
BMI(Kg/m^2) [a]	<30	67(87.0)	10(13.0)	77(100)	0.937
	≥30	42(87.5)	6(12.5)	48(100)	
Lung involvement in chest computurized tomography [z,a]	None or Mild	39(92.9)	3(7.1)	42(100)	0.601
	Moderate or common	91(90.1)	10(9.9)	101(100)	

[x]: One or more of any systemic disease (Diabetes Mellitus, Chronic lung diseases, Cardiac diseases, Hypertension, Thyroid diseases, Malignant or Connective tissue diseases etc..),[y]: One or two doses of Sinovac vaccine,[a:] Missing data,BMI: Body Mass Index,[z]: If there is no involvement in the lungs or minimal focal involvement: the none or mild group. Diffuse multifocal involvement or consolidated areas in unilateral or both lungs: moderate or common involvement.

Similarly, regardless of gender, those with moderate or severe lung involvement require oxygen support compared to those without or mild involvement, and favipiravir treatment seems to be continued for more than 5 days, and the probability of steroid use increases (respectively p=0.001, p=0.001, p< 0.001, Table 4).

Table 4: Binary Comparison of Lung Involvement Level with some Bio demographic and Treatment Characteristics.

Variables		Lung involvement in chest computerized tomography [x]			
		None or Mild	Moderate or common	**Total**	**P**
		n(%)	**n(%)**	**n(%)**	
BMI(Kg/m^2)	<30	22(30.6)	50(69.4)	72(100)	0.394
	≥30	11(23.4)	36(76.6)	47(100)	
Age (year)	<60	26(28.0)	67(72.0)	93(100)	0.613
	≥60	16(32.0)	34(68.0)	50(100)	
COVID-19 Vaccinated[y]	No	39(29.8)	92(70.2)	131(100)	0.728
	Yes	3(25.0)	9(75.0)	12(100)	
Comorbidity[z]	No	18(27.3)	48(72.7)	66(100)	0.610
	Yes	24(31.2)	53(68.8)	77(100)	
Oxygen support[(up to 2-15ml/min),in the covid 19 clinic and without intubation]	No	32(41.6)	45(58.4)	77 (100)	**0.001**
	Yes	10(15.2)	56(84.8)	66 (100)	
Number of days favipiravir was used	≤5	30(41.7)	42(58.3)	72(100)	**0.001**
	>5	12(16.9)	59(83.1)	71(100)	
Steroid use[a]	No	28(44.4)	35(55.6)	63(100)	**<0.001**
	Yes	14(17.5)	66(82.5)	80(100)	

[x]: If there is no involvement in the lungs or minimal focal involvement: the none or mild group. Diffuse multifocal involvement or consolidated areas in unilateral or both lungs: moderate or common involvement,BMI: Body Mass Index,**[y]:**One or two doses Sinovac vaccine,**[z]:** One or more of any systemic disease (Diabetes Mellitus, Chronic lung diseases, Cardiac diseases, Hypertension, Thyroid diseases, Malignant or Connective tissue diseases etc..),[a]: Any steroid, preferably Dexamethasone.

In Table 5, the comorbidities of the patients by gender are presented. Due to the high diversity of comorbidities, statistical analysis was not performed for each comorbidity.

Table 5: Comorbidities of Hospitalized COVID-19 Patients

Comorbidities	**Female (n)**	**Male (n)**	
HT	9	3	12
DM	6	4	10
DM& HT	3	6	9
CHD	1	2	3
COPD	1	4	5
CHD		1	1
Bronchial asthma	1		1
Hypothyroidism	2	1	3
Hyperthyroidism	1		1
Gilbert syndrome		1	1
Factor V Leiden		1	1
Depression		2	2
Parkinson's disease		1	1
Fibromyalgia		2	2
Colon cancer		1	1
Pharyngeal cancer		1	1
Hepatocellular carcinoma		1	1
Comorbidity:Three or more diseases: [HT/ DM/ /CHF/ CHD/ COPD/ CKD/ AF/ Asthma / Hypothyroidism / Inactive Hepatitis B Virus (normal Alanine aminotransferase, serum HBV DNA negative, HBeAg negative)/Depresyon/ Epilepsi**]**	16	11	27
Total	**40**	**42**	**82**

HT: Hypertension, DM: Diabetes Mellitus (Type 2), CHF: Congestive Heart Failure, CHD: Coronary Heart Disease, COPD: chronic obstructive pulmonary disease, CKD: Chronic kidney disease, AF: Atrial fibrillation.

Discussion

In this study, the results of inpatient COVID-19 cases confirmed by PCR testing were analyzed. The most frequent symptoms were dyspnea, cough, weakness, and myalgia. 55% of the patients presented one or more comorbidities (82/150), common comorbidities were diabetes mellitus, hypertension, and chronic obstructive pulmonary disease(COPD). There was no statistically significant difference between men and women when under 60 years of age and over were categorized (p=0.261, Table 2), and mean age was slightly higher in women (p=0.001, Table1). In the study, no difference was found when the lung involvement of those over 60 years of age and those who were not, regardless of gender, were analyzed (Table 4).

However, this finding isn't coherent with earlier studies, which have shown that older age is an essential prognosticator of serious complications or death in COVID-19 (8-12).Since the elderly population mostly has a fragile immune system, proinflammatory responses may be prolonged and the risk of serious outcomes may be increased (13).

Among the 150 patients in this research, we observed that COVID-19 was more frequently diagnosed in men than women, consistent with previously COVID-19 cases (14,15).In this study, the comorbidity rate was 40/62 (64.5%) in female patients, while it was 42/(88) (47.7%) in males which was lower. Despite this, among those who were treated in the intensive care unit, the female/male ratio was 6/10, slightly lower than that of males. However, this result was not statistically significant (Table 2, p=0.742). Chest CT, it was detected that the presence of diffuse multifocal ground-glass opacities and sub pleural lesions or consolidation on the right and/or left in the form of consolidation was female/male 38/69(107 patients) and it was less common in females than males (p=0.016). In other words, the level of advanced lung involvement was 38/61 (62.2%) in women, while it was 69/86 (80.2%) in men, which was higher than in women (Table 2, p=0.016). In short, although the rate of comorbidity was higher in women, admission to the intensive care unit and lung involvement levels were not parallel with comorbidity.

In the study, although there was more comorbidity in women, the rate of hospitalization in the ICU was lower and moderate or common involvement in the lungs was found less than men. When evaluating this situation, the relatively low number of cases should be taken into account. In a previous study, it was stated that the X chromosome has a role in reducing susceptibility to viral and bacterial infections in women. The observation of susceptibility to infections in males from birth to adolescence suggests that sex chromosomes, not sex hormones, play an important role in sexual dimorphism in innate immunity. Differences between genders have been defined in the expression of pattern recognition receptors of the innate immune response and in the functional responses of antigen presenting cells. Moreover, estrogen and testosterone have been noted to modulate the differentiation, maturation, lifespan, and functions of immune cells, including macrophages, natural killer cells, and dendritic cells (16).

When acute phase reactants were evaluated, CRP and ferritin levels were higher in males and were statistically significant (Table 1).However, the contribution of higher ferritin levels in men and slightly higher hemoglobin averages in men cannot be denied. D-Dimer levels were higher in males, but this was not significant. The missing data of the d-dimer can be considered as the reason for this (Table 1).

While the rate of admission to the ICU was 17.1% in all patients with comorbidities, the rate of admission to the ICU was lower and 2.9% in those without comorbidities. (Table 3, p=0.005).

There was no involvement on chest CT in a 68-year-old female patient who was PCR positive. This patient, who was brought to the emergency room with rapid transitory atrial fibrillation and hypotension, was taken to the cardiology intensive care unit and was discharged after completing his treatment in the COVID-19 clinic after his clinical condition stabilized.

Hypoxemia is a risk factor for higher hospital mortality in COVID-19 patients (17).In this study, the rate of oxygen delivery to those with minimal focal lung involvement was 15.2%, while oxygen support was provided to approximately 85% of those with diffuse multifocal involvement or consolidation in the lungs (p=0.001, Table 4).

Three patients died during their hospital stay. The ages and comorbidities of the patients who died were as follows:91-years old female with hypertension,71-years old male with heart failure, and 48-years old male with liver metastasis due to colon malignancy.

When the complete blood count is evaluated; There was no difference between men and women in leukocyte, lymphocyte, and platelet counts (p>0.05, Table 1). Laboratory findings in COVID-19 have been different however most of the studies report leukopenia and lymphopenia. In a study, laboratory parameters of patients diagnosed with COVID-19 were studied, 63% had lymphopenia, 25% had leukopenia (18,19).

Elder age, comorbidities, lactate dehydrogenase (LDH), high levels of d-dimer, leukocytosis, and low thrombocyte counts were reported as risk factors related to death in hospitals of severe COVID-19 patients (20-22). In the presented study, the presence of diabetes mellitus, hypertension, cardiac disease, and comorbidities including COPD were at similar rates to previous studies (23,24).

The cause of leukopenia and lymphopenia in COVID-19 is not well understood however can be related to lymphocyte sequestration, apoptosis, and suppression of bone marrow. However other respiratory tract viruses can have the same impact on the immune system (25).

Steroid therapy was also used for severe complications in nearly 82.5 % of patients (p=0.001,Table 4).

Severe COVID-19 can lead to lung damage and systemic inflammatory response. It has been suggested that the anti-inflammatory effects of corticosteroids may prevent or reduce these harmful effects. The use of corticosteroids in ARDS (acute respiratory distress syndrome) patients has been evaluated in controlled studies. Meta-analysis of these results demonstrated that, compared with placebo, corticosteroid therapy reduced the risk of all-cause mortality.

The recommendations of the COVID-19 Treatment Guidelines Panel (Panel) regarding the use of corticosteroids in patients with COVID-19 are based on the results of these studies (26).The Panel, based on the RECOVERY trial results, those in need of oxygen therapy support in patients with COVID-19 who are on a mechanical ventilator suggested the use of dexamethasone 6 mg. Prednisone 40 mg, Methylprednisolone 32 mg, and Hydrocortisone 160 mg can be used when Dexamethasone is not available (27).

Although corticosteroid has side effects, the results of a randomized controlled trial showed that dexamethasone treatment resulted in low mortality in COVID-19 patients (26).

In our study, two types of infection treatments were used to heal patients with COVID-19. Antiviral (Favipiravir) and antibiotics (levofloxacin or Moxifloxacin or Azithromycin) were used in 100% (150/150), 27.3% (41/150) of patients, respectively. Antibiotic use in female/male was 16/25 (Table 2, p = 0.725). Favipiravir treatment was extended to 5-10 days regardless of gender for those with oxygen saturation below 93% and respiratory rate exceeding 30/minute (Table 4, p=0.001).

Conclusions

This study was limited due to a low number of patients which may restrict the statistical impact. These restrictions may cause statistical bias and therefore the significant difference identified in demographic and symptomatic characteristics and the laboratory findings between the genders. Missing data on several variables, for instance, information of chest CT images and biochemical parameters, may cause bias in the identification of risk factors for mortality in severe patients.

Analyzing the patient data of the early stages of the pandemic, when vaccination is still very limited, presenting the clinical results according to the comorbidities and gender of the patients, and being the first study in inpatient treatment in our region can be seen as the distinguishing aspects of the study.

As a result, although there was more comorbidity in women, the severity of lung involvement and the rate of admission to the intensive care unit were lower than men. The results of larger studies on this subject should be evaluated.

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