

Evaluation of the impact of COVID-19 pandemia on pediatric urological operations and the number of outpatient clinic patients in a province with, the highest birth rate Turkey

Türkiye'nin en yüksek doğum oranına sahip ilinde COVID-19 pandemisinin pediatrik ürolojik operasyonlar ve poliklinik hasta sayısına etkisinin değerlendirilmesi

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Abstract

Purpose: In this study, we aimed to investigate the effect of the COVID-19 pandemia on pediatric urology operations.

Materials and methods: Hospital records of pediatric patients who admitted to Harran University Medical Faculty Pediatric Urology Clinic during the pandemia period (19 March-22 December 2020) and pre-pandemia period (19 March-22 December 2019) and were operated with precautions were retrospectively analyzed. The number of outpatient clinic patients during and before the pandemia period, the number of operations and indications, and the types of surgery were compared. The names and numbers of surgical procedures are listed according to the European Association of Urology (EAU) priority classification.

Results: During the COVID-19 pandemia period, the number of pediatric patients admitted to the outpatient clinic was 2361, while it was 5214 in the same period before the pandemia. It was observed that the number of patients who admitted to the outpatient clinic decreased by 54.8% during the pandemia period. While the total number of pediatric operations was 316 during the pandemia period, it was 741 before the pandemia period. When the pandemia period was compared with the pre-pandemia period, a 58.4% reduction was observed in pediatric urology operations. The number of emergency operations was 69 during the pandemia period and 85 in the pre-pandemia period. During the pandemia period, the reduction in emergency operations was 18.8%. No complications were observed due to COVID-19 in any of the operated patients.

Conclusion: During the COVID-19 pandemia, it was observed that the number of pediatric urology outpatient clinic admissions and surgeries in our hospital decreased. In cases where urgent interventions were required, adequate precautions were taken, and surgical operations could be applied without any contamination and mortality.

Key words: Coronavirus, coronavirus disease 2019, pandemia hospital, pediatric urological surgery.

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Öz

Amaç: Bu çalışmada COVID-19 pandemisinin pediatrik üroloji ameliyatlarına etkisini araştırmayı amaçladık.

Gereç ve yöntem: Harran Üniversitesi Tıp Fakültesi Pediatrik Üroloji Kliniği'ne pandemi döneminde (19 Mart-22 Aralık 2020) ve pandemi öncesi dönemde (19 Mart-22 Aralık 2019) polikliniğe başvuran ve önlemler eşliğinde ameliyat edilen pediatrik hastaların hastane kayıtları retrospektif incelendi. Pandemi dönemi ve öncesi poliklinik hasta sayıları, ameliyat sayıları ve endikasyonları, ameliyat türleri karşılaştırıldı. Cerrahi prosedürlerin isimleri ve sayılar Avrupa Üroloji Derneği (EAU) öncelik sınıflandırmasına göre listelendi.

Bulgular: COVID-19 pandemisi döneminde polikliniğe pediatrik hasta başvuru sayısı 2361 iken pandemi öncesi aynı dönemde 5214 idi. Pandemi döneminde polikliniğe başvuran hasta sayısının %54,8 azaldığı görüldü. Pandemi döneminde toplam pediatrik ameliyat sayısı 316, pandemi dönemi öncesi 741 idi. Pandemi dönemi, pandemi öncesi ile karşılaştırıldığında pediatrik üroloji ameliyatlarında %58,4 azalma olduğu görüldü. Pandemi döneminde acil ameliyat sayısı 69, pandemi öncesi dönemde 85 idi. Pandemi döneminde acil ameliyatlardaki azalma %18,8 idi. Opere edilen hiçbir hastada COVID-19 nedeniyle komplikasyon izlenmedi.

Sonuç: COVID-19 salgını sırasında hastanemizdeki pediatrik üroloji poliklinik başvurusu ve ameliyat sayısının azalmış olduğu görüldü. Acil müdahalelerin gerekli olduğu olgularda yeterli önlemler alınarak, herhangi bir kontaminasyon ve mortalite olmaksızın cerrahi operasyonlarının uygulanabilirliği görüldü.

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Anahtar kelimeler: Koronavirüs, koronavirüs hastalığı 2019, pandemi hastanesi, pediatrik ürolojik cerrahi.

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Introduction

The COVID-19 is a novel coronavirus disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The COVID-19 outbreak started to spread around the world from the first day it appeared and was declared a pandemic by the World Health Organization on March 11, 2020 [1]. As of February 19, 2021, more than 216 countries have reported cases of this disease, causing approximately 109,997,288 diagnosed cases and over 2,435,145 deaths worldwide [2]. In Turkey, according to data from the Ministry of Health, since the first case was diagnosed on 11 of March 2020, 2624019 COVID-19 cases and 27.903 total deaths were reported by 19 of February 2021 [3]. The first corona virus cases have been seen on March 19, 2020 in Şanlıurfa province, which has the highest birth rate in Turkey. The COVID-19 pandemic has spread rapidly around the world, placing a huge strain on medical resources such as medical staff, hospital beds, and preventive health equipment. Turkey, to prevent the rapid spread of the virus infection and to control the outbreak since March 2020, began to receive a series of strict measures.

This pandemic affected not only individuals with COVID-19, but also individuals seeking treatment for other diseases in the country as well as all over the world. As in other diseases, it was observed that during the pandemic period, there was a decrease in hospital admissions for urological diseases and COVID-19 significantly affected people's behavior of admittance for urological condition [4, 5]. Considering the expert opinion of the EAU (European Association of Urology-European Association of Urology) panel of pediatric urology guides [6], and the studies published in the literature, it was planned to compare the surgical management of patients in the pediatric age group with the pandemic process and the pre-pandemic period. Thus, it was concluded that pediatric urology surgery would help predict future surgical needs by evaluating the current situation during and before the pandemic.

Materials and methods

The first COVID-19 patient was reported in Turkey on March 11, 2020 and this date is considered the beginning of the pandemic. After approval was obtained from the Ministry of Health and our faculty ethics committee for the study (HRU 21/01/04) the data of pediatric patients who were admitted to our outpatient clinic during the pandemic period (19 March-22 December 2020) and pre-pandemic period (19 March-22 December 2019) at the Harran University Faculty of Medicine Pediatric Urology Clinic were retrospectively analyzed from the hospital registry system. The number of outpatient clinic patients during and before the pandemic period, the number of operations and indications, and the types of surgery were compared.

Patients who underwent surgical procedures during the pandemic were evaluated in 4 groups as low priority, medium priority, high priority, and emergency according to EAU recommendations. In addition to the surgical consent form, a preoperative COVID-19 information and consent form was signed for patients who underwent surgery during the pandemic process. Patients who were taken into emergency surgery without PCR testing were considered as COVID-19 (+) and operated in negative pressure operating room, taking all precautions. Priority cases were operated after COVID-19 PCR (-) was detected and an average of three days without symptoms passed. COVID-19 quarantine was applied to all patients, and it was recommended to quarantine at home for at least two weeks for possible hospital transition.

Results

While the number of pediatric patients admitted to the outpatient clinic during the COVID-19 pandemic period was 2361, it was 5214 in the same period before the pandemic. It was observed that the number of patients who applied to the outpatient clinic decreased by 54.8% during the pandemic period. This reduction was observed for conditions that treatment could be delayed such as enuresis

nocturna, urinary incontinence, undescended testis, and hypospadias. During the COVID-19 pandemia period, the total number of pediatric procedures was 316 and 741 before the pandemia period. When compared with the pre-pandemia period, a 58.4% reduction was observed in pediatric urology surgeries. The number of emergency operations was 69 during the pandemia period and 85 in the pre-pandemia period. During the pandemia period, the reduction in emergency operations was found to be 18.8% (Figure 1).

When the indications for surgery were examined, it was seen that the most significant

reduction was in non-emergency patients such as circumcision, undescended testis and hypospadias and with the least risk of organ loss. Surgical treatment rates of urgent diseases such as kidney stones, ureteral stones, vesicoureteral reflux and ureteropelvic junction stenosis, which can cause serious organ damage, were found to be similar during the pandemia period and before the pandemia (Figure 2).

In the study, no pediatric patient was found to have COVID-19 in the preoperative PCR tests. No complications were observed due to COVID-19 in any of the operated patients.

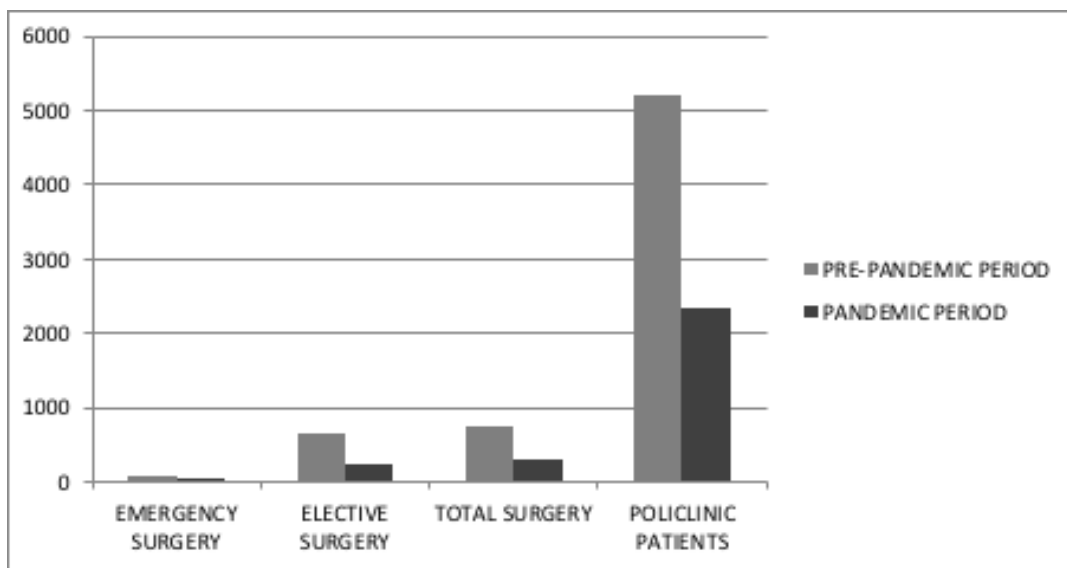


Figure 1. The number of surgery and outpatient clinic patients before and during the pandemic period

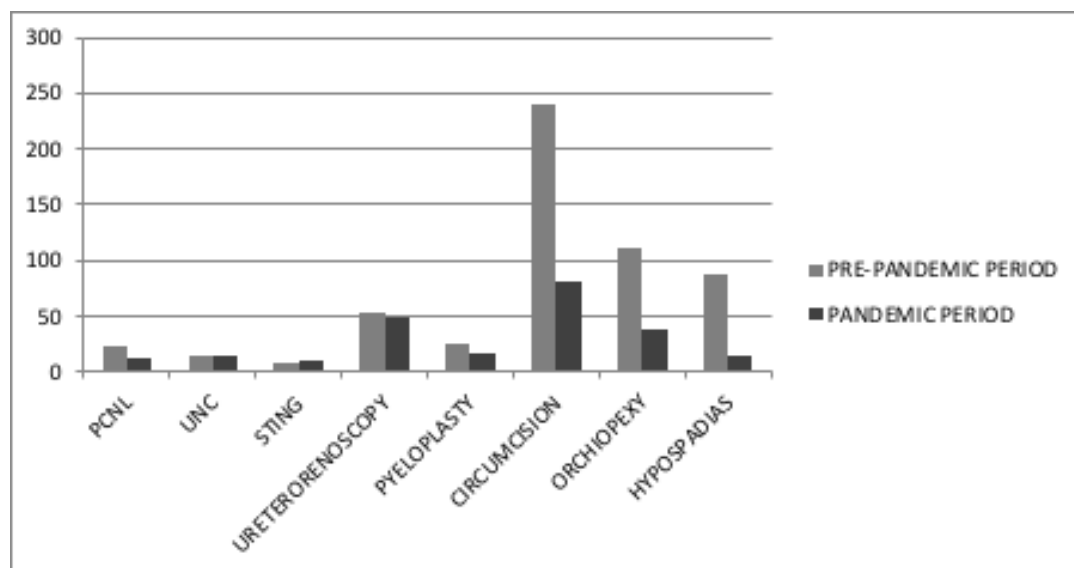


Figure 2. Comparison of the number of operations before and during the pandemic period (PCNL: percutaneous nephrolithotomy, UNC: ureteroneocystostomy)

Discussion

First, cases of pneumonia of unknown cause were reported in Wuhan, China's Hubei province, in early 2020 [7]. Originally limited to only one part of China, the infection spread rapidly around the world due to its highly contagious nature and extensive transport facilities. This pandemic, called the new type of COVID-19, is a Coronavirus disease caused by the severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2). The rapid spread of the disease has led to a global epidemic, with the infection of people of all ages residing in almost every country in the world [8].

Currently, 99% of the countries have encountered this virus [9]. The first case in Turkey, appeared in the March 11, 2020 when WHO declared COVID-19 a global pandemic, and the first death was reported on 17 March [10]. As the number of cases increased, almost all public hospitals were declared as pandemic hospitals. Except for emergency operations, all surgeries and patient examinations were postponed indefinitely.

In this epidemic, severe symptoms of infection are seen less frequently in children than in adults. In most reports published on COVID-19, mild to moderate symptoms such as fever, cough and runny nose have been described in children [11]. The prevalence of severe symptoms was higher in children younger than 5 years of age, especially those younger than 1 year [11]. Although most of the children are not seriously affected by COVID-19, due to the strict precautions taken during the pandemic period, patients' access of admission to hospitals and access to treatment have been affected. This policy, which is strictly applied in our country, has been implemented in almost all hospitals affected by the COVID-19 epidemic around the world, including Australia [12], Finland, other Scandinavian countries, and the United States (USA) [13].

In some studies, it has been revealed that COVID-19 significantly affects the surgical care-seeking behavior of people around the world [4, 5, 14]. Although this situation needed further analysis, it is attributed to three possible reasons: The first is that some surgeries have decreased due to the strict precautions implemented by the countries. These strict measures include

staying at home, avoiding unnecessary outdoor activities, traveling only for work, and providing necessary healthcare. Reduced outdoor activity and restricted travel can contribute to a reduced incidence of surgical emergencies. The second may be that their parents delay treatment with concerns of coronavirus transmission. The third may be the cancellation of elective surgeries in hospitals during the pandemic to reduce the risk of COVID-19 transmission and to make room for coronavirus patients [15].

In a retrospective study conducted in China, it was reported that during the COVID-19 epidemic, 62.86% less pediatric patients were admitted to the hospital and operated on compared to the year earlier [15]. In the same study, it was observed that the number of pediatric emergencies was also greatly affected by COVID-19, dropping from 90.14 to 67.86 per week ($p < 0.05$). Similar studies have shown that the COVID-19 pandemic affects pediatric surgery services in general [16, 17]. In our study, it was observed that the patients who admitted to the pediatric urology outpatient clinic during the pandemic period decreased by 54.8% compared to the pre-pandemic period.

EAU guidelines panel determined 4 separate stages in the management of clinical and surgical results of the COVID-19 pandemic for pediatric urology patients, and in the first and second stages, benign scrotal and penile diseases (circumcision, undescended testis, hydrocele, inguinal hernia, hypospadias, etc.), non-obstructive urolithiasis diagnoses are included. In line with the recommendations of the panel, a high recommendation opinion was made to reduce surgical approaches and delay the procedures in such diseases in the first and second stages. In the third and fourth stages, urolithiasis, PUV (posterior urethral valve), progressive differential function loss or ureteropelvic junction obstruction with severe symptoms, paraphimosis and oncological cases (Wilm's tumor, malign testicular tumors) are included, which cause obstruction and recurrent febrile infection. In this group of diseases, it is recommended not to postpone surgical intervention, considering that the delay will cause irreversible disease progression or organ damage [6].

In our clinic, patient treatments were planned and managed in line with EAU recommendations.

Compared to the pre-pandemia period, pediatric urological procedures decreased by 58.4% and emergency operations by 18%. We observed that the most significant reduction rate was in non-emergent diseases such as circumcision, undescended testis and hypospadias, which can be deferred. The data showed decreasing trends in elective surgical cases and the number of outpatient admittance, while the number of emergency procedures was not significantly affected by the pandemia. This decline in the number of outpatients and surgeries may be related to the delay of elective surgery to ensure adequate hospital capacity to respond to rapid increases in COVID-19 cases and to reduce the risk of nosocomial transmission of COVID-19 infection. However, while performing such applications, it should be considered that delaying surgical treatments for time sensitive and emergency diseases in children may affect their growth, development, and quality of life.

The impact of surgical treatment on the susceptibility to COVID-19 or the severity of existing symptoms is not yet known. Therefore, it will be beneficial to use regional or local anesthesia as much as possible to minimize the need for mechanical ventilation [18]. This also limits the use of mechanical ventilators and other potentially scarce intensive care equipment. However, almost all patients in the pediatric age group are operated under general anesthesia. Therefore, this situation should be taken into consideration while planning.

In the safety precautions panel of the EAU guideline for pediatric urology personnel, it was recommended that healthcare workers should be divided into 2 teams to be prepared for the risk of infection and to work in rotation in hospitals [19, 20]. In our clinic, 2 separate surgical and outpatient clinic examination teams were formed in line with the panel recommendations, to ensure that emergency surgery and outpatient services were not interrupted in case of possible intra-clinical infection. However, despite all the precautions, 1 faculty member, 2 research assistants, 3 service nurses, 1 clinic staff had COVID-19 infection during the pandemia period.

This study contains some limitations in terms of being retrospective and single centered. It is predicted that conducting multi-center studies with a higher number of patients will be beneficial.

As a result, the decrease in the number of pediatric urology outpatient clinic admissions and surgeries in our hospital during the COVID-19 outbreak shows that this outbreak affects not only COVID-19 patients, but also pediatric patients seeking diagnosis and treatment for urological conditions. However, the study has shown that surgical operations can be performed by taking precautions without any transmission and mortality during the pandemia in emergency cases and diseases that may cause irreversible disease progression or organ damage. It cannot be predicted how long this pandemia will continue. Due to this uncertainty, elective surgeries, non-invasive interventions, and patient examinations should only be performed in a controlled manner by taking precautions.

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

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Contributions of the authors to the article

E.Ö. set up the main idea and hypothesis of the study. M.D. developed the theory and edited the material method section. The evaluation of the data in the results section was carried out by E.Ö. and M.D. The discussion part of the article was written by E.Ö. and it was reviewed and approved by İ.Y. after making the necessary corrections. In addition, all authors discussed the entire study and approved its final version.

Ethics committee approval: Harran University Clinical Research Ethics Committee, (date: 04/01/2021 and number: 21/01/04).