

Evaluation of Eye Consultations Requested From the Pediatric Emergency Service: Experience of A Tertiary Center

Pediatric Acil Servisten İstenen Göz Konsültasyonlarının Değerlendirilmesi: Üçüncü Basamak Merkez Deneyimi

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ABSTRACT

Objective: In this study, it was aimed to evaluate the reasons for visits, demographic and clinical characteristics of patients, the methods of approach to these patients who visited the pediatric emergency service and were consulted to ophthalmology.

Material and Methods: The files of patients consulted to the Ophthalmology Clinic from Pediatric Emergency Department were analyzed retrospectively. Age and gender distribution of patients, complaints at the time of visits, clinical characteristics, diagnoses, diagnostic examinations and treatment methods were recorded.

Results: Of the 241 patients, 164 (68.0%) were male and 77 (32.0%) were female. The median age was 11.0 (3.0-15.0) years. According to age groups, the highest number of patients was in the 12-17 age group with 117 (48.5%) patients. The most common complaints were foreign body in eye with 30.3% (n=73), eye redness with 10.8% (n=26), sticky eye with 8.3% (n=20) and eyelid swelling with 8.3% (n=20). The most common diagnoses were foreign body (31.1%, n=75), conjunctivitis (26.1%, n=63) and corneal epithelial defect (10.0%, n=24). Considering the distribution of diagnoses by age groups, conjunctivitis was the most common in the 0-5 and 6-11 age groups, foreign body in the 12-17 age group. While medical treatment was given to 59.3% (n=143) of the patients, intervention under local anesthesia was performed for 29.5% (n=71) of the patients. Of the seven patients that were hospitalized, five of them were treated under general anesthesia and two of them received surgical operations.

Conclusion: Pediatric emergency visits with eye complaints in children were most common between 12-17 years of age and the most common cause was foreign bodies in the eye. All hospitalized patients were 0-5 years old and the most common reason for hospitalization was foreign bodies. Clinicians' awareness should be increased on common pediatric eye emergencies accordingly.

Key Words: Consultation, Eye, Foreign body, Pediatric emergency

ÖZ

Amaç: Bu çalışmada, çocuk acil servisine başvuran ve göz hastalıklarına konsülte edilen hastaların başvuru nedenleri, demografik ve klinik özellikleri, bu hastalara yaklaşım yöntemlerinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Çocuk Acil Servisi'nden Göz Hastalıkları Kliniği'ne konsülte edilen hastaların dosyaları geriye dönük olarak incelendi. Hastaların yaş ve cinsiyet dağılımı, başvuru anındaki şikayetleri, klinik özellikleri, tanıları, tanı muayeneleri ve tedavi yöntemleri kaydedildi.

Conflict of Interest / Çıkar Çatışması: On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethics Committee Approval / Etik Kurul Onayı: This study was conducted in accordance with the Helsinki Declaration Principles. This study was approved by the local Health Sciences University, Hamidiye Scientific Research ethics committee with the date 27.07.2022 and number 22/390.

Contribution of the Authors / Yazarların katkısı: **SAYIN O:** Constructing the hypothesis or idea of research and/or article, Planning methodology to reach the Conclusions, Organizing, supervising the course of progress and taking the responsibility of the research/study, Taking responsibility in patient follow-up, collection of relevant biological materials, data management and reporting, execution of the experiments, Taking responsibility in logical interpretation and conclusion of the results, Taking responsibility in necessary literature review for the study, Taking responsibility in the writing of the whole or important parts of the study, Reviewing the article before submission scientifically besides spelling and grammar. **UGUR C:** Constructing the hypothesis or idea of research and/or article, Planning methodology to reach the Conclusions, Organizing, supervising the course of progress and taking the responsibility of the research/study, Taking responsibility in patient follow-up, collection of relevant biological materials, data management and reporting, execution of the experiments, Taking responsibility in logical interpretation and conclusion of the results, Taking responsibility in necessary literature review for the study, Taking responsibility in the writing of the whole or important parts of the study, Reviewing the article before submission scientifically besides spelling and grammar.

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Bulgular: Toplam 241 hastanın 164'ü (%68.0) erkek, 77'si (%32.0) kadındı. Ortanca yaş 11.0 (3.0-15.0) yılı. Yaş gruplarına göre en fazla hasta sayısı 117 (%48.5) hasta ile 12-17 yaş grubundaydı. En sık başvuru şikayeti %30.3 (n=73) ile gözde yabancı cisim, %10.8 (n=26) ile gözde kızarıklık, %8.3 (n=20) ile gözde çapaklanma, %8.3 (n=20) ile göz kapağında şişlikti. En sık konulan tanılar yabancı cisim (%31.1, n=75), konjonktivit (%26.1, n=63) ve kornea epitel defekti (%10.0, n=24)'dü. Tanıların yaş gruplarına göre dağılımına bakıldığında konjonktivit en sık 0-5 ve 6-11 yaş gruplarında, yabancı cisim ise 12-17 yaş grubunda görüldü. Hastaların %59.3'üne (n=143) medikal tedavi uygulandı ve %29.5'ine (n=71) lokal anestezi altında müdahale yapıldı. Hastanede yatan 7 hastanın 5'i genel anestezi altında müdahale ile tedavi edilirken, 2'si cerrahi olarak tedavi edildi.

Sonuç: Çocuklarda göz şikayeti ile acil servise başvurular en sık 12-17 yaş arası olup, en sık neden gözdeki yabancı cisimlerdi. Hastaneye yatırılan hastaların tamamı 0-5 yaş aralığında olup en sık yatış nedeni yabancı cisimlerdi. Klinisyenlerin sık görülen pediatrik göz acilleri konusunda farkındalığı artırılmalıdır.

Anahtar Sözcükler: Konsültasyon, Göz, Yabancı cisim, Pediatrik acil

INTRODUCTION

Pediatric ocular emergencies occupy an important place among the patients who visited the emergency department (1). Eye injuries constitute about 8-14% of all injuries in childhood (2). Annually, more than quarter million children sustain eye injuries that require hospitalization (3). Pediatric population groups are at increased risk because of greater exposure to hazards, decreased ability to avoid or detect hazards, immature motor skills, limited common sense and a lower likelihood of functional recovery following eye injury (4). Ocular injuries are among the leading causes of deprivation amblyopia, bilateral low vision, non-congenital monocular blindness, and long-term acquired visual disability (4,5).

Children typically depend on someone else for personal hygiene and self-care. They may have difficulty recognizing eye symptoms and expressing discomfort such as watering of the eye, infection or foreign body. Most of these eye emergencies can be treated on an outpatient basis with simple medical intervention. Ocular trauma is one of the most common causes of acquired blindness in children (6). Some of them require surgical intervention. Examination of pediatric patients is more specific than adult patients. It requires more careful examination and treatment due to both the difficulty of examination and the inability of pediatric patients to express themselves correctly.

In this study, it was aimed to evaluate the reasons for visits, demographic and clinical characteristics of patients who were presented to the pediatric emergency service and consulted to an ophthalmologist, and the methods of approach to these patients. With this study, we think that we will contribute to informing parents about this issue by identifying common eye emergencies in children. In addition, we think that we will contribute to the determination of early diagnosis and appropriate treatment approach by increasing the awareness of physicians working in the emergency department about common eye emergencies.

MATERIALS and METHODS

The files of patients under the age of 18 who were consulted to the Ophthalmology Clinic from the Pediatric Emergency

Department of the Konya City Hospital between January 2021 and June 2021 were retrospectively analyzed from the medical records. Patients who visited to the Pediatric Emergency Department with eye complaints and were treated by a pediatric emergency doctor were not included in the study. All of the 241 patients who were consulted to the Ophthalmology Clinic from the Pediatric Emergency Department were included in this study. Age and gender distribution of 241 patients, complaints at the time of visits, clinical characteristics, diagnoses, diagnostic examinations, and treatment methods were recorded. The patients were divided into 3 different age groups: 0-5, 6-11, 12-17 years old.

This study was conducted in accordance with the principles of the Declaration of Helsinki. This study was approved by local ethics committee with date 02.08.2022 and number 10769.

Statistical analysis

Descriptive statistical methods were used in analyzing the data. Normality tests including Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine the distribution of data. Normally distributed data were specified as mean \pm standard deviation, and not normally distributed data were specified as median (25th-75th percentile). Categorical variables were expressed as number (n) and percentage (%). Statistical Package for Social Sciences (SPSS) Windows software (ver. 22; IBM SPSS, Chicago, USA) was used for all statistical analyses.

RESULTS

Of the 241 patients, 164 (68.0%) were male. The median age of the patients was 11.0 (3.0-15.0) years and the youngest age was 9 months, the oldest was 17 years. The highest number of patients was in the 12-17 age group with 117 (48.5%) patients and 7 (2.9%) of the patients were hospitalized (Table I).

The most common reason for the pediatric emergency visits was foreign body in the eye in 30.3% (n=73) of the cases and it was followed by redness in the eye with 10.8% (n=26), sticky eye with 8.3% (n=20) and swelling in the eyelid with 8.3% (n=20) (Table II).

Table I: Distribution of patients by demographic and clinical characteristics.

	n = 241
Gender, n (%)	
Female	77 (32.0)
Male	164 (68.0)
Age, median(25 th -75 th percentile), years	11.0 (3.0-15.0)
Groups by age range, n (%)	
0-5 years	86 (35.7)
6-11 years	38 (15.8)
12-17 years	117 (48.5)
Hospitalization status, n (%)	
Yes	7 (2.9)
No	234 (97.1)

Table II: Distribution of patients according to complaints.

Complaints	n (%)	Complaints	n (%)
Foreign body	73 (30.3)	Stinging sensation	3 (1.2)
Eye redness	26 (10.8)	Blurred vision	3 (1.2)
Sticky eye	20 (8.3)	Detergent splash	3 (1.2)
Swollen eyelid	20 (8.3)	Low vision	3 (1.2)
Eye bleeding	11 (4.6)	Metal fragment penetration	3 (1.2)
Swollen eye	11 (4.6)	Spray splash	3 (1.2)
Eye weld burn	10 (4.1)	Eye discharge	2 (0.8)
Headache	9 (3.7)	Soil splash	2 (0.8)
Trauma	8 (3.3)	Dust splash	2 (0.8)
Tree branch strike	6 (2.5)	Adhesives splash	2 (0.8)
Perfumes splash	4 (1.7)	Strabismus	2 (0.8)
Eye pain	4 (1.7)	Drug splash	1 (0.4)
Fly intrusion	4 (1.7)	Pen strike	1 (0.4)
Oil solvent splash	4 (1.7)	Plastic fragment penetration	1 (0.4)

Foreign body was the most common diagnosis in the ophthalmologic examinations of the patients (31.1%, n=75). It was followed by conjunctivitis (26.1%, n=63), corneal epithelial defect (10.0%, n=24), subconjunctival hemorrhage (5.8%, n=14) and preseptal cellulitis (3.3%, n=8). Considering the distribution of diagnoses by age groups, conjunctivitis was the most common in the 0-5 and 6-11 age groups, foreign body in the 12-17 age group. Normal ophthalmologic examination findings were present in 7.5% (n=18) of the patients (Table III).

It was observed that the biomicroscope method was mostly used (78.8%, n=190). While medical treatment was given to 59.3% (n=143) of the patients, intervention under local anesthesia was performed for 29.5% (n=71) of the patients. No treatment was required for the 18 (7.5%) patients with normal eye examination findings (Table IV).

Seven (2.9%) patients were hospitalized. Five of them were hospitalized for foreign bodies (Table V). The mean age of hospitalized patients was 3.4±1.5 years and all hospitalized

Table III: Distribution of diagnoses made after ophthalmology consultation according to age groups.

Diagnoses	0 – 5 years*	6 – 11 years*	12-17 years*	Total*
Foreign body	7 (2.9)	6 (2.5)	62 (25.7)	75 (31.1)
Conjunctivitis	37 (15.4)	10 (4.1)	16 (6.6)	63 (26.1)
Corneal epithelial defect	9 (3.7)	6 (2.5)	9 (3.7)	24 (10.0)
Normal eye	4 (1.7)	5 (2.1)	9 (3.7)	18 (7.5)
Subconjunctival hemorrhage	8 (3.3)	2 (0.8)	4 (1.7)	14 (5.8)
Preseptal cellulitis	5 (2.1)	1 (0.4)	2 (0.8)	8 (3.3)
Blepharitis	2 (0.8)	1 (0.4)	4 (1.7)	7 (2.9)
Allergic conjunctivitis	1 (0.4)	3 (1.2)	2 (0.8)	6 (2.5)
Hordeolum	3 (1.2)	1 (0.4)	1 (0.4)	5 (2.1)
Papilledema	0 (0.0)	0 (0.0)	4 (1.7)	4 (1.7)
Nasolacrimal duct obstruction	2 (0.8)	0 (0.0)	0 (0.0)	2 (0.8)
Herpes infection	1 (0.4)	0 (0.0)	1 (0.4)	2 (0.8)
Keratitis	2 (0.8)	0 (0.0)	0 (0.0)	2 (0.8)
Corneal abrasion	1 (0.4)	0 (0.0)	1 (0.4)	2 (0.8)
Entropion	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.4)
Visual impairment	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.4)
Hemangioma	0 (0.0)	1 (0.4)	0 (0.0)	1 (0.4)
Hyphema	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.4)
Cataract	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.4)
Chemosis	0 (0.0)	1 (0.4)	0 (0.0)	1 (0.4)
Corneal scar	0 (0.0)	0 (0.0)	1 (0.4)	1 (0.4)
Pterygium	0 (0.0)	0 (0.0)	1 (0.4)	1 (0.4)
Amblyopia	0 (0.0)	1 (0.4)	0 (0.0)	1 (0.4)
Total	86 (35.7)	38 (15.8)	117 (48.5)	241 (100)

*n(%)

Table IV: Distribution of diagnostic examinations and treatment methods applied to the patients.

	n (%)
Diagnostic examinations	
Biomicroscope	190 (78.8)
Ophthalmoscope	51 (21.2)
Total	241 (100)
Treatment methods	
Surgical treatment	2 (0.8)
Intervention under general anesthesia	5 (2.1)
Glasses treatment	2 (0.8)
Intervention under local anesthesia	71 (29.5)
Medication	143 (59.3)
No treatment	18 (7.5)
Total	241 (100)

patients were between 0-5 years old. While five of the hospitalized seven patients were treated with intervention under general anesthesia, two were treated with surgical treatment.

Table V: Distribution of the diagnoses of hospitalized patients according to age groups.

	0-5 year n (%)	6-11 year n (%)	12-17 year n (%)	Total n (%)
Hordeolum	1 (14.3)	0 (0.0)	0 (0.0)	1 (14.3)
Cataract	1 (14.3)	0 (0.0)	0 (0.0)	1 (14.3)
Foreign body	5 (71.4)	0 (0.0)	0 (0.0)	5 (71.4)
Total	7 (100)	0 (0.0)	0 (0.0)	7 (100)

DISCUSSION

In this study, pediatric emergency visits due to eye complaints were most common between 12-17 years of age and the most common complaint for pediatric emergency visits was foreign bodies in the eye. Furthermore, the most common diagnoses were foreign body in the eye and conjunctivitis, respectively. In addition, all hospitalized patients were 0-5 years old and the most common reason for hospitalization was foreign bodies.

Shah et al. (7) found the male patient rate to be 68.3% in their study on closed-globe injuries. Singh et al. (8) reported that male patients were 68.6% and Archambault et al. (9) reported that male patients were 65.0% in their studies. In our study, pediatric patients who presented to the pediatric emergency department due to any eye complaint were examined. When the patients were evaluated in terms of gender, 164 (68%) patients were male and 77 (32%) patients were female. The fact that boys are more active and courageous and spend more time outside the home than girls may cause them to be more exposed to eye infections and injuries.

In the study of Alim et al. (10) including all age groups, conjunctivitis was the most common diagnosis, while in the study of Üstündağ et al. (11) it was conjunctival hyperemia. In our study, foreign body in the eye (31.1%) was the most frequently recorded emergency diagnosis, followed by conjunctivitis (26.1%) and corneal epithelial defect (10.0%). Considering the distribution of diagnoses by age groups, conjunctivitis was the most common in the 0-5 and 6-11 age groups, and foreign body in the 12-17 age group. Our interpretation of the foreign body and conjunctivitis being more common is as follows: Small objects are easier to enter into the eye because the eye is open to the external environment. Conjunctivitis can be seen more frequently because children do not follow hygiene rules.

In the study of Ligget et al. (12) it was reported that 1.3% of the emergency department visits were due to eye trauma. In the study of Alim et al. (10) this rate was found to be 2.3%. In our study, the rate of patients who visited the pediatric emergency department due to eye trauma was found to be 3.3%.

When the pediatric ophthalmic complaint related emergency department visits are examined in detail, the most common complaints were foreign body in eye (30.3%), eye redness (10.8%), sticky eye (8.3%) and swollen eyelid (8.3%). Kaplan et al. (13) found the exposure to chemical substance rate to be

5.8% in their study. In our study, it is seen that the number of patients who were exposed to chemicals such as detergents, drugs, perfumes, spray, oil solvents and adhesives into their eyes was 17 (7.1%).

In the study of Kaplan et al. (13) 90.1% of the patients were treated with simple medical intervention, 7.2% were treated with advanced medical treatment, 2.4% with simple surgical intervention and 0.3% with advanced surgical intervention. In our study, 59.3% of the patients were treated with medical treatment and 29.5% were treated under local anesthesia. Surgical treatment was performed in two patients; one for cataract and one for hordeolum. Foreign bodies were removed under general anesthesia in five patients because they were very young and examination of the patients were difficult.

One of the limitations of our study is that it is a single-center. The second is that it is a retrospective study. Another limitation is that, the patients who visited the pediatric emergency service with eye complaints and were treated by a pediatric emergency doctor were not included in our study.

CONCLUSION

Visits to the pediatric emergency department with eye complaints in children were most common between 12-17 years of age, and the most common cause was foreign bodies in the eye. All hospitalized patients were 0-5 years old and the most common reason for hospitalization was foreign bodies. Clinicians' awareness should be increased on common pediatric eye emergencies accordingly.

REFERENCES

1. Matsa E, Shi J, Wheeler KK, McCarthy T, McGregor ML, Leonard JC. Trends in US Emergency Department Visits for Pediatric Acute Ocular Injury. *JAMA Ophthalmol* 2018;136:895-903.
2. Qayum S, Anjum R, Rather S. Epidemiological profile of pediatric ocular trauma in a tertiary hospital of northern India. *Chin J Traumatol* 2018;21:100-3.
3. Zhang Y, Feng K, Yan H. Epidemiological Characteristics of Pediatric Ocular Trauma in China: A Multicenter Retrospective Hospital-Based Study. *J Ophthalmol* 2022;2022:4847027. Available from: URL: <https://www.hindawi.com/journals/joph/2022/4847027/>
4. Puodžiuvienė E, Jokūbauskienė G, Vieversytė M, Asselineau K. A five-year retrospective study of the epidemiological characteristics and visual outcomes of pediatric ocular trauma. *BMC Ophthalmol* 2018;18:10.
5. Günaydın NT, Oral AYA. Pediatric traumatic cataracts: 10-year experience of a tertiary referral center. *BMC Ophthalmol* 2022;22:199.
6. Ahmadi H, Alizadeh Z, Karkhah S, Ghazanfari MJ. Prevalence of Pediatric Ocular Trauma in Northern Iran; An Epidemiological Cross-Sectional Study. *Bull Emerg Trauma* 2022;10:40-3.
7. Shah SM, Shah MA, Singh R, Rathod C, Khanna R. A prospective cohort study on the epidemiology of ocular trauma associated with

- closed-globe injuries in pediatric age group. *Indian J Ophthalmol* 2020;68:500-3.
8. Singh S, Sharma B, Kumar K, Dubey A, Ahirwar K. Epidemiology, clinical profile and factors, predicting final visual outcome of pediatric ocular trauma in a tertiary eye care center of Central India. *Indian J Ophthalmol* 2017;65:1192-7.
 9. Archambault C, Gabias C, Fallaha N, Bélanger C, Superstein R. Pediatric ocular injuries: a 3-year review of patients presenting to an emergency department in Canada. *Can J Ophthalmol* 2019;54:83-6.
 10. Alim S. The clinical features of eye emergency patients that admitted to emergency department of Tokat State Hospital. *J Contemp Med* 2014;4:26-8.
 11. Ustundag M, Orak M, Guloglu C, Sayhan M B, Ozhasanekler A. Retrospective evaluation of eye injury victims presented to emergency department. *Türk J Emerg Med* 2007;7: 64 -7.
 12. Liggett PE, Pince KJ, Barlow W, Ragen M, Ryan SJ. Ocular trauma in an urban population: review of 1132 cases. *Ophthalmology* 1990;97:581-4.
 13. Kaplan AT, Kaymak NZ, Günaydın NT, Oral AY, Şimşek Ş. Epidemiological Evaluation of Pediatric Patients Admitted to the Emergency Ophthalmology Clinic. *Bosphorus Med J* 2018;5:58-61.