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Comorbidity Evaluation and Outcomes in COVID-19 Patients Followed in The Palliative Care Center; in Türkiye

ABSTRACT

Objectives: To understand the demographic and clinical characteristics of COVID-19 patients treated in palliative care centers, and the effects of comorbid diseases on oxygen and mechanical ventilation needs and mortality were examined.

Methods: We conducted a retrospective analysis with the data of the patients, whose diagnosis of COVID-19 was consistent with COVID-19 polymerase chain reaction (PCR), and thoracic tomography or chest X-ray findings, and whose isolation period had been completed in COVID-19 clinics and ICUs.

Results: Of the 116 patients treated at the palliative care center, 61 were female and 55 were male. The average age of the patients was 76.60±12.8 years. The mean hospital stay of the female patients was 16.78±10.14 days. The most common comorbid condition was hypertension observed in 67 (57.8%) patients. Morbid obesity (BMI: 35 and above) was observed in 4 patients, all of whom were observed to be female (P:0.007). During the follow-up of the patients, mortality was observed in 32 patients (27.6%). The need for mechanical ventilation14(%43,75) was significantly higher in the patient group with mortality (P:0,05).

Conclusion: Elderly care patients being treated in palliative care centers, and patients with chronic diseases who are being treated for diseases without curative treatment are in the high-risk group for severe COVID-19 infection.

Keywords: COVID-19, hospitality, palliative care

The coronavirus disease 2019 (COVID-19) infection, which emerged at the end of 2019 and became a pandemic by spreading all over the world in a short time, has a wide clinical spectrum, ranging from mild pneumonia to severe and life-threatening cases (1). In COVID-19 patients, mortality and risk of severe illness increase with advanced age, male gender, and the presence of more than one chronic disease (2). Although clinicians today give more importance to the acute treatment of COVID-19 in clinical services and intensive care units (ICUs), the treatment and management of terminal period palliative care patients, who are infected with COVID-19, are of great importance.

The definition of palliative care, according to the World Health Organization, is an approach that includes practices for the prevention and alleviation of suffering, pain and other problems for patients and families facing problems that arise due to a life-threatening disease with early diagnosis and impeccable assessment, and through the fulfillment of physical, psychosocial, and spiritual needs. For chronic patients without curative treatment and elderly care patients, palliative care is of vital importance in terms of increasing their quality of life and ensuring that they spend their remaining time in well-being (3). In elderly patients with co-morbid COVID-19 who need palliative care, shortness of breath and agitation are common, and the clinical picture of these patients may worsen dramatically (4). The risk of severe disease increases in COVID-19 patients with chronic diseases that suppress the immune system, such as malignant diseases (5). The treatment and follow-up of COVID-19 patients in palliative care units directly affect their quality of life. There are many studies on the epidemiological and clinical findings, follow-up, and treatment results of COVID-19 patients; however, there is not enough information about the data of patients in the palliative care unit and of advanced age and as far as we know, there is no data in the literature regarding this situation from Türkiye yet.

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In the current study, it was aimed to examine the demographic, clinical, and epidemiological characteristics of patients struggling with COVID-19 who were transferred to palliative care.

METHOD

The data of the patients, whose diagnosis of COVID-19 was consistent with COVID-19 polymerase chain reaction (PCR), and thoracic tomography or chest X-ray findings, and whose isolation period had been completed in COVID-19 service and ICUs, and who had been treated inpatient at the Ankara Bilkent Hospital, Palliative Care Center, were scanned retrospectively. For this study, ethics committee approval was received from the Ankara City Hospital Ethics Committee 1 with number E1-21-1489 and action was accorded with the Declaration of Helsinki throughout the study. All data were taken from the hospital information technology system, daily nurse and doctor observations, and dietitian notes. Demographic features of the patients such as age, gender, hypertension (HT), Alzheimer's Disease, dementia, Parkinson Disease, diabetes mellitus (DM), heart failure, chronic kidney disease (CKD), hyperlipidemia (HL), documented coronary artery diseases (CAD), stroke history, oxygen and mechanical ventilation requirement, nutrition pathway, pressure ulcer situation. In-hospital all-cause mortality rates and discharged position were recorded. Eastern Corporative Oncology Group Performance Status Scale (ECOG) was noted.

Statistical Analysis

Univariate analysis was performed for all of the data. Frequency amounts were given for the nominal and ordinal variables (n, %). For the interval-ratio variables, descriptive statistics were presented as the median, range, and interquartile range. The Mann-Whitney U and Pearson chi-square tests were used to test the inter-cohort differences in the interval ratio variables and binary/nominal variables. $p<0.05$ was accepted as statistically significant.

RESULTS

Of the 116 patients treated at the palliative care center, 61 were female and 55 were male. The average age of the patients was 76.60 (min-max 33-98) years. Cancer patients were younger than non-cancer patients significantly (p:0.005). It was observed that none of the patients had previously contacted the home care unit or palliative care centers. The mean hospital stay of the female patients was 16.78±10.14 days. The most common comorbid condition was hypertension observed in 67 (57.8%) patients. Morbid obesity (BMI: 35 and above) was observed in 4 patients, all of whom were observed to be female (p= 0.007). Moreover, 26 (42.6%) of the female patients and 14 (25.4%) of the male patients had diabetes mellitus (DM). The rate of DM was significantly higher in the female patients (p= 0.015). The demographic data and co-morbidity data of the patients are given in Table 1. Mortality was observed in 32(%27.58) patients during hospitalization. Mortality rate was found to be significantly higher in 32 (62.50%) non-cancer patients. (p:0.003) The need for mechanical ventilation 14(%43.75) was significantly higher in the patient group with mortality(p:0.05). Comparison of cancer and non-cancer patient's demographical features were given Table 2. Of the patients, 83(%71.6) were transferred to the palliative care center after being followed up in ICUs due to poor general condition.33 (%8.45) patients were transferred from COVID-19 inpatient clinics. Among the patients followed up in the palliative care center, the rate of discharge to home was 67.2%; 3(%2.6) patients required intensive care, and the patients sent to the ICU were not requested to return to us and 3(%2.6) patient discharge to a nursing home.

Table 1. Demografical variable of COVID-19 patients at the palliative care center

	N	%
Gender		
Female	61	52.6
Male	55	47.4
Length of stay. median (min-maks). ± st	2-66	16.78±10.14
PPS.median (min-maks)	20-60	40
Tubes	51	44
TPN	17	14.7
Oxgen requirement	56	48.3
Mecanical ventialtion requirement	35	30.2
Alzheimer	44	37.9
Diabetus mellitus	40	34.5
Hypertension	67	57.8
Coronary artery disease	29	25
Cronical obstructive lung disease	24	20.7
Heart failure	26	22.4
Cronical liver disease	1	0.9
Cronical renal disease	20	17.2
Serebrovascular disease	42	36.2
Canser	23	19.8
Hypoxıc brain	4	3.4
Schizoprenia	3	2.6
Obesity	4	3.4
Pressure ulcer	61	52.6
Which clinic consultation?		
Clinic	33	28.4
ICU	83	71.6
Discharge situation		
Discharge	78	67.2
Exitus	32	27.6
Nursing home	3	2.6
Transfer	3	2.6

PPS: Palliative performance skor. Tubes: Nasogastrig/ perkütan gastrostomy/ percutan jejunostomy. TPN: Total parenteral Nutrition. ICU: Intensive care unit

Table 2. comparison of canser and non-cancer patient's demographical features

		Cancer patient		Non-cancer patient		Total	p
		N	%	N	%	N	
Age. median (min-maks)		65 (33-88)		79 (38-97)		76 .60 (33-98)	**0.005**
Oxgen requirement		18	32.14	38	67.86	56	**0.001**
Mecanical ventialtion requirement		3	8.57	32	91.43	35	**0.046**
Exitus		12	37.50	20	62.50	32	**0.003**
Discharge		11	14.10	67	85.90	78	**0.027**
Pressure ulcer		4	6.56	57	93.44	61	**p<0.000**
Which clinic consultation?	Clinic	10	30.30	23	69.70	33	0.074
	ICU	13	15.66	70	84.34	83	
Oral nutrition		7	14.58	41	85.42	48	0.234
Tubes		4	7.84	47	92.16	51	**0.004**

Tubes: Nasogastrif/ perkütan gastrostomy/ percutan jejunostomy. TPN: Total parenteral Nutrition; ICU: Intensive care unit.

DISCUSSION

Herein, the demographic, epidemiological and clinical data of 116 COVID-19 patients treated in a palliative care center were analyzed. This study has shown us that patients who did not previously need palliative care have increased care needs after COVID-19. As far as we know this is the first study from Türkiye in literature.

The average age was 76 years, and the most common co-morbidity was determined as hypertension. This was compatible with a similar study in a palliative care center with the diagnosis of COVID-19. In this study involving elderly patients, the mortality rate was. These findings are similar to our study Although the COVID-19 virus, which is the cause of the COVID-19 pandemic, poses a risk for all age groups, the risk of severe disease is higher in patients over 60 years of age and in those with chronic diseases, such as DM, chronic obstructive pulmonary disease (COPD), and coronary artery disease (6). In the current study, the oxygen requirement of the female patients was significantly higher than that of the male patients. The reason for this was thought to be the higher rate of having comorbid diseases that increase the risk of severe disease in female patients, such as DM, COPD, congestive heart failure (CHF), Alzheimer's disease, and obesity.

Although a high body mass index (BMI) was not seen as a risk factor for severe COVID-19 infection in the first period of the COVID-19 pandemic, the data obtained in the following periods revealed that it is in fact a risk factor for severe disease (7, 8).In patients with a high BMI, aeration is reduced in the basal parts of the lung, due to the fact that abnormal cytokine, interferon, and adipokine secretion, which cause low-grade chronic inflammation due to obesity, suppresses the immune system, which makes it difficult to control lung diseases (9). In one study, it was observed that 68.6% of obese patients infected with COVID-19 developed oxygen demand, while another study revealed that the hospitalization period of obese patients was longer than that of other patients, and the risk of death was 5 times higher (10). The presence of obesity in the female patients was significantly higher than in the male patients and, in line with the literature, it was considered that obesity could have been one of the reasons for the high oxygen demand in the female patients.

In diabetic patients, due to impaired phagocytic cell functions, the tendency toward infection generally increases. The level of the ACE-2 receptor, which is thought to play a key role in the entry of the SARS-CoV-2 virus into cells, increases in diabetic patients, leading to an increase in virulence and viral load (11). In a study that examined 5700 COVID-19 patients, it was reported that 34% of them were diabetic (12). Moreover, the increased interleukin 6 (IL-6) level and impaired T-cell function in diabetic patients negatively affect the immune response against the virus (13). Studies have indicated that the need for intensive care due to COVID-19 infection in diabetic patients is over 14%, and the mortality is 8%. It has been reported that these rates are significantly higher than patients without comorbid disease (14,15). In the current study, the presence of DM was significantly higher in female patients than in male patients. Similar to the current study, it was considered that DM might have been one of the reasons for the high oxygen requirement in the female patients.

Due to COVID-19-related lung infection, the requirement for mechanical ventilation may develop to a rate of 20%. The risk of severe COVID-19 infection is 5 times higher in COPD patients than in other patients (16,17). Increased mucus secretion, the use of inhaled steroids, weakened immunity due to chronic inflammation, and disorders in the lung structure in COPD patients may lead to severe symptoms related to COVID-19 infection (18). In one study, it was reported that more than half of the patients who needed intensive care due to COVID-19 infection had COPD and that the mortality rate in these patients was higher when compared to other patients (19). It was determined herein that mortality was significantly higher in the group with a history of mechanical ventilation among the post-COVID-19 patients followed up in our palliative care center. This indicated that mortality in patients with high co-morbidity rates in palliative care after intensive care can be high, even if the patients are weaned off of mechanical ventilation. In fact, this situation alone increases the importance of palliative care post-COVID. Even though they are patients with a limited life expectancy, COVID-19 infection is also an important cause of mortality in palliative care. The presence of cardiovascular disease (CVD) is also a risk factor for severe COVID-19 infection. The incidence of COVID-19 infection in patients with CVD increased. In

one study, the frequency of CVD in patients infected with COVID-19 was reported as between 2.5% and 16% (20–22). Immune system suppression due to CVD may be the reason for the relationship between the risk of atherosclerosis, increased procoagulant activity CVDs, and severe COVID-19 caused by increased inflammatory cytokines due to ACE-2 receptors in myocardial cells and COVID-19 infection (23). Mortality increases significantly in COVID-19 patients with CVD. In another study, it was stated that 17% of patients who died due to COVID-19 infection had CVD (24). In the current study, the rate of COPD and CHF in the female patients was higher than in the male patients, which was thought to be, similar to the literature, another reason for the high oxygen demand in the female patients.

Elderly patients are at high risk both for serious COVID-19 infection and also for all cancer types. (22). Cancer patients become susceptible to COVID-19 infection due to the long treatment process and their weakened immune systems due to the effects of the current disease. In one study, COVID-19 patients with malignant disease were examined, and it was determined that more than half of them had lung cancer (25). Moreover, it was also reported that patients with hematological malignancies were in the high-risk group for severe COVID-19 infection due to their weakened immune systems (26). In a study examining 1099 patients, 0.9% of the patients had cancer, and 30% of the patients developed severe COVID-19 infection (27). The number of patients with a diagnosis of malignant disease was significantly higher in the female patient group, which may have been associated with increased oxygen demand in the female patients.

Mortality in COVID-19 patients in palliative care can be seen at rates of up to 80% (28). The importance of nutrition in COVID-19 patients is a known fact. In the current research, the rate of patients fed enterally was 44%, and a significant change was found in mortality during the hospitalization period with enteral nutrition. There were no studies in the literature related to mortality in the patients who were fed enterally, among the patients followed up in the palliative care center after COVID-19. Although nutrition is not considered an important symptom of pain in palliative care, in Türkiye, nutrition provides social relief for both the patients and their relatives.

In patients with neurological disease, hospitalization and mortality rates are higher when compared to other patients, while discharge rates are lower (22). The cause of the severe illness in these patients may be due to the central nervous system being invaded by the virus, although it is mostly as a result of systemic response to the virus (29). In elderly patients who need care, the increased inflammation due to the disease with the immune system and renin-angiotensin-aldosterone system, and pro-inflammatory tendency increases the risk of severe infection (22). In addition, diseases such as meningoencephalitis, Guillain-Barre syndrome, and acute hemorrhagic necrotizing encephalopathy have also been reported in patients with COVID-19 infection, and this situation may lead to poor clinical outcomes (30). According to the current study results, Alzheimer's disease was more common in female patients than in male patients, which was considered to be related to the poor clinical outcomes seen in female patients.

When we look at the literature, we see that non-cancer patients benefited very little from palliative care services during the COVID-19 pandemic(3^1). This data seems to contradict our study. The reason for this may be related to the fact that more intensive care patients were consulted for palliative care.

Limitations of the study: Since our palliative care center is supposed to serve non-COVID-19 patients as well, it was only possible to admit COVID-19 patients who had completed their isolation period. There is a need for prospective studies for patients followed up in palliative care centers at the time of COVID-19 diagnosis.

CONCLUSION

In COVID-19 patients who are elderly and who have chronic diseases, the risk of severe illness increases. The increased frequency of comorbid disease in elderly patients and the increased risk of severe disease over the age of 60 are the most important causes of increased morbidity and mortality due to COVID-19 infection. Like HIV infection, COVID-19 infection should also be a subheading in palliative care.

The current study was remarkable for examining the demographic and clinical characteristics of COVID-19 patients who are being treated in palliative care centers, and for emphasizing the need for closer follow-up in the treatment and care of these patients due to increased mortality and morbidity.

Ethics Committee Approval: This study was approved by the XXXXXX Hospital (No: E1-21-1489, Date: 26/05/2021).

Informed Consent: Written informed consent was obtained from the patients who agreed to take part in the study.

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