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Do Lifestyle Changes of Renal Transplant Recipients During the Pandemic Reduce the Risk of Coronavirus Disease 2019?

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ABSTRACT

Introduction. There is no published study regarding the effects of preventive measures on coronavirus disease 2019 (COVID-19) frequency in renal transplantation recipients. The aim of this study is to reveal the preventive measures taken by renal transplant recipients during the COVID-19 pandemic and whether these measures influence the prevalence of the disease.

Materials and Methods. After detecting the first COVID-19 case in Turkey, we briefed all of our renal transplant recipients on preventive measures regarding COVID-19. Two months afterward, a questionnaire was prepared regarding the preventive measures practiced by renal transplant recipients, and patients were asked whether they had any COVID-19 symptoms or had received a COVID-19 diagnosis.

Results. Among 132 patients, 68 were surveyed through telephone calls. During this time, 95.5% of patients were in isolation at home except for when seeing to their essential needs. Two (2.9%) patients were hospitalized due to increases in creatinine level and urinary tract infection. All patients have worn masks when going out and stated that they washed their hands more frequently. There was a decrease in the frequency of hospital controls in 79.4% of patients. Although 2 (2.9%) patients had complaints of dysuria and fever, they did not apply to the hospital because they thought hospitals carried risk during the pandemic. One patient had a cough with fever and was admitted to the hospital with suspicion of COVID-19 but tested negative.

Discussion. It was determined that renal transplant recipients in our study population meticulously complied with preventive measures and increased the use of masks and hand hygiene practices. As a result, none were infected with severe acute respiratory syndrome coronavirus 2.

IN DECEMBER 2019, cases of pneumonia with an unknown etiology were detected in Wuhan, China. The causative agent has been described as a new coronavirus called severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2), which is thought to be of zoonotic origin [1]. The number of virus-infected patients has increased rapidly, and the World Health Organization (WHO) declared an international public health emergency regarding the coronavirus outbreak at its meeting on January 30, 2020. As of June 15, 2020, the total number of

cases worldwide reached 8 million and the number of deaths was over 400,000.

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Coronaviruses have a wide spectrum of clinical presentation, ranging between the common cold to SARS. The newly identified SARS-CoV-2 presents different courses in different hosts. In light of the current data regarding coronavirus disease 2019 (COVID-19), severe disease in COVID-19 can occur in healthy individuals of any age. However, it is predominantly observed in adults with comorbidities like cardiovascular disease, diabetes mellitus, hypertension, chronic obstructive pulmonary disease, and malignancies [2]. Solid organ transplant recipients are also thought to have higher mortality and morbidity for COVID-19 due to T-cell suppression as a result of immunosuppressive agents [3]. There is currently limited experience with the treatment and monitoring of COVID-19 in kidney transplant recipients. However, looking at previous coronavirus infection experiences, transplant recipients who are exposed to the virus are thought to be more likely to become infected. On the other hand, there are a limited number of studies indicating that COVID-19 infection has shown a relatively mild clinical course in transplant patients [4,5]. Due to the chronic immunosuppression of solid organ recipients, which minimizes the cytokine storm triggered by SARS-CoV-2, the course of the disease is thought to be similar to the normal population in this patient group [4-7].

The COVID-19 pandemic is not the first time the transplant population has been challenged by emerging viruses, and it will not be the last. To best manage this challenge, it is essential to take advantage of past experiences and implement necessary preventive measures to protect transplant recipients, starting from the earliest stages of the pandemic. Adherence to preventive measures in COVID-19, as in all infectious diseases, is an important issue that should also be emphasized in immunosuppressed solid organ recipients. Unfortunately, no medication has been proven to be effective against COVID-19 through controlled studies, nor has any medication received approval of the Food and Drug Administration (FDA). Although cutting-edge treatments and cures exist for many diseases, the most effective weapon against the SARS-CoV-2 virus remains the prevention of its spread. Although compliance with the protective measures is of great importance for the entire population, it is particularly important for immunosuppressed individuals, where the risk of mortality and morbidity is assumed to be high.

The aim of this study is to reveal the protection measures taken by renal transplant recipients during the period of the COVID-19 pandemic and whether these measures influence the prevalence of the disease.

MATERIALS AND METHODS

This was a descriptive, questionnaire-based, single-center study. The study was approved by the Turkish Ministry of Health (Project number: 2020-04-30T15_13_09) and Ankara City Hospital Ethical Committee (No: E1-20-562). Renal transplant recipients who are followed at the Infectious Diseases and Clinical Microbiology outpatient clinic of Ankara City Hospital were included in the

study. Patients with graft loss and those younger than 18 years were excluded.

After detection of the first COVID-19 case in Turkey, we briefed all our renal transplant recipients on preventive measures regarding COVID-19. Two months after the first COVID-19 case was reported in Turkey, a questionnaire was prepared regarding the preventive measures and lifestyle changes practiced by renal transplant recipients. Additionally, patients were asked whether they had any COVID-19 symptoms or had received a COVID-19 diagnosis. Questions of the survey are given in Table 1. Characteristics of the patients such as transplant history, medications, and comorbid diseases are obtained through patients' follow-up charts and communication with the patients. All data were cross-checked from the hospital database.

Data Analysis

Results were analyzed with SAS JMP 11 (SAS Institute, Inc, Cary, NC, United States) statistical software package.

RESULTS

Among 132 patients, 68 were surveyed through telephone calls. The mean age of patients was 47 years, and 69% were male. The characteristics of the patients are given in Table 2. All patients were receiving mycophenolate mofetil, tacrolimus, and prednisolone for immunosuppression. During this time, 65 (95.5%) patients were in isolation at home except for when seeing to their essential needs. Two (2.9%) patients were hospitalized due to increases in creatinine level and urinary tract infection. Both of these patients were in isolation at home before hospitalization. Only 1 (1.5%) patient did not comply with isolation measures. During this period, 32 (47%) patients never went outside, while 27 (39.7%) patients went out of home only

Table 1. Questionnaire Regarding the Preventive Measures Practiced by Renal Transplant Recipients

Have you been in isolation at home since the beginning of the pandemic?
Have you ever left home during this time?
If you ever left home, what was the reason?
Do you use a mask when you leave home?
Did the number of times you leave home for grocery shopping reduce?
Do you stay away from public places?
Have you canceled your plans to get together with relatives and friends?
Do people who live with you leave the home?
Did you reduce contact with people who live with you?
Do you receive guests at home?
Did the frequency of your hospital controls change?
Are you washing your hands more frequently?
Did you have any complaints such as fever, cough, weakness or sore throat during this time?
If yes, what was it?
Did you have any contact with a person with symptoms of COVID-19?
Did you have a hospital admission with the suspicion of COVID-19?
Have you had the COVID-19 test? What was the result?

Abbreviation: COVID-19, coronavirus disease 2019.

Table 2. Characteristics of the Patients

	Recipients (N=68)
Age, years (mean)	48
Age (range)	18-66
Sex	
Male	42 (61.7%)
Female	26 (38.2%)
Time post-transplantation, median (range)	36 (4-96) months
Comorbidity	
Hypertension	31 (45.5%)
Diabetes mellitus	7 (10.2%)
Familial Mediterranean fever	3 (4.4%)
Coronary artery disease	2 (2.9%)
Chronic pulmonary disease	2 (2.9%)

for grocery shopping and 9 (13.2%) patients went out only for hospital control. Shopping for 32 patients was done by their relatives, and 27 (39.7%) patients who went shopping stated that they decreased the number of times they went for shopping compared to the prepandemic period. All patients wore masks when going out and stated that they washed their hands more frequently.

Sixty-seven (98.5%) patients kept away from public areas. All patients canceled their plans with their relatives and friends and did not accept guests. Family members of 42 (61.7%) patients had to leave the house, and 29 (42.6%) patients reduced contact with the people they shared the same house with and were paying attention to the isolation rules at home.

There was a decrease in the frequency of hospital controls in 54 (79.4%) patients. On the other hand, 14 (20.6%) patients continued their routine control visits. The patient group whose control frequency did not change included patients who had renal transplantation in the past year. Although 2 (2.9%) patients had complaints of dysuria and fever, they did not apply to the hospital because they thought hospitals carried extra risk during the pandemic. Eight (11.7%) patients had active complaints during the pandemic. Five (7.3%) patients had dysuria, 1 (1.5%) patient had only fever, 1 (1.5%) patient had chills, and 1 (1.5%) patient had a cough with fever. The patient with fever and cough was admitted to the hospital with suspicion of COVID-19 and tested negative. His symptoms completely resolved with outpatient antibiotic treatment.

DISCUSSION

In this study, we found that 95.5% of renal transplant recipients complied with isolation rules during the pandemic, and 52.9% of patients went out only for mandatory situations, such as shopping for essential needs or hospital control. Although the number of patients going out for shopping decreased, the majority of patients (79.4%) had a lower frequency of hospital control than before. All patients kept away from public areas, did not accept guests at home, and minimized contact with people. In addition to these measures, we found an increase in the use of masks and

hand washing frequency in all patients. As a result of all these preventive measures, we found that none of our patients were infected with COVID-19 at the end of the second month of the epidemic in Turkey.

The whole world is challenged by a virus that has no vaccine and no antiviral drug with proven efficacy in randomized controlled studies. In this instance, the most important parameter we can rely on in controlling the outbreak is classic public health measures. The main purpose of these measures is to separate people from each other and prevent the spread of the disease from person to person. The methods to be applied in this regard are isolation, quarantine, and social distancing. These classic public health measures have been successful for SARS. SARS was largely symptomatic, and infected people could be detected and isolated more easily. However, with COVID-19, the disease can be largely asymptomatic, and transmission from these asymptomatic individuals is also reported. For this reason, identifying and quarantining infected people alone will not be sufficient in controlling the outbreak [8,9].

In time, the number of studies regarding COVID-19 in transplant recipients increased and revealed that these patients have a poor prognosis [10–12]. Although transplant recipients constitute one of the high-risk groups for COVID-19 due to their immunosuppression, it can be predicted that they will become infected less due to their knowledge and experience with protection measures. In this regard, it must be kept in mind that all renal transplant recipients are informed in detail about infection prevention measures after the transplantation procedure. Prevention measures that many people in the society have learned for the first time with the COVID-19 pandemic, in fact, constitute the lifestyle of renal transplant recipients. In a single-center experience, Akdur et al [5] reported 1 kidney transplant patient infected with SARS-CoV-2 among 538 transplant patients. They reported an infection rate similar to the general population with no mortality. In a study from Wuhan, China, Ren et al [13] included 87 heart transplant recipients in a web-based survey study and concluded that patients using protection measures during the COVID-19 pandemic had a low rate of infection with SARS-CoV-2.

Mask use and hand hygiene practices are other means of virus protection. It is known that the virus is transmitted through the respiratory tract or by touching infected surfaces with the hands followed by the mouth, nose, or eyes. The Centers for Disease Control and Prevention recommends the use of masks to prevent COVID-19 transmission in the community. The use of masks seems to be an important protection measure, especially in epidemics where transmission from asymptomatic people is possible. In a study conducted in China, the protection rates of N95 masks, medical masks, and home masks were found to be 99.9%, 94.3%, and 90.97%, respectively [14]. Although there is confusion about the protection efficiency of home-made masks, mask use is considered an effective method of controlling the epidemic. Providing hand hygiene also ranks

first among the measures to prevent all infectious diseases. One of the most important suggestions given to society by the WHO during the epidemic is frequent and correct handwashing. In line with these recommendations, it is known that the rate of controlling the epidemic is high in countries where mask and disinfectant use is common [14,15]. In our study, it is observed that mask use and handwashing rates increased in all patients compared to the pre-pandemic period, and this increase, similar to the literature, is an effective method of preventing the disease.

CONCLUSION

Although renal transplant recipients are in the risk group defined for COVID-19, they are predominantly protected by classic preventive measures such as isolation, social distancing, hand hygiene, and mask use. It is important that renal transplant recipients pay extra attention to all these measures during the pandemic. In our study, it was determined that the renal transplant recipients in our study population meticulously complied with these preventive measures, increasing the use of masks and hand hygiene practices, and as a result, none were infected with SARS-CoV-2. Although not much is known about the disease, classic prevention methods seem to be effective in communities, even in high-risk groups.

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