

EPIDEMIOLOGY OF PEDIATRIC OPEN GLOBE EYE INJURIES IN SOUTHERN TUNISIA

ÉPIDÉMIOLOGIE DES TRAUMATISMES OCULAIRES PÉDIATRIQUES A GLOBE OUVERT AU SUD TUNISIEN

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Abstract

Open globe traumas in children continue to be a public health problem and an important cause of functional disability. We conducted a retrospective study enrolling children with an age of 16 years or younger, hospitalized for an open globe injury, from January 2018 to December 2021, in the ophthalmology department of Habib Bourguiba University Hospital in Sfax, Tunisia. The study of the epidemiological profile showed that open globe injuries in children occurred mostly in school-aged boys. Most of these injuries occurred at home, in the afternoon and during the summer. Games were the most incriminated activity. Metal objects were the most common cause. Penetrating injuries were the most common type and zone I was the most affected. The study of the epidemiological characteristics of these injuries is important for preventing their occurrence.

Key – Words : Child; Open globe injury; Epidemiology; Prevention

Résumé

Les traumatismes à globe ouvert chez les enfants continuent d'être un problème de santé publique et une cause importante d'incapacité fonctionnelle. Nous avons mené une étude rétrospective ayant inclus des enfants âgés de 16 ans ou moins, hospitalisés pour une blessure à globe ouvert, de janvier 2018 à décembre 2021, dans le service d'ophtalmologie du CHU Habib Bourguiba à Sfax, Tunisie. L'étude du profil épidémiologique a montré que les lésions à globe ouvert chez l'enfant surviennent majoritairement chez les garçons d'âge scolaire. La plupart de ces blessures sont survenues à la maison, dans l'après-midi et pendant l'été. Les jeux étaient l'activité la plus incriminée. Les objets métalliques étaient la cause la plus fréquente. Les blessures pénétrantes étaient le type le plus courant et la zone I était la plus touchée. L'étude des caractéristiques épidémiologiques de ces blessures est importante pour prévenir leur survenue.

Mots - clés : Enfant ; Blessure à globe ouvert ; Épidémiologie ; Prévention

ملخص

لا تزال إصابات العين المفتوحة لدى الأطفال تمثل مشكلة صحية عمومية وسبباً مهماً للإعاقة الوظيفية. أجرينا دراسة بأثر رجعي لتسجيل الأطفال الذين تبلغ أعمارهم 16 عاماً أو أقل، والمقبولين في المستشفى لإصابة في العين المفتوحة، من جانفي 2018 إلى ديسمبر 2021، في قسم طب العيون في المستشفى الجامعي الحبيب بورقيبة بصفاقس- تونس. أظهرت دراسة الملامح الوبائية أن الإصابات حدثت في الغالب لدى الأولاد في سن الدراسة. معظم هذه الإصابات حدثت في المنزل، بعد الظهر وأثناء الصيف. كانت الألعاب هي النشاط الأكثر تضرراً. كانت الأجسام المعدنية هي السبب الأكثر شيوعاً. كانت الإصابات المخترقة هي النوع الأكثر شيوعاً وكانت المنطقة 1 الأكثر تضرراً. تعتبر دراسة الخصائص الوبائية لهذه الإصابات مهمة لمنع حدوثها.

الكلمات المفتاحية : طفل ; إصابات العين المفتوحة ; علم الأوبئة ; وقاية.

INTRODUCTION

The Birmingham Eye Trauma Terminology (BETT) defines an open globe injury as a trauma that causes a full-thickness defect in the wall of the eye [1]. Each year, 160,000 to 280,000 children under the age of 15 years experience an eye trauma severe enough to require hospitalization, of which 21% to 24% are open globe injuries [2]. Children are at greater risk due to their still developing motor skills and less ability to recognize hazards. Severe trauma leads to complications that can reach loss of the eye or visual impairment with subsequent amblyopia. Beyond their childhood, there will be a lifelong impact on mental health, morbidity and quality of life. To help establish prevention programs and improve the management of pediatric ocular trauma, we proposed to study the epidemiological profile of open globe injuries in children in southern Tunisia.

METHODS

A retrospective study enrolling children with an age of 16 years or younger, hospitalized for an open globe injury, over a period of four years from January 2018 to December 2021, in the ophthalmology department of Habib Bourguiba University Hospital in Sfax, Tunisia, was conducted. We specified for each patient demographic data (age and gender) and details related to the trauma (date, time, place and circumstance of the trauma, traumatic agent and consultation timeline). The injuries were classified according to the BETT into rupture of the globe, penetrating injury, perforating injury or IOFB (intraocular foreign body) [1]. Locations of the injuries were classified into 3 zones according to the Ocular Trauma Classification Group (OTC) : zone I injuries were confined to the cornea and limbus, zone II injuries involved the anterior 5 mm from the limbus, and zone III injuries extended to the posterior by more than 5 mm from the limbus. The zone was defined according to the most posterior opening [3]. Impairment of the visual axis (the central three millimeters of the cornea) was also specified.

RESULTS

Fifty-nine children with an open globe injury were collected. Most injuries occurred in males (36 boys, sex ratio M/F: 1.57). The mean age was 6.83 years \pm 3.71 (range 1-16 years). The majority of patients (31 cases, 52.5%) were between 6 and 12 years old.

The monthly distribution of injuries showed peaks of incidence for the months of May, June and August with a frequency of 13.56% for each of these months. The injuries in our series occurred mainly in the afternoon (21 cases, 44.1%). The predominant place of trauma was home (15 cases, 25.4%) followed by street (14 cases, 23.7%), countryside (9 cases, 15.3%), school (4 cases, 6.8%) and workplace (1 case, 1.7%). Place of trauma was unspecified in 16 cases (27.1%). The accidents of everyday life including games dominated the circumstances of the trauma (33 cases, 55.9%). The other described circumstances were assault (3 cases, 5.1%), work accident (1 case, 1.7%) and public road accident (1 case, 1.7%). Circumstance of the trauma was unspecified in 21 cases (35.6%). The most incriminated traumatic agents were metal objects (21 cases, 35.6%) followed by plant material (18 cases, 30.5%), stone (7 cases, 11.9%), wood (6 cases, 10.2%), broken glass (3 cases, 5.1%), finger (1 case, 1.7%), firework (7 cases, 11.9%) and darts (7 cases, 11.9%). Traumatic agent was unspecified in one case. The majority of patients (28 cases, 47.5%) consulted more than 24 hours after the trauma. The most common type of injury was penetrating injury found in 45 patients (76.3%) followed by IOFB found in 12 patients (20.3%). Rupture of the globe was described in two patients (3.4%). No perforating injury has been described. Zone I was the most affected zone (45 cases, 76.3%), followed by zone II (10 cases, 16.9%) then zone III (4 cases, 6.8%). Thirty-four patients (57.6%) had an impairment of visual axis.

DISCUSSION

The male predominance of open globe injuries, found in our series, has been also found in Tunisia [4] and in different series around the world [5,9]. This can be attributed to the fact that boys are more often engaged in violent acts and in dangerous games. We found a predominance for the age group between 6 and 12 years. Several studies have shown that school-aged children are more likely to be exposed to open globe injuries than younger children [5,6,8,9]. As they gradually become independent and sometimes escape parental supervision. We found in our series peaks in the incidence of injuries during the months of May, July and August. Batur [5] also found a higher frequency of open globe injuries in children in summer vacation, during which supervision of children by their parents is reduced and the risk of

ocular trauma is increased. Regarding the time of day, the afternoon was the most favorable time for the occurrence of trauma in our series and in Grieshaber's series [9]. This can be explained by the fact that there are more outdoor activities during the afternoon. Several studies have found a greater frequency of trauma at home [4,9] as our series. This reflects the existence in homes of potential neglected dangers. Although children spend a lot of time at school, a low frequency of injuries at school was found in our series and in other series such as that of Grieshaber [9]. This may be due to the presence of staff to monitor children's activities. We found that most injuries occurred while patients were playing as found by Tok [7]. This can be explained by the lack of adequate playgrounds that comply with safety standards and the lack of adult supervision during games. Metallic objects including knives, scissors, forks, wires, etc. were the most incriminated traumatic agents in our series and in the literature [4,7]. This fact should highlight the importance of paying more attention to children, even older ones, in handling such objects. Organic and agricultural objects were the second causative agent in our series and in Batur's series [5]. Children should therefore be discouraged from playing in environments with branches to decrease the rate of open globe injuries. The consultation time was greater than 24 hours for 47.5% of the children in our series. The average delay was 22.8 hours in Malek's series [4]. In contrast, more than half of the children were seen within 6 hours in a French series [10]. The consultation time, which is too long and late in developing countries, depends on the distance from health care establishments and the lack of recognition of the seriousness of the trauma either by parents or in primary health care centers. Penetrating injury was the most common type of open globe injuries in children in our series and in the literature, followed by rupture or IOFB. The perforating injury was the least described in the literature [4,5]. Zone I was the most affected followed by zone II and then zone III in our series and in the literature [4,5].

CONCLUSION

Open globe traumas in children continue to be a public health problem and an important cause of functional disability. Many prevention measures should be taken such as integrating eye injuries prevention into school curricula dealing with health issues, educating parents about the importance of making the home environment safer for children, trying to introduce less dangerous games for children, early identification and optimal management of ocular lesions in primary care structures and establishing national registries to collect epidemiological data on pediatric eye injuries and assess the impact of prevention programs.

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