

Profile of childhood eye trauma in an ophthalmologic emergency

Perfil do trauma ocular infantil em unidade de emergência oftalmológica

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ABSTRACT

Objective: To describe the profile of childhood eye trauma in an ophthalmologic emergency unit. **Methods:** A descriptive cross-sectional study reviewing medical records of patients under 15 years of age at a referral hospital in the ophthalmologic emergency sector from April 2016 to March 2017. Information was collected from the patient and the history of the trauma, the type of trauma and details involved. Ophthalmologic exam was performed, visual acuity, lesions description and type of conduct were verified. **Results:** A total of 78 patients, 80 eyes were included. The right eye was the least affected. Two patients presented bilateral affection. Fifty patients (64%) were admitted through the single health system (SUS). The age group with the highest number of cases was between 1 and 5 years. Regarding the location of the accident, in 42 patients occurred in a home environment. Regarding the ocular lesion involved, most of the patients presented corneal abrasion as the main type of lesion. On the nature of the causal factor of the trauma showed a greater prevalence of traumas with external agents like pencil and pen (14%), ball (13%) and physical aggression (19%). Regarding visual acuity, 39 patients (50%) reported low visual acuity in the affected eye. Sixty-nine patients (89%) had exclusively clinical follow-up. Two patients were referred for ocular evisceration. **Conclusions:** Accidents occurred more frequently in the home environment and closed globe injuries were predominated. Ocular trauma was more frequent among boys. Programs of education and prevention for ocular trauma in childhood are necessary.

Keywords: Eye injuries; Amblyopia; Child

RESUMO

Objetivo: Descrever o perfil do trauma ocular infantil em unidade de emergência oftalmológica. **Métodos:** Estudo descritivo transversal, revisando prontuários de pacientes até 15 anos em hospital de referência em urgência oftalmológica no período de Abril de 2016 a Março de 2017. Foram coletadas informações do paciente e da história do trauma, agente causador e detalhes envolvidos. No exame oftalmológico, foi verificada a acuidade visual, descrição das lesões e o tipo de conduta realizada. **Resultados:** Um total de 78 pacientes, 80 olhos foram incluídos. O olho direito foi o menos acometido. Dois pacientes apresentaram afecção bilateral. Cinquenta pacientes (64%) deram entrada pelo sistema único de saúde (SUS). A faixa etária com maior número de casos estava entre 1 a 5 anos. Em relação ao local do acidente, em 42 pacientes ocorreram em ambiente domiciliar. Quanto à lesão ocular envolvida, a maioria dos pacientes apresentaram abrasão corneana como principal tipo de lesão. Sobre a natureza do fator causal do trauma mostrou maior prevalência de traumas com lápis e caneta (14%), bola (13%) e agressão física (19%). Em relação à acuidade visual, 39 pacientes (50%), referiram baixa acuidade visual no olho acometido. Sessenta e nove pacientes (89%) tiveram seguimento exclusivamente ambulatorial. Dois pacientes evoluíram para evisceração ocular. **Conclusões:** Os acidentes aconteceram mais frequentemente em ambiente domiciliar sendo o trauma fechado a lesão predominante. Sexo masculino representou a maioria dos pacientes incluídos no estudo. A análise epidemiológica do trauma ocular infantil permite elaboração de medidas preventivas baseado no conhecimento dos fatores causais envolvidos.

Descritores: Traumatismos oculares; Ambliopia; Criança

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INTRODUCTION

Ocular trauma is an important cause of hospitalization in pediatric hospitals. It is a serious public health problem due to the morbidity in the pediatric population, being a relevant cause of acquired unilateral blindness.^(1,2)

It follows a bimodal variation according to the age group. Domestic accidents and leisure activities predominate among children, whereas car accidents, occupational injuries and violence predominate in youngsters.⁽³⁾

The American Society for the Prevention of Blindness has estimated that one-third of individuals who lose sight due to eye trauma is in the first decade of life.⁽³⁾

The visual prognosis of ocular trauma is worse in childhood, due to the great tendency to atrophy of the eyes that suffered perforating trauma, resulting in the failure of development and consolidation of visual acuity, which occurs until the eighth year of life.⁽⁴⁾

Several studies in ophthalmologic centers are carried out to investigate the main causes and epidemiological features of ocular trauma, searching for preventive alternatives and better treatment options.⁽⁵⁾ The main studies are from developed countries,⁽²⁾ being important to know the peculiar characteristics of each region.

The present study aims to analyze the epidemiological characteristics of children's ocular accidents in patients treated at a reference service in ophthalmology of our state.

METHODS

A cross-sectional descriptive study was carried out with the review of medical records of patients aged up to 15 years of age treated at a reference hospital in ophthalmological emergency between April 2016 and March 2017.

The following data was collected: patient identification and history of the trauma, causative agent, and details involved. In the ophthalmological examination, the visual acuity was measured, and details of the lesions and the type of conduct performed were checked by biomicroscopy.

The medical records showing absence of some data were not considered in the evaluation.

RESULTS

Eighty eyes from 78 patients were included in the study. The results showed that regarding gender 58 patients (74%) were male and 20 patients (26%) were female. Regarding the age group, 21 patients (26%) were between 1 and 5 years, 39 patients (50%) between 6 and 10 years, and 18 patients (24%) between 11 and 15 years of age. The right eye was less affected (46% - 36 patients) than the left eye (51% - 40 patients). Two patients had affections in both eyes. The traumatic material is shown in figure 1.

Regarding the accident site, 42 patients (54%) were at home, whereas 36 patients (46%) were outside the home environment.

In the present study, 53 patients (68%) came from Fortaleza and metropolitan region, and 25 patients (32%) were from cities in the rural area of the state.

In relation to the month of incidence of the trauma, 46% occurred in the months of January, July and December. (Figure 2)

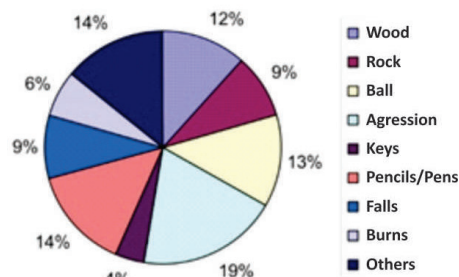


Figure 1: Nature of traumatic agents.

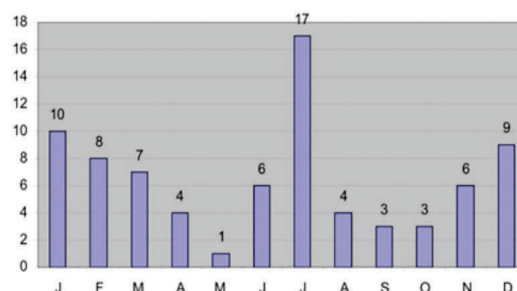


Figure 2: Number of cases distributed in the months from April 2016 to March 2017.

The time of treatment showed that 43 patients (55%) took from 0 to 5 hours to seek care, 21 patients (27%) took 6 to 10 hours, 10 patients (13%) between 11 and 24 hours, and 4 patients (5%) took more than 24 hours to get specialized care.

The ocular lesions presented were shown in figure 3.

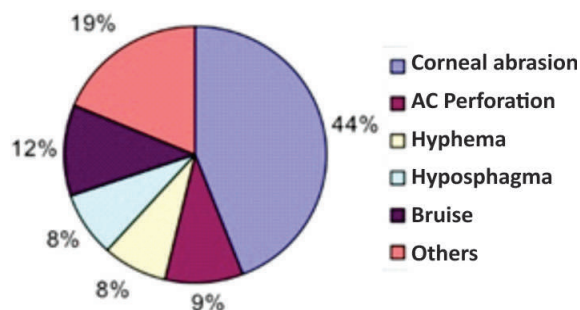


Figure 3: Ocular injuries found in trauma.

Visual acuities at admission and discharge were measured and are shown in table 1.

Table 1
Acuidade visual na entrada e no momento da alta

	Acuidade visual		
	Até 20/40	Pior que 20/40	Não Mensurado
Entrada	31	39	8
Alta	57	9	12

Nine patients (11%) required surgical treatment, in contrast to the 69 patients (89%) who had only ambulatory follow-up. Two patients evolved into ocular evisceration.

DISCUSSION

The frequency of ocular trauma in childhood varies across countries. The results show the highest casuistry in male children, (1,5–9) as found in our study. It is believed that it is due to boys having greater freedom in society, besides their aggressive nature and greater physical contact while playing.^(1,5,6,9)

The highest prevalence of trauma is in the age group of 2 to 6 years, different from the age group found in our evaluation, between 6-10 years. It is justified by motor system immaturity, limited risk sense, and the natural child curiosity that is stronger in this age group.^(1,5) However, injuries with greater visual loss are reported in children older than 6 years.⁽⁴⁾

Regarding laterality, approximately 98% of the patients presented monocular lesion, being in accordance with the literature.^(1,6,7,10)

Most accidents happened inside the house. This analysis was also verified by other authors.^(5,11,12) The prevention of domestic trauma is complex, but by increasing the awareness of parentes and improving supervision and exposure of younger children to objects and potential danger situations can reduce their occurrence.⁽⁶⁾

Most traumas occurred in children from the metropolitan area of Fortaleza, probably due to greater ease of access to the specialized service, being in accordance with other studies.^(7,13) The time of care following the trauma is an important factor for better treatment outcome. The data of the present study coincide with the literature, where 95% of accidents were treated in the first 24 hours after the trauma.^(6,9)

Our study evidenced a higher prevalence of ocular accidents in patients attended by the Single Health System (SUS) compared to patients with some health insurance. The ocular lesions that most caused low vision were more prevalent in SUS patients, among these two cases evolved with evisceration. Socioeconomic, geographic and cultural conditions influence access to specialized services, defining the patients' visual prognosis.^(5,11,12)

The period of greatest occurrence of traumas was during the months of children's vacations (July, January and December). These are the months when children are more involved in playing, away from the supervision of an adult, and during the school vacation period. Other authors did not establish correlation between traumas and a certain time of year (month, school period or season).^(6,11) Adult supervision was considered an important factor in the prevention of accidents, and the presence of an alert adult is of great value in the prevention of ocular lesions in children.⁽¹²⁾

Traumas with pencils and pens occurred in 14% of cases, ball accidents in 13%, and physical aggression in 19%. In other studies, sharp objects were more prevalent.^(7,9,14) These situations demonstrate that parents, teachers or caregivers should be aware of the environment where the child lives, plays and studies.

Ophthalmologic injuries were varied, being corneal abrasions more prevalent, in accordance with the literature studied.^(4,6,7,11,14) The vast majority was solved with clinical treatment, as seen in other studies.^(1,7,8) In a study carried out in Cuba, traumatic hyphema was the most prevalent ocular alteration after trauma.⁽¹⁵⁾

Other researches have a high prevalence of low visual acuity (between light perception and 20/100) related to perforating trauma.^(8,10,12) In a study carried out in Iran, the initial visual acuity of the eyes affected at the moment of treatment was less

than 20/200, and the final visual acuity was greater than 20/40.⁽¹⁶⁾ It is worth remembering that some ocular changes like cataract, glaucoma or retinal detachment may appear months or years after the accident.⁽¹⁵⁾ In severe eye traumas, about 30% of patients lose their useful sight, and this corresponds to approximately 10% of all eye injuries in children.⁽¹⁷⁾

Ophthalmologists, pediatricians, nurses, social workers and other professionals involved in child health care play an important role in raising awareness about eye safety problems among the family and community.⁽¹²⁾

CONCLUSION

The epidemiological analysis of childhood ocular trauma allows the creation of preventive measures based on the knowledge of the causal factors involved.

In the home environment, the structuring of furniture that keeps utensils and chemicals away from children, as well as storerooms with safety systems can prevent children's ocular accidents.

Based on the results, greater vigilance during school vacation periods under the supervision of an adult can be a prophylactic measure to avoid accidents during this period of the year when the highest incidence was observed, mainly in boys.

Another measure would be the creation of reference centers in ophthalmology far from the metropolitan region, seeking an earlier care to the traumatized children to avoid irreversible damages to the vision.

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