



Pattern of ocular injury in Pediatric Population in urban area of bhuj, Gujarat, India

KEYWORDS

Children, injury, ocular trauma, School,

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ABSTRACT

Aim: To analyze the pattern of ocular trauma, causative agents and to find the correlation between time of intervention & visual outcome in pediatric population referred to a tertiary eye care center in western India.

Method: Prospective observational study, in which pediatric patients having ocular trauma between April 2013 - April 2014 referred to our hospital were enrolled. These children underwent detailed ophthalmic examination and intervention as required. Demographic data, mechanism, cause of injury and visual outcome were recorded with details of anterior and posterior segment evaluation. Follow up period: up to 6 months.

Results: 209 children were enrolled. Age ranged from 5 months to 15 years; male: female ratio(2.08:1); mean time between injury to treatment (1day \pm 2.19 hours). Out of all, trauma occurred at home, school and Road Traffic Accidents. Most common modes of injury-wooden-stick, RTA, pencils/pens, broken eye glasses, cricket-ball, and hand of adult and fire-crackers. Injuries were classified as open globe, adnexal and closed globe.

Conclusion: Most patients presented with a delay of 24 hours during which substantial damage was done. Thus, emphasizing the need to educate parents and to improve rural health care system to provide better facilities and a better transport system to reduce the duration between injury & treatment.

INTRODUCTION

Ocular trauma is an important and yet preventable cause of visual morbidity especially among pediatric population in developing countries. The visual outcome of ocular trauma depend on many factors namely the etiology, severity and most importantly on the duration from injury to intervention.¹

Trauma is a significant cause of monocular blindness. Western population-based surveys have shown incidence of monocular blindness due to trauma ranging from 20%–50% and of bilateral blindness from 3.2%–5%^{1,3}. These Hospital-based studies also indicate that about two-thirds of those affected are males, predominantly children and young adults. Injuries with sticks, stones, cricket ball, and metallic objects are the most common.^{3,4} The use of traditional eye medicine like instilling honey, rose water is common and its use potentially worsens otherwise minor conditions and delays treatment for serious injury.²

Ocular injury occurs in three forms: open globe, closed globe, and adnexal injuries. Open globe injuries are one of the most common emergencies in ophthalmologic clinics and require immediate operation.³

Children are not aware of the consequences of eye injury and often report the injury after substantial damage has already occurred. This leads to delayed medical and surgical intervention and ultimately poor visual outcome. Identifying the cause of injuries among children may help in determining the most effective measures to prevent visual loss.³ Pediatric ocular trauma has a significant impact on the future quality of life as children are exposed to a major risk of amblyopia.⁴

Thus, A trauma to the eye however small may lead to permanent visual impairment. Patient education regarding the eye injury and its prompt management can lead to better visual outcome.

The purpose of this study was to analyze the pattern of ocular trauma, causative agents and to find the correlation between time of intervention & visual outcome in pediatric ocular trauma at Gujarat Adani institute of medical science, Bhuj, Gujarat, India .

MATERIAL AND METHOD

In this prospective observational study of all pediatric patients having ocular trauma between from April 2013 to April 2014 referred to Gujarat Adani institute of medical science, Bhuj, Gujarat, India, were enrolled. Patients were either referred to us from other eye care centers in the District or attended our emergency/outpatient department directly.

The demographic data of each child included the age of the child; sex; activity; place; date of trauma; time before seeking medical care. Other details included the cause, nature and circumstance of injury. A thorough ophthalmic examination which included presenting visual acuity measurement by Snellen's chart, slit lamp examination to evaluate anterior segment injuries with fundus evaluation was done by indirect ophthalmoscopy and slit lamp bio-microscopy. In hazy media ultrasonography and in some cases ultrasound bio-microscopy was done to evaluate the eye status. Intraocular pressure was measured in all eyes except in open globe injuries. Gonioscopy to visualize the angle of the anterior chamber was done in closed globe injuries where angle recession was suspected.

All the patients were followed up at monthly intervals for initial six months. The initial visual acuity and final visual acuity after 6 months follow-up were recorded. Open globe injury with lid tear or any adnexal involvement was classified as open globe injury only.

Results

We enrolled 209 children in the age group of 3 months to 15 yrs (3.8 \pm 2.3 years) with a history of ocular trauma. There were 141 boys and 68 girls in the study. 46.36%

children belonged to the urban population and 53.56% children belonged to the rural population.

In our study population three varieties of ocular trauma was seen. Blunt injury causing closed globe injury, where as injury with sharp objects caused either open globe injury or ocular adnexal injuries.

Most of the open globe injuries were caused by injury with sharp objects. Out of 90 patients with open globe injury corneal tear was found in 33 sclera tear in 11 globe rupture due to penetrating corneal/sclera wound with extensive uveal tissue prolapsed was seen in 10. More severe open globe injury presented with retained Intra ocular foreign body with penetrating corneal/ sclera/ globe rupture was seen in 9 and open globe injury with intraocular infection in the form of endophthalmitis was found in 27 cases who presented to us with a delay of 24 to 48 hrs from the time of injury

Injury with blunt objects caused coup counter-coup effect. Out of 54 patients with closed globe injury presented to us, lens damage was seen in 16, hyphema in 18, angle recession in 6, retinal detachment in 8, vitreous hemorrhage in 5 and optic nerve avulsion 1(0.46%).

Ocular adnexal injury was caused by either sharp instruments or severe thrust by blunt object in 65 of cases. They presented with lid tear in 33 cases, conjunctival tear in 6 canalicular tear with lid tear in 18 and miscellaneous in 8 cases

Majority of children had suffered the injury during day time especially when parents were at work. Most of the children had suffered ocular trauma while playing in the house or at school.

Majority of the patients suffering ocular trauma presented at our institute after 24 hours of insult. We found two major reasons for delayed presentation on eliciting history that Children did not report the injury to their parents out of fear and parents did not visit hospital because of the lack of awareness regarding the serious consequences of an eye injury leading to blindness.

At the end of 6 months 60% remained legally blind.

Patients reported within 24hr of eye injury showed better visual outcome as compared to more than 24hrs of presentation.

Table 1: Pattern of Ocular Injury

Sr no	Type of injury	Number
1	open globe injury	90
2	closed globe	54
3	adnexal injury	65

Table: 2 Correlations between the Type of Ocular Injury and Age Group

Age of the Patients	open globe	closed globe	adnexal injury
0-5 year	24	06	10
6-10 year	32	27	27
More than 10 year	34	21	29

Table: 3 Timing And Place of Injury

Timing of injury	Patients
Morning	24
Mid-day	84
Evening	81
Night	20
Place of injury	
Home	97
School	66
Street	18
Playground	28

DISCUSSION

Our study was a hospital-based study among children attending the ophthalmology department Gujarat Adani institute of medical science, Bhuj, Gujarat, India. Its results showed that the percentage of pediatric ocular trauma among patients attending the ophthalmology department during a period of 1 year was 3.7%. This is in agreement with Dandona et al from south India who found a rate of ocular trauma of 3.97% in their study.

Our study showed that about 61.28% of pediatric ocular trauma occurred in children aged 1-10 years. Younger children have common physical vulnerability, lack of coordination, and

Limited ability to avoid or escape from danger. Also children show curiosity and a desire to explore, which may expose them to serious hazards. Abraham et al found that one-third of the injuries occurred in those less than the age of 20 years.

Our study showed that a higher frequency of ocular trauma occurred at home, followed by school, play ground, and finally the street. This agrees with Kaimbo et al who stated that street and home-related injuries accounted for 54% of all ocular injuries. Wooden stick was the cause of injury in 15.20% of patients, followed by cricket ball (15.2%). This is in contrast to other studies done in African countries which stated that 25% of ocular injuries in children are from gunshots, 24.2% from tools, and 21.8% from assault which reflect the cultural and socio-economical differences between the countries.¹⁴

CONCLUSION

Our study showed that Almost 69% children presented to us 24 hrs after the injury. During these crucial hours substantial damage to the ocular structures had already taken place. This delayed presentation to the hospital was responsible for the poor visual outcome in these children. Thus, indicating that either negligence or ignorance on part of the parents was the most important factor in eye injuries in children.

Our data support the need for improving rural health services by providing them with facilities and equipment which is necessary for urgent management of ocular trauma.

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