



Retrospective Evaluation of Acute Urticaria Patients Presenting to Pediatric Emergency Department

Çocuk Acil Servisine Başvuran Akut Ürtiker Hastalarının Retrospektif Değerlendirilmesi

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ABSTRACT

Aim: Evaluation of the frequency of emergency room visits due to acute urticaria is important for the control and management of the disease. In this context, the aim of this study was to investigate the seasonal and yearly changes in emergency room visits due to acute urticaria in children.

Material and Method: In our retrospective and descriptive study, all patients aged 0-18 years who presented to the pediatric emergency department of a tertiary hospital in Istanbul between January 2017 and December 2022 with acute urticaria were included in the study. Age at diagnosis, time of presentation and gender of the patients were evaluated within the scope of the study.

Results: Between January 2017 and December 2022, 2.7% (n=28,847) of the patients visited to the Pediatric Emergency Department due to acute urticaria. 53.6% (n=15,465) of the patients were male and 46.4% (n=13,382) were female. The median age of the patients was 5 years (0-18 years). Between 2017 and 2022, the rates of visits to pediatric emergency departments for acute urticaria were 3.0%, 3.4%, 2.9%, 2.2%, 2.2%, 2.1%, 2.2% for each year, respectively. In general, there was an increase in visits in June, July and August, and a decrease in visits in January and February.

Conclusion: In a six-year period, the frequency of visits to the pediatric emergency department due to acute urticaria generally decreased over the years. While there was an increase in visits in June, July and August, there was a decrease in visits in January and February.

Keywords: Acute urticaria, children, emergency room

ÖZ

Amaç: Akut ürtikere bağlı acil servise başvuruların sıklığının değerlendirilmesi hastalığın kontrolü ve yönetimi açısından önemlidir. Bu bağlamda yürüttüğümüz çalışmada, çocuklarda akut ürtikere bağlı acil servis başvurularının mevsimlere ve yıllara göre değişiminin incelenmesi amaçlanmıştır.

Gereç ve Yöntem: Retrospektif dizaynda ve tanımlayıcı tipte olan çalışmamızda; 0-18 yaş arası, Ocak 2017- Aralık 2022 tarihleri arasında İstanbul'da üçüncü basamak bir hastanenin çocuk acil servisine akut ürtiker sebebiyle başvuran hastaların tümü çalışmaya dahil edildi. Hastaların tanı yaşı, başvuru zamanı ve cinsiyeti çalışma kapsamında değerlendirildi.

Bulgular: Ocak 2017 ile Aralık 2022 yılları arasında Çocuk Acil Servisi'ne akut ürtiker sebebiyle başvuruların oranı %2,7 (n=28,847) idi. Hastaların %53,6'sı (n=15,465) erkek, %46,4'i (n=13,382) kadındı. Hastaların medyan yaşı 5 yıldığı (0-18 yaş). 2017 ve 2022 yılları arasında akut ürtiker sebebiyle çocuk acile olan başvuruların oranı her bir yıl için sırası ile %3,0, %3,4, %2,9, %2,2, %2,1, %2,2 idi. Genel olarak Haziran, Temmuz, Ağustos aylarında başvurularda artış görülürken; Ocak ve Şubat aylarında başvurularda azalma görüldü.

Sonuç: Altı yıllık bir dönemde çocuk acil servisine akut ürtiker sebepli başvuruların sıklığı yıllar içinde genel olarak azalmıştır. Haziran, Temmuz, Ağustos aylarında başvurularda artış görülürken; Ocak ve Şubat aylarında başvurularda azalma görülmüştür.

Anahtar Kelimeler: Akut ürtiker, çocuklar, acil servis

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INTRODUCTION

Urticaria is a common mast cell-derived disease characterized by pruritus, wheals, angioedema or both (1,2). The lifetime frequency of acute urticaria is approximately 20%. Urticaria impairs quality of life and negatively affects work and school performance (1).

Urticaria is classified as acute or chronic according to its duration and as inducible or spontaneous according to the presence of known triggers (3). In acute urticaria, urticaria-related wheal, angioedema or both are observed in 6 weeks or less. In chronic urticaria, the findings last longer than 6 weeks (1).

Although urticaria is less common in children than in adults, it is one of the common allergic diseases in childhood. In children, urticaria mostly presents as acute urticaria and is triggered by viral infections and antibiotics (4). Other triggers of acute urticaria in children include food additives, drug hypersensitivities, physical triggers, insect bites and idiopathic causes (5). Although most cases in children are thought to be triggered by infections, approximately half of acute urticaria cases are thought to be due to idiopathic causes (6). Triggers or aggravating factors can only be identified in 21-55% of urticaria cases (7). Following an acute episode, a quarter of children experience recurrent urticaria attacks, usually with an intervening viral infection (4).

Urticaria is one of the most common skin diseases encountered in the pediatric emergency department and may cause serious anxiety in parents (8, 9). In a study conducted in Italy, the prevalence of emergency department visits due to acute urticaria in children and adults constituted approximately 1% of all emergency department visits during a one-year period (10). In a study conducted in a tertiary hospital in our country, the most common dermatologic diagnosis in the adult emergency department was reported as acute urticaria with a percentage of 41.6% (11).

Emergency room visits due to acute urticaria may vary during different seasonal periods. Temperature and humidity are associated with the incidence of acute urticaria. The fact that acute respiratory viral infections, which are the most common triggers of acute urticaria, exhibit seasonal patterns, suggests that the frequency of acute urticaria cases may also display seasonal characteristics, influenced by factors such as temperature and humidity (12). Evaluation of the frequency of emergency room visits due to acute urticaria is important in terms of control and management of the disease. In addition, examining the seasonal variation of urticaria attacks in children is also important in terms of evaluating the factors that may be associated with urticaria attacks. In this context, the aim of this study was to investigate the seasonal and yearly changes in emergency department visits due to acute urticaria in children.

MATERIAL AND METHOD

This study was approved by the Health Sciences University Ümraniye Training and Research Ethics Committee (Date: 26.01.2023, Decision no: 410). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

This is a retrospectively designed, descriptive type of study. All patients aged 0-18 years who visited to the pediatric emergency department of a tertiary hospital in Istanbul between January 2017 and December 2022 with acute urticaria were included in the study. Age at diagnosis, time of presentation and gender of the patients were evaluated within the scope of the study.

Statistical analysis

SPSS (Statistical Package for Social Sciences) for Windows 25.0 program was used for statistical analysis and data recording. The conformity of continuous variables to normal distribution was examined visually (histograms and probability plots) and analytically (Kolmogorov-Smirnov). Median, minimum and maximum values, number (n) and percentages (%) were used for descriptive data. The percentages of emergency department visits were visualized with graphs. Friedman test was used for the statistical analyses of the seasonal change of acute urticaria-related visits to the pediatric emergency department. A p value of <0,05 was considered as statistical significance level.

RESULTS

In our study, there were 1,087,174 patients visited to the Pediatric Emergency Department between January 2017 and December 2022. The rate of patients visited to the emergency department due to acute urticaria was 2.7% (n=28,847). Of the patients visited due to urticaria, 53.6% (n=15,465) were male and 46.4% (n=13,382) were female. The median age of the patients was 5 years (0-18 years).

In a total of 6 years between 2017 and 2022, pediatric emergency department visits due to acute urticaria were 2.7% of all visits. Between 2017 and 2022, the proportion of pediatric emergency department visits for acute urticaria was 3.0%, 3.4%, 2.9%, 2.2%, 2.2%, 2.1%, 2.2% for each year, respectively. The number of visits to pediatric emergency departments and the proportion of visits due to acute urticaria are shown in **Table 1**.

Table 1. Visits to the pediatric emergency department between 2017 and 2022

	All visits (n)	Visits due to acute urticaria (n)	Visits due to acute urticaria (%)
2017	188,883	5658	3.0
2018	198,460	6663	3.4
2019	212,240	6146	2.9
2020	106,447	2309	2.2
2021	171,962	3557	2.1
2022	209,182	4514	2.2
Total	1,087,174	28847	2.7

The age group distribution of pediatric emergency department visits with acute urticaria was analyzed according to years. In 2017, 54.5% (n=3084) of emergency visits due to acute urticaria were between the ages of 0-5 years and 45.5% (n=2574) were between the ages of 6-18 years. In 2018, 55.2% (n=3681) of the emergency visits due to acute urticaria were between the ages of 0-5 years and 44.8% (n=2982) were between the ages of 6-18 years. In 2019, these rates were 52.1% (n=3202) and 47.9% (n=2944), respectively. In 2020, the rates of visit due to acute urticaria were 49.3% (n=1138) and 50.7% (n=1171) for 0-5 years and 6-18 years, respectively. In 2021 and 2022, these rates were 54.8% (n=1949), 45.2% (n=1608) and 53.6% (n=2421), 46.4% (n=2093), respectively. Among all visits between 2017 and 2022, 53.6% (n=15475) were between 0-5 years of age, while 46.4% (n=13372) were between 6-18 years of age. The age group distribution of patients' visits over the years is shown in **Figure 1**.

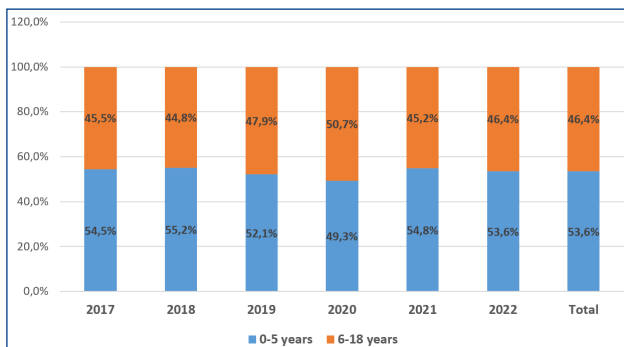


Figure 1. Age group distribution of acute urticaria patients visited to the emergency department according to years

The change in pediatric emergency department visits due to acute urticaria according to the months between 2017 and 2022 was evaluated. In general, there was an increase in visits in June, July and August, whereas there was a decrease in visits in January and February. In 2020, the highest number of visits were seen in January, while the lowest number of visits were seen in April and May (**Figure 2a** and **2b**). The statistical significance of the seasonal variation of acute urticaria-related visits to the pediatric emergency department were analyzed with the total rates of visits in winter, spring, summer and autumn seasons. The increase in acute urticaria-related visits in the summer months was found to be statistically significant ($p=0,008$).

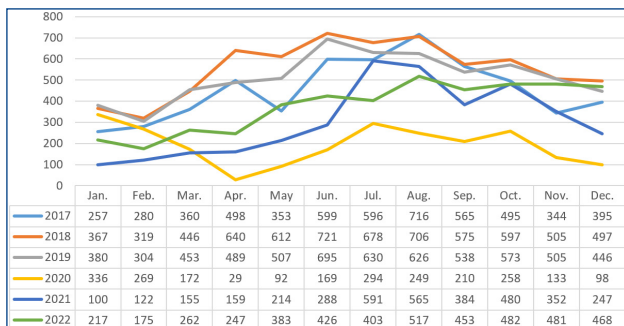


Figure 2a. Monthly variation of visits to pediatric emergency departments due to acute urticaria. *Data is presented as numbers (n)

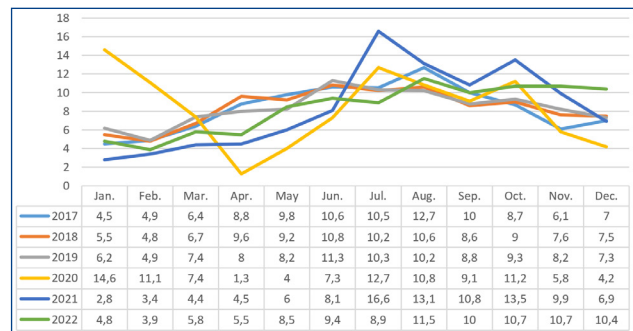


Figure 2b. The percentage of the distribution of pediatric emergency room visits due to acute urticaria by months

DISCUSSION

Urticaria may cause lower quality of life and decreased school performance in children (13,14). In addition to the physical burden of illness, children with urticaria may also be negatively affected psychologically (15). Acute urticaria is one of the common allergic diseases in children and may lead to emergency room visits. In this study, it was aimed to examine the frequency of emergency department visits due to acute urticaria in children and to evaluate the changes according to years and seasons.

In the literature, urticaria has been reported as the most common cause of dermatologic presentations to the emergency department (16-18). Although urticaria has been reported as the most common dermatologic cause of visit to the pediatric emergency department, the number of studies reporting the rate of urticaria-related visits among all visits to the emergency department is very limited. In our study, the rate of emergency department visits due to acute urticaria was 2.7%. When evaluated by years, similar percentages were observed in general. In a study conducted in 2013 in our country, the rate of urticaria-related visits among all visits to the pediatric emergency department was reported to be 1.4% (18). In another study, visits to the pediatric emergency department due to acute urticaria constituted 0.88% of all visits (19). In our study, the percentage of visits to the pediatric emergency department due to urticaria exhibited a slight increase compared to the literature. The differences in the study results may be due to the fact that our hospital is a tertiary care center and patients from surrounding hospitals were referred to us as a reference center.

In our study, 53.6% of the patients were under 5 years of age. The distribution of age groups over the years is similar except for 2020. In 2020, 50.7% of those visited to the emergency department for acute urticaria were over 5 years of age. In a study conducted in pediatric patients in the literature, children visited to the emergency department are mostly in preschool age (20). Since exposure to viral respiratory diseases (21), which are the most common triggers of acute urticaria, may be higher in the preschool

age group and acute urticaria findings in parents may cause more anxiety in this age group, it is expected that presentations to the pediatric emergency department would be more common in the early age group.

In our study, in order to evaluate whether acute urticaria cases are affected by seasonal characteristics, the change in visits between 2017 and 2022 according to months was analyzed. In general, there was an increase in visits in June, July and August, while there was a decrease in visits in January and February. In 2020, the highest number of applications was seen in January, while the lowest number of applications was seen in April and May. The difference in 2020 may be due to the decrease in respiratory viral infection rates in children with the measures taken with the COVID-19 pandemic process in our country and the decrease in infection-induced urticaria attacks in April-May. In a similar study conducted in our country, urticaria-related visits to the pediatric emergency department increased in the summer and fall seasons (August and October) (18). In the same study, the least number of visits occurred in November. In two different studies in the literature, an inverse relationship between temperature increase and urticaria incidence was reported (12, 22). The fact that visits due to acute urticaria increased in the summer months in our study and in the other study conducted in our country, apart from the studies conducted in different countries, suggests that urticaria cases may be due to different etiologic reasons. Further studies are needed to evaluate the reasons for seasonal changes in urticaria cases together with the etiologic causes of urticaria.

Limitations and Strengths

In our study, the evaluation of visits to the emergency department of a single healthcare institution constitutes a limitation in terms of generalizability of the study results. Since our study was retrospective in design, data on the etiology of acute urticaria could not be evaluated. This is another limitation of the study. Despite the limitations of the study, the large sample size and the evaluation of emergency room visits over a long period of time are the strengths of the study. The number of studies examining the seasonal change in the frequency of acute urticaria is limited in the literature. At the same time, our study provides an important contribution to the literature with a broad perspective by examining the emergency department visits related to acute urticaria according to years and these frequencies according to months and age groups. This is another strength of our study.

CONCLUSION

In our study, the percentage and number of visits to the pediatric emergency department due to acute urticaria in the 6-year period followed a similar course over the years. While this percentage was 3.0% in 2017, it was

2.2% in 2022. In general, there was an increase in visits in June, July and August, while there was a decrease in visits in January and February. The increase in acute urticaria-related visits in the summer months was found to be statistically significant. According to the results, it can be interpreted that there may be a seasonal change in the frequency of acute urticaria cases. There is a need for further studies and analysis of multicenter data on this subject.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by the Health Sciences University Ümraniye Training and Research Ethics Committee (Date: 26.01.2023, Decision no: 410).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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