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The Impact of COVID-19 Pandemic on Pediatric Emergency Admissions: Comparison with the Previous Year

COVID-19 Pandemisinin Çocuk Acil Başvurularına Etkisi: Önceki Yıl ile Karşılaştırma

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ABSTRACT

Aim: After lockdown decisions taken to prevent the spread of the Coronavirus disease-2019 (COVID-19) epidemic all over the world, admissions to emergency department (ED) were interrupted in many hospitals. This study aims to evaluate the change by comparing the number of patients admitted to pediatric ED in the same period of previous year, distribution characteristics of diseases, and rates of hospitalization with the period at the onset of pandemic.

Materials and Methods: This was a retrospective, observational study. During the COVID-19 pandemic, 4943 patients aged 0-18 years, who were admitted to Pediatric ED between March 10, 2020 and April 10, 2020 and in the same period of previous year, were included in our study. It was conducted by taking medical data such as demographic characteristics, emergency status, history of comorbid disease, diagnosis, and hospitalization status.

Results: By years, 80.7% (n=3989) of the admissions were made in 2019 and 19.3% (n=954) in 2020. There was a significant decrease of 76% in emergency admissions during COVID-19 pandemic compared to same period last year. The rate of comorbid disease in those who were admitted to the pediatric ED was 23.7% in 2019 and was 27.9% in 2020 (p=0.007). The rate of patients evaluated as priority emergencies was 10.6% in 2019 and 17.9% in 2020 (p<0.001). Neurology, endocrinology, hematology-oncology and neonatal group pathologies and home accidents were found to be statistically significantly higher in 2020 (p=0.037, p=0.002, p<0.001, p=0.040, p<0.001). When the rates of asthma attack, foreign body intake and severe anemia were evaluated by years, they were found to be significantly higher in 2020 (p<0.001, p<0.001, p=0.022).

Conclusion: As in the COVID-19 outbreak, the decrease in admissions to ED may lead to delayed diagnosis and treatment, and increased morbidity and mortality in common pediatric emergencies. Despite the decrease in the number of patients admitted to pediatric ED, it should be kept in mind that admissions may be due to critical illnesses.

Keywords: COVID-19, emergency, pediatrics

ÖZ

Amaç: Koronavirüs hastalığı-2019 (COVID-19) salgınının tüm dünyaya yayılmasını önlemek için alınan karantina kararlarının ardından acil servislere (AS) başvurular birçok hastanede kesintiye uğramıştır. AS'lerde pandemiye yönelik yeni triyaj birimleri oluşturulmuştur. Çalışmamızda pandemi öncesindeki yılın aynı döneminde çocuk AS'ye başvuran hasta sayısını, hastalıkların dağılım özelliklerini pandeminin başladığı dönemle karşılaştırarak değişimi değerlendirmeyi amaçladık.

Gereç ve Yöntem: COVID-19 pandemisi süresince 10.03.2020-10.04.2020 tarihleri arasında ve bir önceki yılın aynı döneminde çocuk AS'ye başvuran 0-18 yaş arası 4943 hasta çalışmamıza dahil edildi. Hastanenin elektronik kayıtlarından demografik ve epidemiyolojik özellikler, başvuru tarihi, acil durum, komorbid hastalık öyküsü, tanı ve yatış durumu gibi tıbbi veriler alınarak retrospektif bir çalışma yapıldı.

Bulgular: Yıllara göre başvuruların %80,7'si (n=3989) 2019 yılında ve %19,3'ü (n=954) 2020 yılında oldu. Hasta sayısında %76'lık bir azalma görüldü. Beş yaş altı çocuk AS'ye başvuru oranı 2020 yılında %39 (n=372) iken 2019 yılında %43,6 (n=1739) (p=0,010) olarak bulundu. Çocuk AS'ye başvuranlarda komorbid hastalık oranı 2019 yılında %23,7 iken 2020 yılında %27,9 idi (p=0,007). Öncelikli acil olarak değerlendirilen hasta oranı 2019 yılında %10,6 olup 2020 yılında ise %17,9 olarak saptandı (p<0,001). 2019 yılında servis yatışı olan hasta oranı %5,2 iken bu oran 2020 yılında %13,8 idi (p<0,001). Nöroloji, endokrinoloji, hematoloji-onkoloji ve yenidoğan grubu patolojileri ve ev kazaları 2020 yılında istatistiksel olarak

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anlamlı derecede yüksek bulundu (p=0,037, p=0,002, p<0,001, p=0,040, p<0,001). Astım atağı, yabancı cisim alımı ve ağır anemi oranları yıllara göre değerlendirildiğinde 2020 yılında anlamlı olarak yüksekti (p<0,001, p<0,001, p=0,022).

Sonuç: COVID-19 salgınında olduğu gibi, AS'ye başvuruların azalması yaygın pediyatrik acil durumlarda tanı ve tedavinin gecikmesine, morbidite ve mortalitenin artmasına neden olabilir. Bu çalışma, doktorların pediatrik AS'lerde acil teşhis ve tedavi süreçlerini yeni bir pandeminin başlaması veya mevcut pandeminin devam etmesi nedeniyle hızlı bir şekilde yönetmelerini sağlayabilir. Olası pandemi durumlarında çocuk acile başvuran hastaların sayısında azalma görülmesine rağmen başvuruların kritik hastalık grubundan olabileceği unutulmamalıdır.

Anahtar Kelimeler: COVID-19, acil, pediatri

INTRODUCTION

Coronavirus disease-19 (COVID-19) first appeared in Wuhan, China at the end of 2019[1]. The World Health Organization declared an international public health emergency on January 30, 2020. On March 11, 2020, the novel Severe acute respiratory syndrome-Coronavirus-2 (SARS-CoV-2) outbreak was officially identified as a pandemic[2]. Schools were closed on March 16, 2020 and shelter-in-place was ordered for those whose birth dates were on or after January 1, 2000 on April 3, 2020 in Turkey.

Following lockdown decisions taken to prevent spread of COVID-19 epidemic all over the world, most of routine and elective procedures, especially emergency department (ED) service, have been interrupted in many hospitals. Triage units were created in EDs and reorganized to separate suspected COVID-19 cases from other emergency cases[3,4]. At the onset of COVID-19 outbreak, just before lockdown was implemented, a sudden decline in the number of patients with non-COVID-19 complaints was reported in EDs of different countries[5-9]. It was determined that this decrease in ED admissions was primarily in very urgent patients with high morbidity and mortality. These patients, who needed urgent intervention, were not admitted to EDs and were waited at home for a long time. Also, decreases were observed in admissions of children who were expected to continue their admission to EDs due to acute exacerbations of underlying problems such as neurological, endocrinological and oncological diseases or surgical reasons[7,8,10]. Initially, decrease in the number of patients in EDs was welcomed worldwide to allocate more space and time to COVID-19 patients, but the continuance of decrease in admissions began to raise concerns. Decrease in admissions to hospitals and EDs may have various probable negative effects on child health. Children with various metabolic, neurological, hematological, immunological, and syndromic diseases and accordingly using devices such as tracheostomy cannula, ventriculoperitoneal shunt, home-ventilator, nebulizer, and non-invasive mechanical ventilator, and those who have special needs such as percutaneous endoscopic gastrostomy and urinary and venous catheter are potentially at higher risk of more serious illness than healthy children due to lack of access to healthcare.

There are various reasons and different alternative solution methods for the decrease in emergency admissions. Concerns about being infected with SARS-CoV-2 at hospitals, high number of patients, overcrowded waiting areas and insufficient personal protective equipment for medical staff were reported as the reasons for decrease in the number of emergency admissions[8,11,12]. The fact that patients and their families delay or stop seeking treatment for emergencies will pose a significant risk in terms of preventable causes of morbidity and mortality in the future. One of unclear situations of COVID-19 epidemic is uncertainty regarding the management of patients not admitted to ED or hospitals. During pandemics, it is necessary to plan how to help patients who are not admitted to ED due to the concern of transmission of causative disease. Examining changes in the admission features of emergent and non-emergent patients will help arrangements to be made in this regard.

Therefore, we aimed to evaluate the change by comparing number of patients admitted to pediatric ED in the same period of the previous year, distribution characteristics of diseases, rates of hospitalization, and follow-up status with the period at the onset of the pandemic.

MATERIALS AND METHODS

Separated areas for evaluation and inpatient follow-up were created at our hospital for suspected or positive COVID-19 patients and for other patients in the light of current guidelines. In this sense, it was thought that anxiety and fear of patients and their families would be alleviated and number of admissions to ED would not be affected.

During COVID-19 pandemic, 4943 patients aged 0-18 years who were admitted to Pediatric ED between March 10th and April 10th of 2019 and in the same days of 2020 were included in our study. A retrospective, observational study was conducted by taking medical data such as demographic and epidemiological characteristics, admission date and time, emergency status, history of comorbid disease, diagnosis, and hospitalization status from the hospital's electronic records. The percentage of change in information such as ED visits, patient characteristics and diagnoses for 2020 was calculated and compared to that for 2019. Interactions between each factor and overall variation in ED visits were assessed. Patients were divided into specific groups according to systems and diagnoses. According to the follow-up status, ward, intensive care unit and pediatric

emergency follow-ups were accepted as hospital admissions. Diseases were evaluated individually or by categorization.

As the exclusion criteria for the study, cases in which there was a problem in reaching the data to be used in the study were determined.

The primary purpose of this study is to determine the effects of this pandemics on EDs, Its secondary purpose is to develop an ED procedure for the pandemic and other future pandemics.

Statistical Analysis

Analyses were made with Statistical Package for the Social Sciences 26.0 (for macOS) program. The normal distribution of data was evaluated using the Kolmogorov-Smirnov test. In descriptive statistics, categorical data were presented as numbers and percentages and non-categorical data were presented as median (25-75 percentile) because they were not normally distributed. In analytical statistics, the chi-square test and Fisher's exact test were used. Type-1 error (a) was accepted as 5%.

This study was approved by İstanbul University, İstanbul Medical Faculty Medical Ethics Committee (approval date: 15/02/2020, decision number: 10).

RESULTS

The median age of 4943 patients admitted to the pediatric ED in both time periods were 5.0 years (2-10). Of the children, 45.9% (n=2270) were girls. A total of 24.5% of the children (n=1211) had comorbid diseases. Respectively, 80.7% (n=3989) of the admissions were in 2019 and 19.3% (n=954) were in 2020. There was a 76% reduction in the number of admissions within years. While the rate of admissions to the pediatric ED under the age of 5 years was 39% (n=372) in 2020, it was 43.6% (n=1739) in 2019, which was significantly important (p=0.010). When evaluated according to the days when they were admitted to the hospital, it was found that 28% of the patients were admitted at the weekend in 2019 and 23.7% in 2020. Weekend admissions in 2019 were significantly higher compared to those in 2020 (p=0.007). In comparison of admission time to hospital by years, it was found that there was a significant difference in terms of admission rates in three different time periods (p=0.021). In subgroup analysis, it was determined that the difference between these groups originated from 00:00-07:59 hours and that there were more admissions in these hours in 2020 compared to 2019.

The rate of comorbid diseases among those admitted to the pediatric ED was 23.7% in 2019, while it was 27.9% in 2020 and this difference was statistically significant (p=0.007). The rate of patients who were considered as priority emergencies was 10.6% in 2019 and 17.9% in 2020, and this difference was significant (p<0.001). While the rate of patients requiring service admission was 5.2% in 2019, this rate was 13.8% in 2020, which was significantly different (p<0.001).

While the rate of intensive care unit admissions was 0.5% (n=5) in 2020, it was found to be 0.3% (n=13) in 2019, and there was no statistical difference (p=0.369). In 2020, COVID-19 polymerase chain reaction test was positive in 21 (2.2%) cases (Table 1). When the admission rates of cases such as seizures, pneumonia, acute appendicitis, invagination, metabolic decompensation, drug intoxication and toxic substance intake were examined by years, no significant difference was found. When the rates of asthma attack, foreign body aspiration and severe anemia were evaluated by years, admissions in 2020 were found to be significantly higher (p<0.001, p<0.001, p=0.022) (Table 2).

Patients admitted to pediatric ED were divided into specific groups according to their diagnoses and evaluated according to years. The patient's pathologies who were followed up in neurology, endocrinology, hematology-oncology and neonatal units and home accidents were found to be significantly higher in 2020 (p=0.037, p=0.002, p<0.001, p=0.040, p<0.001, respectively). Dermatological diseases such as urticaria, respiratory tract diseases such as upper respiratory tract infection and gastrointestinal system pathologies such as acute gastroenteritis were significantly lower in 2020 (p=0.003, p<0.001, p=0.002, respectively). Although a statistical evaluation could not be made in the diagnosis of headache-dizziness considered within neurological pathologies, a significant decrease was observed in 2020 compared to 2019. While the rate of palpitations among the diagnoses evaluated within the cardiological pathologies increased significantly in 2020, the rate of chest pain cases decreased significantly. It was noted that the percentages of acute bronchiolitis and asthma attack diagnosis evaluated within respiratory tract pathology increased significantly in 2020 compared to 2019. Although there was no case of intoxication with cologne/disinfectants in 2019, the increased percentage of intoxication cases in 2020 drew attention. When the diagnoses in the Hematology/Oncology group were evaluated, a significant decrease was observed in the percentage of bleeding cases due to factor deficiency in addition to febrile neutropenia cases in 2020 compared to 2019 (Table 3).

DISCUSSION

Our data showed that there was a significant decrease of 76% in emergency admissions during COVID-19 pandemic compared to the same period last year. Although it was reported that admissions to ED in emergencies with high mortality were reduced by half in adults, it was observed in our study that there was no decrease in admissions for priority red.

Some studies have reported a decrease in ED admissions at the onset of the COVID-19 pandemic before lockdown has just started[6,7,13,14]. The number of admissions to the pediatric ED at weekends decreased significantly in 2020 compared to 2019. The curfew, which was only admitted at the weekends during the lockdown, might have caused this situation. When admission hours to the ED for children were observed, it was determined that the number of admissions increased significantly from 12.00 am to 08.00 am in 2020 compared to 2019. The fact that there were more admissions at these hours in 2020 might indicate that patients were admitted to the hospital without waiting in case of complaints or they might think that they would be exposed to less crowding in ED at specified hours. In a study examining the admissions to the pediatric ED, it was shown that there were more admissions on the weekend throughout the whole time and a striking decrease was observed in the number of daily admissions during the pandemic period[15].

Studies in adults have reported unexpected and disproportionate decreases in emergency admissions with high morbidity and mortality, such as cerebrovascular events, stroke, and myocardial infarction[7,13]. There are also studies that have reported an increase in morbidity and mortality in pediatric patients due to delay in admission of critically ill patients to EDs[8,15]. In our study, there were 5 (0.5%) patients hospitalized in intensive care unit and no fatalities occurred.

Despite the decrease in hospital admissions during the pandemic, the rate of cases considered as priority emergencies was found to be statistically higher compared to the previous year. Considering the increase in the rates of priority emergencies and the rate of hospitalized patients, it was thought that critical patients continued to be admitted to EDs despite the pandemic and it might be concluded that a sufficient number of experienced healthcare workers should be organized in EDs for these patients.

Angoulvant et al[16]. reported that there was more than 70% decline in acute gastroenteritis, common cold, acute bronchiolitis and acute otitis media complaints in pediatric ED admissions. In our study, the rate of admissions in 2020 due to diseases with high morbidity and mortality such as asthma

Table 1. Comparison of pediatric emergency admissions between March 10 and April 10 by years

Variables	2019		2020		x^2	p
	Number (n)	Percent (%)*	Number (n)	Percent (%)*		
Age						
<5 years	1739	43.6	372	39.0	**6.661**	**0.010**
≥5 years	2250	56.4	582	61.0		
Sex						
Female	1851	46.4	419	43.9	1.910	0.167
Male	2138	53.6	535	56.1		
Comorbid disease						
Yes	945	23.7	266	27.9	**7.316**	**0.007**
No	3044	76.3	688	72.1		
Time of admission to the hospital (day)						
Weekdays	2873	72.0	728	76.3	**7.154**	**0.007**
Weekend	1116	28.0	226	23.7		
Time of admission to the hospital (hour)						
00.00-07.59	525	13.2	158	16.6	**7.708**	**0.021**
08.00-16.00	1652	41.4	372	39.0		
16.01-23.59	1812	45.4	424	44.4		
Priority emergency						
Yes	424	10.6	171	17.9	**38.697**	**<0.001**
No	3565	89.4	783	82.1		
Follow-up status						
Outpatient	3783	94.8	822	86.2	**90.891**	**<0.001**
Hospitalization	206	5.2	132	13.8		
Intensive care hospitalization	13	0.3	5	0.5	-	**0.369****
COVID-19 PCR positive	-	-	21	2.2	-	-
Total	**3989**	**100.0**	**954**	**100.0**		

*Column percentage. **Fisher's exact test.

COVID-19: Coronavirus disease-2019, PCR: Polymerase chain reaction

attack, foreign body intake and severe anemia were found to be significantly higher than in 2019. Foreign body intake might have increased due to having to spend more time at home. It was thought that the increase in asthma attack admissions was due to the increase in awareness of families to cough and respiratory distress symptoms related to COVID-19. The reason for the increase in severe anemia might be the result of deterioration and delayed follow-up of chronic diseases.

It has been reported that the percentage of hospital admissions increased in pediatric patients due to diseases with high morbidity and mortality, and patients in need of urgent medical care were admitted to pediatric ED without causing a significant delay during lockdown[9]. In our data, no significant change was found in cases of seizures, pneumonia, acute appendicitis, drug intoxication, invagination, decompensation of metabolic diseases and toxic substance intake by years. Unlike adults, families brought their children to pediatric ED because they thought that these diseases, which have high morbidity and mortality, could not be cured at home.

While analyzing the results of our study, the patients were divided into specific groups according to their systems and diagnoses, and neurological, endocrinological, hematological-oncological and neonatal diseases and home accidents were found to be significantly higher in 2020 compared to 2019. In a study, it was reported that there was an increase in the rate of neoplastic diseases from 5.6% to 14.9% and a decrease in the rate of perinatal pathologies and cardio-circulatory system diseases from 22.5% to 8.1% and from 5.6% to 0%,

Table 2. Comparison of the diseases considered as very urgent by years

	2019		2020		x^2	p
	Number (n)	Percent (%)*	Number (n)	Percent (%)*		
Seizure						
Yes	68	1.7	24	2.5	2.772	0.096
No	3921	98.3	930	97.5		
Pneumonia						
Yes	55	1.4	15	1.6	0.207	0.649
No	3934	98.6	939	98.4		
Acute appendicitis						
Yes	14	0.4	6	0.6	-	0.224**
No	3975	99.6	948	99.4		
Severe anemia						
Yes	9	0.2	7	0.7	-	**0.022****
No	3980	99.8	947	99.3		
Asthma attack						
Yes	46	1.2	26	2.7	**13.258**	**<0.001**
No	3943	98.8	928	97.3		
Drug intoxication						
Yes	10	0.3	3	0,3	-	0.725**
No	3979	99	951	99.7		
Invagination						
Yes	4	0.1	2	0.2	-	0.327**
No	3985	99.9	952	99.8		
Metabolic decompensation						
Yes	16	0.4	8	0.8	-	0.114**
No	3973	99.6	946	99.2		
Toxic substance intake						
Yes	21	0.5	6	0.6	0.149	0.700
No	3968	99.5	948	99.4		
Foreign body intake						
Yes	18	0.5	15	1.6	**14.591**	**<0.001**
No	3971	99.5	939	98.4		
Total	**3989**	**100.0**	**954**	**100.0**		

*Column percentage. **Fisher's exact test.

Table 3. Comparison of the diseases evaluated according to the departments by years

	2019		2020		
	Number (n)	Percent (%)	Number (n)	Percent (%)	p
Neurology	157	3.9*	52	5.5*	**0.037**
Headache-dizziness	63	40.1	13	25.0	
Seizure	68	43.3	24	46.2	
Status epilepticus	0	0.0	2	3.8	
Syncope	12	7.6	5	9.6	
Other	14	9.0	8	15.4	
Dermatology	210	5.3*	28	2.9*	**0.003**
Urticaria	100	47.6	14	50.0	
Angioedema	10	4.8	1	3.6	
Other	100	47.6	13	46.7	
Surgery	36	0.9*	13	1.4*	**0.197**
Acute appendicitis	14	38.9	6	46.2	
Invagination	4	11.1	2	15.4	
Other	18	50.0	5	38.4	
Endocrinology	8	0.2*	9	0.9*	**0.002****
Diabetic ketosis	0	0.0	2	22.2	
Hypoglycemia	2	25.0	3	29.4	
Other	6	75.0	4	48.4	
Respiratory diseases	2115	53*	430	45.1*	**<0.001**
Acute upper respiratory tract	1696	80.2	320	74.4	
Croup	22	1.0	8	1.9	
Acute otitis	161	7.6	22	5.1	
Acute bronchiolitis	61	2.9	25	5.8	
Asthma attack	46	2.2	26	6.0	
Pneumonia	55	2.6	15	3.5	
Other	74	3.5	14	3.3	
Home accidents	18	0.5*	15	1.6*	**<0.001**
Foreign body intake	18	100	15	100	
Intoxication	33	0.8*	10	1.0*	**0.509**
Drug intoxication	10	30.3	3	30.0	
Cologne-disinfectant	0	0.0	4	40.0	
Other	23	69.7	3	30.0	
Metabolism	18	0.5*	8	0.8*	**0.137**
Metabolic decompensation	18	100	8	100	
Hematology-oncology	25	0.6*	19	2.0*	**<0.001**
Anemia (insufficiency)	9	37.5	7	36.8	
Factor deficiency (bleeding)	7	28.0	2	10.5	
Febrile neutropenia	3	12.5	1	5.3	
Other	6	22.0	9	47.4	
Newborn	12	0.3*	8	0.8*	**0.040****
Jaundice	11	91.7	7	87.5	
Other	1	8.3	1	12.5	
Renal-urogenital	147	3.7*	37	3.9*	**0.777**
Urinary tract infection	102	69.4	27	73.0	
Nephrotic syndrome	3	2.0	1	2.7	
Other	42	28.6	9	24.3	
Cardiology	57	1.4*	12	1.3*	0.686
Palpitation	12	21.1	7	58.3	
Chest pain	40	70.2	3	25.0	
Arrhythmia	2	3.5	0	0.0	
Other	3	5.2	2	16.7	

Gastrointestinal	1010	25.3*	147	15.4*	**<0.001**
Acute gastroenteritis	752	74.5	101	68.7	
Constipation	81	8.0	16	10.9	
Colic	92	9.1	10	6.8	
Other	85	8.4	20	13.6	
Rheumatology	18	0.5*	7	0.7*	0.306**
Arthritis	4	22.2	1	14.5	
FMF	4	22.2	2	28.5	
HSP	10	55.6	2	28.5	
Other	-	-	2	28.5	

*Percentage of the disease for the current year. **Fisher's exact test.
FMF: Familial Mediterranean Fever, HSP: Henoch-Schönlein purpura

respectively[15]. It was thought that families did not prefer to stay at home even during the pandemic, since the diseases belonging to these diagnostic groups are the diseases with more serious complaints. It was found that there was an increase in home accidents depending on the length of time that children stayed at home. It was concluded that the rate of serious illnesses in the number of emergency admissions increased due to the decrease in the number of ED admissions for non-urgent diseases.

The number of dermatological, respiratory diseases and gastrointestinal system pathologies decreased significantly compared to previous year. For the diseases of these diagnostic groups with milder complaints, families might have preferred home follow-up and treatment or the frequency of getting ill might have decreased as a result of home isolation. While the rates of headache, dizziness and chest pain decreased in 2020, rate of palpitation increased. The complaint of palpitation might have increased due to anxiety arising from the pandemic. The fact that patients and their families wanted to be followed up at home for a while, instead of coming to ED, might have been effective in the decrease of admissions with subjective complaints such as headache and chest pain. In 2020, we did not have any critical patient who was lately admitted to our pediatric ED due to complaints such as headache and chest pain. It was reported in a study conducted in pediatric patients that there were significant decreases in respiratory tract infection symptoms such as fever, respiratory distress, cough, sore throat, earache, headache and symptoms related to functional syndromes such as dizziness and chest pain and a decrease in injuries following lockdown[9].

While the number of patients with important diseases, who can be treated, decreased in other studies[5], the decrease in the number of admissions for non-serious complaints was more remarkable[17]. In our study, the number of patients with upper respiratory tract infections in the common but non-emergency category of the pediatric ED in the respiratory tract disease group decreased. The admission rate of patients diagnosed with acute bronchiolitis and asthma attacks increased in 2020 compared to 2019. It was thought that this situation was caused by the awareness of families for COVID-19-like symptoms such as fever, cough and respiratory distress. When the diagnoses in the hematology-oncology group were examined, it was observed that the percentage of admission decreased in 2020 compared to 2019 in cases of bleeding disorders due to factor deficiency and febrile neutropenia. It was thought that the decrease in the rate of patients presenting with bleeding due to factor deficiency may be due to the decrease in trauma exposure as a result of home isolation period. It was predicted that the decrease in the rate of patients with febrile neutropenia may be the effect of protection from infectious agents due to home isolation during the pandemic period.

The rate of hospitalization of patients admitted to the pediatric emergency in 2020 was significantly higher than in 2019. This situation made us think that unlike adults during the pandemic, pediatric patients were admitted to the pediatric ED in cases with more serious complaints and hospitalization indications and that mild complaints might also be followed at home with different methods by their own means. However, there was no statistical difference between the intensive care unit hospitalization rates of the patients who were admitted by years. It was thought that the patients were brought to ED before they became sufficiently severe to require intensive care. It has been reported that hospitalization rates have been increased in studies[15,18]. The increase in hospitalization in our findings is consistent with the literature.

The rate of patients with comorbid diseases in 2020 was statistically higher compared to 2019. Since these patients were followed up due to chronic diseases, they knew that the disruptions in outpatient services and acute exacerbations due to chronic diseases could rapidly worsen during the pandemic period, so they came to ED for routine examinations, follow-up and nasogastric tube replacement. Severe illness or death was not observed among our patients with comorbid diseases.

While there was no case of intoxication with cologne or disinfectants in 2019, a high rate of 40% of intoxication cases

with cologne or disinfectants was observed in 2020. It may be considered that colognes and disinfectants were in more accessible areas during the pandemic. In a study, a lack of information has been found on keeping hand disinfectants out of the reach of children[19]. During the COVID-19 pandemic, it has been reported that search for information about hand sanitizers has increased in the National Poison Center[20]. It has been thought that the increase in intoxication cases were due to rise of disinfectant usage and their presence in areas that children could reach.

Study Limitations

The limitation of the study is that it was single centered and cross-sectional study. The first strength of our study is that it covered the first period of the lockdown, where significant changes took place. The second is that demographic factors in ED admissions, the characteristics of admission to the ED, their diagnoses, the severity of the diseases, and their comorbidities were examined on the basis of both diseases and systems. In addition, potential risk factors for future pandemics were also evaluated.

CONCLUSION

Prolongation of the COVID-19 outbreak or future pandemics may lead to a generalized inadequacy of health care for children. We think that the results of our study can enable physicians to quickly manage emergency diagnosis and treatment processes in pediatric EDs during the lockdown admission as a result of the onset of another new pandemic or the continuation of the existing one.

Ethics

Ethics Committee Approval: This study was approved by İstanbul University, İstanbul Medical Faculty Medical Ethics Committee (approval date: 15/02/2020, decision number: 10).

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.U., R.Y., S.G., Concept: M.U., R.Y., S.G., Design: M.U., R.Y., S.G., Data Collection or Processing: R.Y., S.G., Analysis or Interpretation: M.U., R.Y., Literature Search: R.Y., S.G., Writing: M.U., R.Y., S.G.

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