ORIGINAL RESEARCH

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The Effect of COVID-19 Fear Level on Hospital Admissions in Cancer Patients

Özlem Nuray SEVER[a]

[a]Department of Medical Oncology, Gaziantep University Faculty of Medicine, Gaziantep, TURKEY

ABSTRACT Objective: Coronavirus disease-2019 (COVID-19) causes fear and anxiety due to its high mortality rates and high spreading rate. The purpose of this study is to investigate the effect of the level of fear of COVID-19 disease on the frequency of hospital admissions of cancer patients. **Material and Methods:** Fear of Coronavirus-19 Scale questionnaire was used to evaluate the fear of COVID-19 in cancer patients who were followed up and treated at Gaziantep University Department of Medical Oncology during September 1-30. The changes made by the patients in the frequency of hospital admissions were questioned. **Results:** It was observed that 36 of 107 patients included in the study changed the frequency of hospital admissions. However, no statistical relationship was found between the COVID-19 fear level and the change in the frequency of hospital admissions. When the factors affecting the frequency of hospital admissions were evaluated, it was observed that there was less change in the frequency of admission to hospital in patients without symptoms, with a history of surgery, receiving parenteral therapy, and with advanced disease. **Conclusion:** During the COVID-19 pandemic, oral treatment and being a patient under follow-up, having surgery, being a patient without symptoms negatively affected hospital admissions. Future studies will determine how the survival of these patients will be affected by the COVID-19 pandemic.

Keywords: COVID-19; fear; cancer patient; frequency of hospital admission

The new type of coronavirus (2019-nCoV) infection, first seen in Wuhan, China, on December 31, 2019, spread rapidly to the world and was defined as a pandemic.[1,2] The first case was reported on March 11, 2020, in Turkey.[3] As the number of cases increased, various safety measures were implemented. With a decrease in patients and hospitalization rates at the beginning of June, relaxation was given in some measures. However, as of october, the number of cases started to increase again worldwide.

The coronavirus disease-2019 (COVID-19) disease has been a cause of fear and anxiety for many people because of high spreading and mortality rates.[4] In many countries, health services have been interrupted, and health services have halted except for emergencies. In this process, suggestions such as using masks, obeying social distancing rules, paying attention to hygiene, not leaving the house unless necessary were made, and communication tools like television and social media started to be used more frequently. Patients who were followed up with cancer diagnosis had additional risks due to both cancer and the treatment methods. The pooled analysis results show that mortality is high among patients with cancer and COVID-19.[5] Many guidelines have published recommendations on the follow-up and treatment of cancer patients during the COVID-19 pandemic process, and telemedicine services have gained importance. These recommendations included strategies to prevent patients from becoming infected.

Cytotoxic chemotherapy plays an important role in cancer treatment. The treatment aims to eliminate the disease and reduce the risk of recurrence in the early stages while extending the life span and im-

Correspondence: Özlem Nuray SEVER
Department of Medical Oncology, Gaziantep University Faculty of Medicine, Gaziantep, TURKEY
E-mail: ozlem.sever@hotmail.com

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proving the quality of life in advanced stages. Cancer patients need to visit the hospital for treatment and follow-up. Delaying treatment makes these goals difficult to achieve.[6] Studies and clinical routines currently focus on the treatment and prevention of COVID-19 to reduce mortality rates; mass vaccination studies have started in many countries, but it has not yet reached the desired level.

The unpredictability of the pandemic, the effects of the resulting restrictions, and the ensuing fear and anxiety may affect cancer patients. This study aimed to investigate whether the fear levels of patients with cancer diagnosis and treatment in the Gaziantep University Department of Medical Oncology, our center, affect the frequency of hospital admissions and the factors that influence this decision.

MATERIAL AND METHODS

PARTICIPANTS

Between 1-30 September 2020, 107 patients were diagnosed with cancer in our center. Patients whose follow-up and treatment were continuing or newly diagnosed patients were included if they gave consent to participate in the questionnaire study. Those who had a history of psychiatric illness and who left the questionnaire incomplete were excluded from the study. Patients whose treatment was delayed due to side effects such as hematological toxicities were not included in the study.

REGISTRATION AND SURVEY SCALES

The demographic, socioeconomic, and clinical data of the patients including age, gender, educational status, marital status, diagnosis of the disease, stage, presence of symptoms, European Collaborative Oncology Group (ECOG) performance status, history of previous surgery, type of treatment (oral or intravenous chemotherapy), and the presence of comorbidities were noted.

COVID-19 Fear Questionnaire [Fear of Coronavirus-19 Scale (FCV-19S)] was filled in face-to-face with patients who accepted to participate in the study.

FCV-19S comprises the following questions:

1. I am most afraid of coronavirus-19.

2. It makes me uncomfortable to think about coronavirus-19.

3. My hands become clammy when I think about coronavirus-19.

4. I am afraid of losing my life because of coronavirus-19.

5. When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.

6. I cannot sleep because I am worried about getting coronavirus-19.

7. My heart races or palpitates when I think about getting coronavirus-19.

The participants indicated their level of agreement with the statements using a five-item Likert-type scale. Answers included “strongly disagree,” “disagree,” “neither agree nor disagree,” “agree,” and “strongly agree.” The minimum score possible for each question is 1, and the maximum is 5. A total score is calculated by adding up each item score (ranging from 7 to 35). The higher the score, the greater is the fear of coronavirus-19.[7]

Next, the treatment status of patients and their tendency to come for treatment and control in this process were questioned.

The local Ethics Committee at the Gaziantep University Faculty of Medicine approved this study in compliance with the Helsinki Declaration (Decision number: 2020/244).

STATISTICAL ANALYSES

The central tendencies and distributions of the variables were determined using descriptive statistics. The normality assumption of the parametric tests was checked by applying the Kolmogorov-Smirnov test to the FCV-19S groups to compare the mean values. Two Independent Sample t-tests were performed to compare the groups when the assumption was met. In nonparametric tests, Pearson’s chi-square analysis was used to determine the differences between categorical variables. Pearson’s correlation coefficient was used for correlation analysis, depending on the assumption of normality. Multiple regression was performed to determine which of the gradually de-

pendent variables potentially affected the independent variables. Values of $p<0.05$ were considered statistically significant. All statistical analyzes were performed using R version 3.5.3 and Statistical Package for Social Sciences 22.0.

All procedures in the study followed the ethical standards of the institutional research committee and abided by the 1964 Helsinki Declaration and its later amendments. The study was approved by the local ethics committee and the Republic of Turkey Ministry of Health.

RESULTS

A total of 107 patients, 46 women and 61 men, with a mean age of 55.33±14.41 years, were included. In terms of diagnosis, 37 (34.6%) patients had breast cancer, 16 (15%) patients had colorectal cancer, 15 (14%) patients had lung cancer, 8 (7.5%) patients had non-colorectal gastrointestinal cancer, 5 (4.7%) patients had head and neck cancer, 5 (4.7%) patients had gynecological cancer, 3 (2.8%) patients had prostate cancer, and 18 (16.8%) patients had other cancers (Table 1).

TABLE 1: Types of cancer and number of patients.

Type of cancer	n (%)
Breast cancer	37 (34.6)
Colorectal cancer	16 (15)
Lung cancer	15 (14)
Non-colorectal GI cancers	8 (7.5)
Head and neck cancer	5 (4.7)
Gynecologic cancer	5 (4.7)
Prostate cancer	3 (2.8)
Other	18 (16.8)

(Non-colorectal GI cancers: Gastric cancer, pancreatic cancer, hepatobiliary cancers; Gynecologic cancer: Ovarian cancer and cervical cancer). GI: Gastrointestinal.

While the frequency of admission to the hospital was affected in 36 (33.6%) patients, in 71 (66.4%) patients, it was not affected. Inquiries were made about the treatment received and any changes in treatment done by the patients whose frequency of admission to the hospital changed. When patients receiving parenteral therapy were evaluated, 1 (0.9%) patient postponed his treatment for one month while 5 (4.7%) patients postponed their treatment for 1-3 months. When patients receiving oral therapy were evaluated, 3 (2.8%) patients continued their treatment but delayed their control for one month, and 12 (11.2%) patients reported that they continued their treatment but delayed the control for 1-3 months. When the follow-up patients were evaluated, 3 (2.8%) patients postponed their control for 1 month, and 12 (11.2%) patients reported that they postponed the control for 1-3 months (Table 2).

TABLE 2: Postponement according to the type of treatment.

	n (%)
Not affected	71 (66.4)
Affected	36 (33.6)
Parenteral treatment	
1 month postponement	1 (0.9)
1 to 3 months postponement	5 (4.7)
Oral treatment	
1 month postponement	3 (2.8)
1 to 3 months postponement	12 (11.2)
Follow-up	
1 month postponement	3 (2.8)
1 to 3 months postponement	12 (11.2)

In terms of factors affecting the frequency of hospital admissions, age (under 65 and over), gender, stage (1-3 and 4), ECOG Performance Status (ECOG PS), educational status, marital status, presence of other diseases, type of treatment (oral, parenteral, follow-up), whether the surgical procedure was performed, presence of symptoms, and the presence of COVID-19 in patient's relatives were evaluated (Table 3). There was no correlation between the fear levels of COVID-19, as assessed by the FCV-19S, and the frequency of hospital admissions (Table 3).

The stage, type of treatment, surgery, and symptoms were statistically significant parameters affecting the frequency of hospital admissions. The table below shows all these parameters and the changes patients made in the frequency of hospital admissions according to the treatments they received (Table 4).

TABLE 3: Frequency of hospital admissions.

	Affected	Not affected	Total	OR	CI (95%)	p value
Age				0.830	0.344-2.007	0.680
>65 years	11 (36.7%)	19 (63.3%)	30			
<65 years	25 (32.5%)	52 (67.5%)	77			
Gender				1.296	0.578-2.906	0.529
Male	17 (37%)	29 (63%)	46			
Female	19 (31.1%)	42 (68.9%)	61			
Stage				2.338	1.001-5.459	0.047
Stages 1-3	25 (41.7%)	35 (58.3%)	60			
Stage 4	11 (23.4%)	36 (76.6%)	47			
Surgery				4.537	1.579-13.035	0.003
Yes	31 (43.1%)	41 (56.9%)	72			
No	5 (14.3%)	30 (85.7%)	35			
Symptom				2.713	1.086-6.773	0.029
Yes	8 (20.5%)	31 (79.5%)	39			
No	28 (41.2%)	40 (58.8%)	68			
COVID-19				0.776	0.343-1.756	0.542
Yes	14 (30.4%)	32 (69.6%)	46			
No	22 (36.1%)	39 (63.9%)	61			
Education						
Illiterate	6 (31.6%)	13 (68.4%)	19	Ref. 1		0.117
Primary school	15 (34.9%)	28 (65.1%)	43	0.862	0.272-2.729	0.800
Middle school	4 (40%)	6 (60%)	10	0.692	0.141-3.404	0.651
High school	6 (25%)	18(75%)	24	1.385	0.363-5.276	0.633
University	5 (45.5%)	6 (54.5%)	11	0.554	0.120-2.561	0.449
ECOG PS						
0	16 (43.2%)	21 (56.8%)	37	Ref. 1		0.407
1	15 (29.4%)	36 (70.6%)	51	1.829	0.754-4.437	0.182
2	4 (23.5%)	13 (76.5%)	17	2.476	0.678-9.047	0.170
3	1 (50%)	1 (50%)	2	0.762	0.044-13.133	0.852
Treatment						
Parenteral	6 (10.9%)	49 (89.1%)	55	Ref.1		0.000
Oral	15 (48.4%)	16 (51.6%)	31	0.131	0.043-0.393	0.000
Follow-up	15 (71.4%)	6 (28.6%)	21	0.049	0.014-0.175	0.000
Marital status				0.642	0.232-1.771	0.389
Married	28 (31.8%)	60 (68.2%)	88			
Not married	8 (42.1%)	11 (57.9%)	19			
Comorbidity				1.179	0.527-2.641	0.688
Yes	23 (37.1%)	39 (62.9%)	62			
No	15 (33.3%)	30 (66.7%)	45			
FCV-19S				0.964	0.853-1.088	0.552

OR: Odds ratio; CI: Confidence interval; COVID-19: Coronavirus disease-2019; ECOG PS: European Collaborative Oncology Group Performance Status; FCV-19S: Fear of COVID-19 Scale.

When asked about how they decided to make changes in the frequency of referral to the hospital, 36 patients who did not make any changes stated that they complied with the doctor's recommendation, 23 patients made their own decision, and 10 patients made this decision as per suggestions of their

TABLE 4: Parameters affecting the hospital admission frequency according to treatment.

		Affected (Postponement)					
	Not affected	Parenteral		Oral		Follow-up	
		1 m	1-3 m	1 m	1-3 m	1 m	1-3 m
Symptom							
Yes	31 (79.5)	1 (2.6)	3 (7.7)	0	2 (5.1)	0	2 (5.1)
No	40 (58.8)	0	2 (2.9)	3 (4.4)	10 (14.7)	3 (4.4)	10 (14.7)
Surgery							
Yes	41 (56.9)	1 (1.4)	4 (5.6)	2 (2.8)	11 (15.3)	3 (4.2)	10 (13.9)
No	30 (85.7)	0	1 (2.9)	1 (2.9)	1 (2.9)	0	2 (5.7)
Treatment							
Parenteral	49 (89.1)	1 (1.8)	5 (9.1)	0	0	0	0
Oral	16 (51.6)	0	0	3 (9.7)	12 (38.7)	0	0
Follow-up	6 (28.6)	0	0	0	0	3 (14.3)	12 (57.1)
Stage							
1-3	35 (58.3)	0	1 (1.7)	2 (3.3)	8 (13.3)	3 (5.0)	11 (18.3)
4	36 (76.6)	1 (2.1)	4 (8.5)	1 (2.1)	4 (8.5)	0	1 (2.1)

TABLE 5: Factors responsible for the patient's decision on the frequency of hospital admissions.

	Doctor's advice	Own decision	Relatives advice	OR	p value
Affected	23 (37.7%)	12 (34.3%)	1 (9.1%)		
Not affected	38 (62.3%)	23 (65.7%)	10 (90.9%)		
Total	61 (57%)	35 (32.7%)	11 (10.3%)	0.176-0.191	0.180

OR: Odds ratio.

relatives. Regarding the patients who made changes, 25 patients stated that they complied with the doctor's recommendation, 12 patients said they made their own decisions. One patient stated that his relatives made this decision with the suggestion (Table 5).

DISCUSSION

This study investigated whether the level of fear created by the COVID-19 pandemic affects the frequency of hospital admissions of cancer patients. The FCV-19S was applied to the patients included in the study to evaluate the COVID-19 fear level. No statistical relationship was found in terms of the patients' fear level and the frequency of hospital admissions.

The FCV-19S scale was created by Ahorsu et al., after which it has been validated in many countries.[7] In Turkey this scale is applicable, as in the study by Satici et al.[8] Today, FCV-19S has been one of the most frequently used scales to evaluate the level of COVID-19 fear. It is known that the mortality of COVID-19 infection in cancer patients is ten times higher compared to the general population. Therefore, the pandemic can cause more anxiety and fear in cancer patients than in the general population.

The literature reports various studies investigating the anxiety and fear levels faced by cancer patients during the COVID-19 pandemic. Casanova et al. investigated the fear levels of cancer patients aged 14-21 years in Italy. They found that a significant proportion of the participants had a high degree of fear and were also worried that their cancer treatment would be interrupted.[9] In another study, Sigorski et al. evaluated the COVID-19 fear level in patients followed up for cancer in Poland and reported high fear and anxiety levels among the participants.[10] Guven et al. evaluated cancer patients' fear and anxiety levels to find that more than 80% of the participants had different levels of COVID-19 fear.[11] Similarly, the present study found

a high COVID-19 fear level among its participants.

While 71 of the 107 patients included in the present study did not change the hospital admission frequency, it was observed that 36 patients postponed their follow-up and treatment for 1 or 1-3 months during this period.

Unlike other countries, curfews have been imposed for people under 20 and over 65 during the pandemic in Turkey. While comparing the patients included in the study as 65 years old and younger, no statistically significant difference was found in terms of the frequency of hospital admissions. Also, it has been shown that gender, educational status, marital status, the presence of COVID-19 infection in their relatives, and other diseases did not affect the frequency of hospital admissions. When evaluated in terms of ECOG PS, it was observed that although it was not statistically significant, the frequency of admission to the hospital in patients with PS 2 and 3 was less affected.

When the factors affecting the frequency of hospital admissions of patients included in the study were evaluated, it was observed that patients without symptoms, having a history of surgery, received parenteral treatment, and had advanced disease, made less change in the frequency of follow-up and treatment. It is well-known that cancer is a life-threatening condition with a high risk of death. The situation can be explained by the fact that patients are more afraid of the consequences of cancer compared to COVID-19 infection. However, in the current study, no separate scale evaluating the patients' fear of cancer was used, which is one of the study's limitations.

During the pandemic, various measures were adopted to reduce the spread of the epidemic and prevent health service disruption. Organizations such as European Society for Medical Oncology and American Society of Clinical Oncology have recommended different diagnoses, treatment, and follow-up processes for cancer patients according to their condition.[12,13] Though continuous service was provided in our center, some control evaluations of patients who were followed up in remission and had no symptoms were postponed and followed up by telemedicine. On evaluating the patients who changed the frequency of hospital admissions in the study, it was observed that most of the participants made this decision with the doctor's recommendation.

The most important limitation of the study is that it was conducted with a limited number of patients and in a single center. Also, although a face-to-face survey is advantageous, patients who decided not to come to the hospital could not be evaluated. However, as mentioned before, the study was conducted between August and September 2020. As it is known, the first COVID-19 case in Turkey was detected on March 11, various restrictions were imposed, and some measures were relaxed as of June 1 since the number of cases started to decrease. Therefore, it is essential to note that the study was conducted when there was an increase in hospital admissions, as the restrictions were more limited at the time of the study.

CONCLUSION

As a result, during the COVID-19 pandemic, taking oral treatment and being a patient under follow-up, having surgery, being a patient without symptoms negatively affected hospital admissions. It would be necessary to investigate whether oral treatment recommendations made by many national and international hematology-oncology organizations for fewer hospital visits of patients had a negative effect on the continuity of treatment. These patients are at risk of delaying treatment and detecting relapses or progression late, although their choices are often shared with their physicians. This will be a matter of discussion in the future in terms of ethical and legal issues. Although the guidelines concern the general patient population, it seems imperative to evaluate each patient individually. Studies in which survival analysis will be conducted in the patient group whose hospital admissions are affected in the future will determine the importance of this issue. The most important lesson to be learned from this epidemic is that such situations may occur in the future.

For this reason, we think that strengthening the infrastructures of communication channels such as social media tools and telemedicine applications

should be the first task in centers that provide services to patients with chronic diseases to deliver accurate and prompt information about such extraordinary situations. For this purpose, announced the phone numbers of the patients at our own center where they can directly reach the doctor and added a section to our website where they can get in touch with the doctors online.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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