The Effect of COVID-19 Phobia on the Time of Admission to the Hospital in Patients with Ureteral Stones

Mutlu Değer[1], Nebil Akdoğan[1], Mehmet Emin Demirkol[2], Sümeyye Seday[1], Sevinç Püren Yüce[3], Volkan İzol[1], İbrahim Atilla Arıdoğan[1]

[1]Çukurova University Faculty of Medicine, Department of Urology, Adana, Turkiye
[2]Çukurova University Faculty of Medicine, Department of Psychiatry, Adana, Turkiye
[3]Çukurova University Faculty of Medicine, Department of Biostatistics, Adana, Turkiye

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What's known on the subject? and What does the study add?

It was observed that there was a decrease in hospital admissions of patients due to COVID phobia during the COVID-19 pandemic process. In our study, it was shown that the increase in COVID-19 Phobia reduced hospital admissions in patients with ureteral stones, which is an emergency.

Abstract

Objective: To investigate the effect of coronavirus disease-2019 (COVID-19) phobia in patients with ureteral stones.

Materials and Methods: Between August 2020 and March 2021, patients over the age of 18 who were diagnosed with ureteral stones were included in this study. The COVID-19 Phobia scale (C19P-S) was used to measure the COVID-19 phobia levels of the patients. Demographic and patients' characteristics were recorded. The time between the onset of the patient's complaint and the time of admission to the hospital was recorded and grouped as group 1 ($\leq$7 days), group 2 (7-21 days), group 3 (>21 days).

Results: A total of 77 patients with a mean age of 45.8$\pm$14.8 years were eligible for analysis. Among these, 55 (71.4%) were male. According to the time between the onset of the patient's complaint and the time of admission to the hospital, there were 39 (50.6%) patients in group 1 ($\leq$7 days), 17 (22.1%) patients in group 2 (7-21 days) and 21 (27.3%) patients group 3 (>21 days). The median C19P-S scores in these groups were 32.0 (15.0-46.0), 37.0 (26.0-62.0) and 56.0 (37.0-80.0), respectively. There were significant differences in terms of C19P-S between groups of the time between the onset of the patient's complaint and the time of admission to the hospital (p$\leq$0.001).

Conclusion: COVID-19 phobia caused a delay in the hospital admission of patients with ureter stones. When patients have complaints, it is necessary to raise the awareness of society about applying to the hospital and to increase awareness of this issue.

Keywords: COVID-19, phobia, ureter stone, urology

Introduction

Coronavirus disease-2019 (COVID-19) began to spread around the world after it was first detected in Wuhan City, China in December 2019, and was named "pandemic" by the World Health Organization on March 11 (1,2). COVID-19, which affected the whole world in 2020, continues to increase its negative impact on 2021. The numbers of cases and deaths due to COVID-19 are still increasing, and the virus has not yet been fully controlled.

The pandemic still affects the large population in various aspects including psychological, social, political, health and economic and has changed routine lives worldwide. As with other epidemics, COVID-19 usually causes various psychological difficulties in humans such as fear, panic or phobia (3-5). People may experience phobic avoidant reactions like not admitting to hospitals to prevent being infected during the pandemics (5).

Ureteral stone causing renal colic is a very common condition in daily urology practice and has been seen in more than 2

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million patients who present to the US emergency services with signs and symptoms of ureterolithiasis every year (6). The ureteral stone disease can be a problem-free condition, or if it is accompanied by infection and/or kidney failure, it can be a life-threatening situation. Treatments ranging from the follow-up of ureter stones to surgery are decided according to the size, location of the stone, pain infection, hydronephrosis (HN), and kidney function.

Acute pain due to obstruction in ureteral stones is a reason for admission to the hospital. Despite the acute pain during the pandemic process, we think that admissions to the hospital have decreased and treatment has been delayed due to COVID-19 phobia. Therefore, we investigated COVID-19 phobia and its results in patients with ureteral stones.

Materials and Methods

A total of 114 patients over the age of 18 who were diagnosed with ureteral stones signed an informed consent from August 2020 to March 2021. Patients who underwent only medical treatment (n=19), patients with kidney stones who underwent retrograde intrarenal surgery and/or percutaneous nephrolithotomy (n=11), patients who were diagnosed with psychiatric disease and/or who were using psychiatric drugs (n=7) were excluded from the study.

All patients admitted to the emergency or urology outpatient clinic with flank pain were examined, and all patients with clinically suspected ureteral stones were undergone non-contrast computed tomography (CT), urinalysis, complete blood count and biochemical tests. An operation [ureterorenoscopy (URS) and/or Double J stent (DJ)] was recommended according to the degree of pain, grade of HN, kidney function, location and size of the stone. Before the operation, urine culture was obtained in the patients. In patients with urinary tract infections, antibiotics were administered before the operation, and the operation was performed after the infection was taken under control. All patients signed a written consent form before the operation. Demographic and patients' characteristics were recorded. Pain severity was evaluated using the visual analog scale (VAS) (VAS 0 = no pain, VAS 10 = the most severe pain that could be seen). VAS was grouped as mild (0-3), moderate (4-6) and severe (7-10). Estimated glomerular filtration rate (eGFR) was calculated according to the modification of diet in renal disease formula based on the serum creatinine level of the patients (7). The time between the onset of the patient's complaint and the time of admission to the hospital was recorded and grouped as group 1 (≤7 days), group 2 (7-21 days), group 3 (>21 days).

The COVID-19 Phobia scale (C19P-S) questionnaire was used to measure the degree of COVID-19 phobia. The C19P-S is a 20-item questionnaire form to assess the levels of corona phobia (COVID-19) and all items in the scale are rated on a 5-point scale from "strongly disagree (1)" to "strongly agree (5)". Cronbach alpha for the overall scale was 0.926 (5).

In accordance with the Declaration of Helsinki, the study protocol was approved by the Regional Ethics Committee (IRB No. 110-21-2020).

Statistical Analysis

All analyses were performed using the IBM SPSS Statistics Version 20.0 statistical software package. Categorical variables were expressed as numbers and percentages, whereas continuous variables were summarized as mean and standard deviations and as median and minimum-maximum where appropriate. Chi-square test was used to compare categorical variables between the groups. Kolmogorov-Smirnov test was used to assess the normality of the distribution of continuous variables. For comparison of continuous variables between two groups, Mann-Whitney U test was used. For non-normal distributed data, Kruskal-Wallis test was used to compare more than two groups. Bonferroni adjusted Mann-Whitney U test was used for multiple comparisons of groups. To evaluate the correlations between measurements, Spearman Rank Correlation Coefficient was used. The statistical level of significance for all tests was considered 0.05.

Results

A total of 77 patients with a mean age of 45.8±14.8 years (range: 20-78 years) were eligible for analysis. Among them, 55 (71.4%) were male and 22 (28.6%) were female. Demographic and patients' characteristics are given in Table 1. The stones were located in the distal ureter in 23 (29.9%), in the middle ureter in 14 (18.2%), and in the proximal ureter in 40 (51.9%) patients. The mean stone size was 11.2±4.8 mm. Grade 1 HN was present in 40 (51.9%), grade 2 HN was in 27 (35.1%) and grade 3 HN was in 10 (13.0%) patients. The mean of VAS was 7.3±2.3. The median of time between the onset of the patient's complaint and the time of admission to the hospital was 7.0 (0-180.0) days. The mean of eGFR was 96.2±20.8 mL/min/1.73 m^2.

C19P-S scores according to patient characteristics are summarized in Table 2. According to the time between the onset of the patient's complaint and the time of admission to the hospital, there were 39 (50.6%) patients in group 1 (≤7 days), 17 (22.1%) patients in group 2 (7-21 days) and 21 (27.3%) patients group 3 (>21 days). The median C19P-S scores in these groups were 32.0 (15.0-46.0), 37.0 (26.0-62.0) and 56.0 (37.0-80.0), respectively. There were significant differences in terms of C19P-S between groups of the time

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between the onset of the patient's complaint and the time of admission to the hospital (p≤0.001) (Figure 1). As the patient's C19P-S increased, the delay in the patient's admission to the hospital increased significantly (Figure 2). As the VAS scores and HN grade increased, the C19P-S score decreased significantly (p=0.003, and p=0.033, respectively) (Table 2). There was no significant difference between groups of age,

Table 1. Demographic and characteristics of the study population	
	All patients (n=77)
Age, years[a]	45.8±14.8 45.0 (20.0-78.0)
Gender[b]	
Male	55 (71.4)
Female	22 (28.6)
BMI kg/m^2[a]	27.1±3.4
Hypertension[b]	
No	62 (80.5)
Yes	15 (19.5)
Diabetes mellitus[b]	
No	66 (85.7)
Yes	11 (14.3)
Smoking[b]	
No	44 (57.1)
Yes	33 (42.9)
Alcohol[b]	
No	61 (79.2)
Yes	16 (20.8)
Side[b]	
Right	29 (37.7)
Left	46 (59.7)
Bilateral	2 (2.6)
Stone size (cm)[a]	11.2±4.8
VAS[a]	7.3±2.3
Location[b]	
Distal	23 (29.9)
Middle	14 (18.2)
Proximal	40 (51.9)
Grade of HN[b]	
1	40 (51.9)
2	27 (35.1)
3	10 (13.0)
The time between the onset of the patient's complaint and the time of admission to the hospital (days)[a]	25.9±40.3 7.0 (0-180.0)
eGFR[a]	96.2±20.8
[a]Data are expressed as mean ± standard deviation, median (min-max); [b]Data are expressed as n (%), *VAS: Visual analogue scale	

gender, side, location and stone size in terms of C19P-S (p>0.05).

Characteristics of groups of the time between the time between the onset of the patient's complaint and the time of admission to the hospital are summarized in Table 3. As the degree of HN and stone size increases, the time of admission to the hospital decreases (p=0.014 and p=0.042). There was a significant difference between group 1 (≤7 days) versus group 3 (>21 days) and group 2 (7-21 days) versus group 3 (>21 days) in terms of VAS (p=0.010 and p=0.025, respectively). There was no significant difference between groups of the time between the onset of the patient's complaint and the time of admission
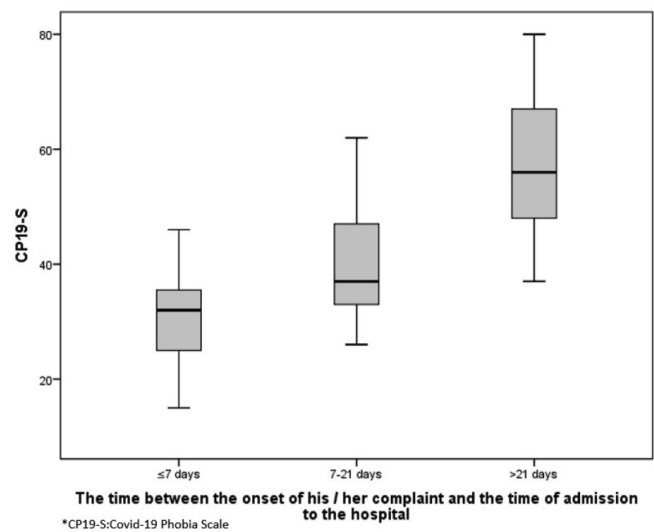

Figure 1. There were significant differences in C19P-S between groups of the time between the onset of the patient's complaint and the time of admission to the hospital (p<0.05 for each comparison)
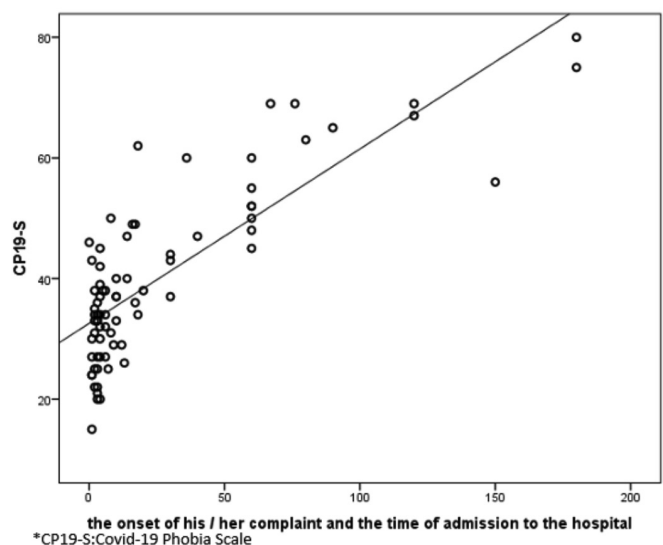

Figure 2. Correlation between the time between the onset of the patient's complaint and the time of admission and C19P-S (r=0.812, p<0.001)

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Table 2. COVID-19 phobia (C19P-S) scale			
	n (%)	CP19-S Mean + SD Median (min-max)	p-value
Age			
18-35	24 (31.2)	37.7±10.4 37.0 (20.0-62.0)	0.594
36-54	29 (37.7)	42.4±16.2 38.0 (15.0-75.0)	
>55	24 (31.2)	39.5±15.3 33.5 (20.0-80.0)	
Gender			
Male	55 (71.4)	40.6±15.8 37.0 (15.0-80.0)	0.991
Female	22 (28.6)	38.6±10.1 36.5 (22.0-69.0)	
VAS			
Mild (0-3)	6 (7.8)	53.1±16.9 59.0 (22.0-69.0)	0.003*
Moderate (4-6)	22 (28.6)	46.4±16.2 45.5 (20.0-80.0)	
Severe (7-10)	49 (63.6)	35.5±10.9 34.0 (15.0-75.0)	
Side			
Right	29(37.7)	40.1±16.1 37.0 (20.0-80.0)	0.189
Left	46(59.7)	40.6±13.3 37.0 (15.0-75.0)	
Bilateral	2 (2.6)	26.0±1.4 26.0 (25.0-27.0)	
Location			
Distal	23 (29.9)	39.5±12.6 36.0 (20.0-69.0)	0.596
Middle	14 (18.2)	36.2±11.2 34.0 (22.0-63.0)	
Proximal	40 (51.9)	41.7±16.1 37.5 (15.0-80.0)	
Stone size			
<1 cm	40 (51.9)	42.2±15.5 39.0 (20.0-80.0)	0.190
>1 cm	37 (48.1)	37.6±12.7 34.0 (15.0-75.0)	
Grade of HN			
1	40 (51.9)	43.5±14.1 42.5 (15.0-75.0)	0.033*
2	27 (35.1)	37.3±15.6 34.0 (20.0-80.0)	
3	10 (13.0)	33.8±7.1 33.0 (25.0-49.0)	

Table 2. Continued			
	n (%)	CP19-S Mean + SD Median (min-max)	p-value
The time between the onset of the patient's complaint and the time of admission to the hospital			
≤7 days	39 (50.6)	31.1±7.3 32.0 (15.0-46.0)	<0.001*
7-21 days	17 (22.1)	39.2±9.4 37.0 (26.0-62.0)	
>21 days	21 (27.3)	57.4±11.6 56.0 (37.0-80.0)	

Data are expressed as mean ± standard deviation, median (min-max); *In Post-hoc pair-wise comparison: for VAS mild versus severe p=0.018 and moderate versus severe p=0.037; for grade of HN 1 versus 2 p=0.025, 1 versus 3 p=0.054; for the time between the onset of the patient's complaint and the admission to the hospital ≤7 days versus 7-21 days p=0.048, ≤7 days versus >21 days p<0.001 and 7-21 days versus >21 days p=0.003, *VAS: Visual analogue scale

to the hospital in terms of age, gender, side, location, eGFR and urinary tract infection (p>0.05) (Table 3).

Discussion

Our study showed that the phobia caused the COVID-19 pandemic process caused a delay in the admission of patients with ureter stones to the hospital. We found that C19P-S positively correlated time between the onset of the patient's complaint and the time of admission to the hospital. We also found that when the VAS scores and HN grade increased, the C19P-S score and the time of admission to the hospital decreased significantly.

The COVID-19 pandemic strikes the whole world and causes radical differences in the habits of individuals. Health concerns, fear of transmission, changes in social relations, canceling travel plans and sports activities, being in a closed environment during quarantine days, and many other factors negatively affect mental health. Mental disorders such as post-traumatic stress disorder, major depressive disorder, acute stress disorder, and phobias can occur due to pandemics (8). Phobias are classified among anxiety disorders in the Diagnostic and Statistical Manual for Mental Disorders 5 (DSM-5) and are characterized by persistent and excessive fear of an object or a situation (9).

During the COVID-19 pandemic process, there may have been two reasons for the delay in patients' admission to the hospital. The first reason is the limitations and malfunctions in the healthcare system during this process. The second reason is that the patient may be afraid of getting COVID-19 infection in the hospital. Surveys show that even patients with life-threatening conditions may have avoided hospitalization, possibly out of fear of exposure to COVID-19

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Table 3. Characteristics of groups of the time between the onset of the patient's complaint and the time of admission to the hospital

The time between the onset of the patient's complaint and the time of admission to the hospital			
	≤7 days (n=39)	7-21 days (n=17)	>21 days (n=21)	p
Age[a]	43.7±15.7	45.4±16.4	49.9±11.2	0.220
Gender (male)[b]	28 (71.8)	10 (58.8)	17 (81.0)	0.323
VAS$^{\Phi,\Psi}$	7.2±3.1	7.7±1.9	5.6±2.4	0.006
Side[b]				
Right	17 (43.6)	6 (35.3)	6 (28.6)	0.431
Left	20 (51.3)	11 (64.7)	15 (71.4)	
Bilateral	2 (5.1)	0 (0.0)	0 (0.0)	
Location[b]				
Distal	14 (35.9)	4 (23.5)	5 (23.8)	
Middle	9 (23.1)	3 (17.6)	2 (9.5)	0.371
Proximal	16 (41.0)	10 (58.8)	14 (66.7)	
Stone size (cm)$^{a,\Phi}$	12.5±5.1	10.5±3.4	9.5±5.0	0.042
Grade of HN[b]				
1	17 (43.6)	7 (41.2)	16 (76.2)	
2	15 (38.5)	7 (41.2)	5 (23.8)	0.014
3	7 (17.9)	3 (17.6)	0 (0.0)	
eGFR[a]	96.3±20.7	94.4±29.3	97.1±12.1	0.960
Urinary tract infection[b]	24 (61.5)	10 (58.8)	8 (38.1)	0.203

[a]Data are expressed as mean ± standard deviation, median (min-max); [b]Data are expressed as n (%); $^{\Phi}$p<0.05 for ≤7 days versus >21 days; $^{\Psi}$p<0.05 for 7-21 days versus >21 days, VAS: Visual analog scale

infection (10). De Filippo et al. (11) reported in their study that hospitalization of acute coronary syndrome decreased by 27.6-39.2% in Italy compared with pre-COVID-19 (11). Petrovic et al. (12) found a significant 44.3% reduction in the number of hospitalizations for acute coronary syndrome and an increase in an ST-elevation myocardial infarction during the COVID-19 outbreak in Serbia. They concluded that this situation contributed to increased complications and mortality in these patients. Also, they emphasized that the reason for this was the constraint in the healthcare system, as well as the fear of going to the hospital as a place where people could become infected (12). Our study showed that as the phobia of COVID-19 increased, the hospitalization of the patient with ureteral stones was delayed, and showed that the delay in the application decreased when the VAS and HN grade increased. We think that when the degree of HN increases, the severity of the pain increases, the patient applies to the hospital by reducing the COVID-19 phobia. Unlike other studies, in our study, we defined the patient-induced delay by measuring the COVID phobia score.

The emergence of COVID-19 has caused a dramatic change in the healthcare system and also affects daily urological practice. In a joint study by urology centers in Europe, participants reported that 37% of total hospital beds were occupied by COVID-19 patients. The main reason for the decrease in the bed occupancy was the ban on hospital administrations (13). In another study comparing the data of the early period of the pandemic to the same period in 2019, they reported that the pandemic had a significant negative impact on uro-oncologic surgery (14). In a study involving 51 urology centers, they reported a dramatic decrease in the number of urologically outpatients, inpatients, surgeries and daily interventions during the pandemic period and emphasized that the urology practice was given priority to urgent and non-postponable surgeries (15). In a multicenter study aimed at measuring changes in emergency urological care during the pandemic period, the authors reported a significant decrease in emergency urology practice and a reason being the fear of being infected by the virus in the hospital (16). Our study showed that in ureter stone disease, which is one of the urological emergencies, hospital admissions decreased when COVID-19 phobias increased. The European Association of Urology has published an updated version of the guidelines for guiding urologists for patient selection during the pandemic process (17-19). These guidelines were aimed at the urology practice of urologists, but were not aimed at raising the awareness of patients. Our study showed that even in an emergency, hospital admissions of patients decreased due to COVID-19 phobia. We think that the reason for this is that the society is not sufficiently informed

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on television, social media and internet sites. In contrast, we think that these platforms increase the COVID-19 phobia in society.

Study Limitations

In our study, it was observed that a delayed admission to the hospital did not have negative effects on patients such as kidney function or urinary tract infection. However, our study had some limitations. These limitations that the study is from a single center and few patients. Multicenter studies investigating the effect of COVID-19 phobia on all urological practices, such as urooncology diseases, kidney stone diseases and urological emergencies are needed. The strengths of our study are that it is the first study investigating the effect of COVID-19 phobia on urological disease and that it shows the importance of raising the awareness the society about hospital admissions and emphasizes that awareness of this issue should be increased.

Conclusions

COVID-19 phobia caused a delay in the admission of patients with ureter stones to the hospital. Multicenter studies investigating the effect of COVID-19 phobia on all urological practices such as urooncology diseases, kidney stone diseases and urological emergencies are needed. When patients have complaints, it is necessary to raise the awareness of society about applying to the hospital and to increase awareness of this issue.

Ethics

Ethics Committee Approval: In accordance with the Declaration of Helsinki, the study protocol was approved by the Regional Ethics Committee (IRB No. 110-21-2020).

Informed Consent: All patients signed a written consent form before the operation.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Critical Review: İ.A.A., Surgical and Medical Practices: M.D., V.İ., Concept: M.D., M.E.D., Design: M.D., M.E.D., Data Collection or Processing: N.A., S.S., S.P.Y., Analysis or Interpretation: M.E.D., S.S., S.P.Y., Literature Search: M.E.D., Writing: M.D., S.S.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declare that they have no relevant financial.

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