



A STUDY OF CLINICAL PROFILE OF EYE INJURIES IN PEDIATRIC AGE GROUP AT A TERTIARY HEALTH CARE CENTRE

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ABSTRACT **BACKGROUND:** Ocular trauma is a major cause of preventable blindness. This study takes into consideration the causative agent, place and type of injury, their classification and final visual outcome.
AIMS AND OBJECTIVE: To study the clinical profile of ocular trauma in pediatric age group.
METHODS: This was a prospective interventional hospital based study concerning ocular trauma in 32 cases in patients up to 16 years of age of either sex. All cases underwent detailed ocular examination.
RESULTS: Males were predominantly affected (90%) and closed globe injuries (90%) outnumbered open globe injuries. Most of the trauma occurred at home (75%) and was due to fall (46%). 21 (65%) had monocular injuries. 16 (50%) of the patients gained final visual acuity of more than 6/9.
CONCLUSION: Eye injuries are not rare in children and can lead to significant visual impairment that can hinder children's development.

KEYWORDS : Eye Injuries, Pediatric Age, Epidemiology

INTRODUCTION

Eye injuries are a matter of concern worldwide. It is an important, preventable cause of ocular morbidity. As many as half a million people in the world are blind as a result of eye injuries.⁽¹⁾

Eye trauma may range from minute corneal abrasion or subconjunctival hemorrhage to badly lacerated globe. Ocular trauma is an important cause of morbidity and acquired unilateral blindness in this age group.^(1,2) In pediatric group, these rates are 12% to 38% making ocular trauma the most avoidable cause of childhood blindness.⁽⁵⁻⁹⁾

Injuries with sticks, stones, cricket ball, and metallic objects are the most common.^(2,3) 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.⁽⁴⁾

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.⁽²⁾ Pediatric ocular trauma has a significant impact on the future quality of life as children are exposed to a major risk of amblyopia.⁽³⁾

MATERIALS AND METHODS

The present study was a prospective hospital-based study of 1-year duration concerning ocular trauma in pediatric age group. A total of 32 cases with age group up to 16 years of either sex without any preexisting eye disease attending casualty or ophthalmology department were included in the study.

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 including the cause, nature and circumstances of injury were noted. A thorough ophthalmic examination which includes presenting visual acuity measured by Snellen's chart, slit lamp examination to evaluate anterior segment injuries and fundus examination was done. In hazy media ultrasonography 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 wherever needed.

Injuries are classified based on new OTS (Ocular Trauma score) named POTS (Pediatric penetrating ocular trauma score).^(10,11)

All open globe injuries are categorized by the open globe classification system into 3 Anatomical zones.
 Zone 1 - includes limbus and cornea

Zone 2 - is 5mm posterior to the limbus
 Zone 3 - includes macula and optic nerve

POTS (pediatric penetrating ocular trauma score) and raw points in this study^(10,11)

Parameters	Variables	Raw points
Initial visual acuity	NLP	10
	LP/HM	20
	Counting fingers	30
	0.1-0.5	40
Age of pediatric patients	0.6-1.0	50
	0-5 years	10
	6-10 years	15
Wound location	11-15 years	25
	Zone 1	25
	Zone 2	15
Concomitant eye pathologies	Zone 3	10
	Iris prolapsed	-5
	Hyphema	-5
	Organic/unclean injury	-5
	Delay of surgery (>48h)	-5
	Traumatic cataract	-10
	Vitreous haemorrhage	-20
Retinal detachment	-20	
Endophthalmitis	-30	

ABBREVIATION:

NLP- no light perception; LP- light perception; HM- hand motion.

Patients were divided into five groups (higher points presumed to be better prognosis) based on trauma evaluation score:

Group 1 - < 45 points
 Group 2 - 46 to 64 points
 Group 3 - 65 to 79 points
 Group 4 - 80 to 89 points
 Group 5 - 90 to 100 points

RESULTS

Gender distribution

Total cases included in this study were 32. Out of total cases 90% were male and 9% female.

Age Distribution:

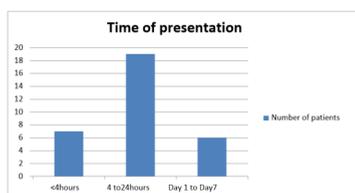
Out of 32 patients, 11 (34%) were between 6 to 10 years of age.
 10 (31%) patients were between 11-16 years of age.
 9 (28%) were between 1 to 5 years of age and 2 (6%) were below 1 year.

- **Distribution of ocular trauma with respect to place of trauma:**
- Most of the trauma occurred at home which included 24(75%) out of 32 patients.
- 6(18%) of patients had ocular trauma at school and 2(6%) of patients at Road.
- **Cause of trauma in pediatric age group:**
- 15 (46%) of children were affected due to accidental fall which most commonly occurred at home.
- Fireworkinjuries accounted for 11(32%) of the cases.
- RTA accounted for 2(6%) of the cases, Burns 1(3%) and other household items 3(9%) of the cases.
- **Extend of ocular involvement:**
- 21(65%) out of 32 patients were presented with monocular injuries and 11(34%) presented with binocular injuries.
- **Type of ocular injury:**
- 29(90%) of patients had closed globe and 3(9%) of patients had open globe injury.

DISTRIBUTION ACCORDING TO SITE OF INJURY:

Site of injury	Number of patients	Percentage (%)
Eyelids	20	62%
Cornea	11	34%
Sclera	02	06%
Hyphema	04	12%
Lens	01	03%
Retina	01	03%

TIME DURATION BETWEEN TRAUMA AND PRESENTATION:



- Most of the patients were presented within 4 to 24 hours of injury which were 19(59%). 7(21%) of patients were presented within 4 hours of injury and 6(18%) of patients were presented between 1 to 7 days.
- **Visual Acuity of Patients at presentation:**
- 7(21%) of patients had 6/9-6/18.
- 5(15%) had 6/24-6/60 and 3 patients had 3/60-PL vision.
- Visual acuity of 6(18%) of patients was not recorded as the patients were non co-operative.
- **Final Visual Acuity at 1 month:**
- 16(50%) of patients gained final visual acuity of >6/9.
- Visual acuity of 6/9 – 3/60 is considered as visual impairment which was seen in 8 patients.
- 2(6%) of patients had 3/60-PL vision which is considered as blindness.

PEDIATRIC OCULAR TRAUMA SCORE:

Group	Score	No of patients	percentage
Group 1	< 45	06	18%
Group 2	46 to 64	05	15%
Group 3	65 to 79	05	15%
Group 4	80 to 89	07	21%
Group 5	90 to 100	09	28%

Higher points presumed to be better prognosis.

DISCUSSION:

This study was a hospital based, single centre, prospective study of clinical profile of ocular trauma in pediatric age group. Total cases included in this study were 32. Out of 32 cases, 90% were Male and 9% Female. Most of the injuries occurred at home accounting for 75% of the cases which were due to Fall(46%). It is similar to studies done by MacEwen C and Desai T et al, in which ocular injuries more commonly occurred at home accounting for 51% and 45.62% respectively⁽¹⁵⁾⁽¹⁶⁾. In

the present study, 59% cases arrived to centre between 4 to 24 hours and 18% presented after 24 hours. Only 21% of patients had treatment within 4 hours of trauma which is regarded as golden period for management of injuries.

Monocular trauma was more common accounting for 65% of the cases as compared to binocular trauma which accounted for 34% of the cases. Majority of cases were closed globe injuries (90%). Most common clinical presentation was laceration of the eyelid followed by periorbital ecchymosis and subconjunctival haemorrhage.

Out of 32 cases, 10 required indoor treatment and the rest were treated on outdoor basis. 2 patients required surgical intervention in the form of full thickness corneal tear repair surgery. Out of these 2 patients, one patient developed cataract and operated for that.

1 patient required partial thickness corneal tear repair surgery. All patients received topical as well as systemic medication.

A study done by Singh et al⁽¹³⁾ reported the incidence of pediatric ocular trauma to be 12.8%. A total of 220 cases of trauma were evaluated. Wooden objects were the most common mode of injury which accounted 29.54%. Penetrating injuries formed the main bulk, accounted for 67.79% cases of open globe injury.

Dandona and Dandona⁽¹⁴⁾ reported that ocular trauma accounted for 4.2%- 7% of all childhood blindness.

In the present study, most common mode of injury was fall down. Other household items such as scissors, knife and firecracker caused more than one fifth of the injuries. It is obviously impractical and impossible to prevent children from touching these items. However, accidents can be prevented by better adult supervision and by educating about the danger of the improper use of certain objects.

In a study done by Saha et al⁽¹⁷⁾, which include 86 eyes, most common place of injury was home (44.18%) and commonest object of injury was sharp objects (34.56%). After primary repair 35 (40.69%) eyes had vision ≥3/60 while only 2 (2.32%) eyes had vision >6/18. Patients reporting within 24 hours of injury were 45.5%, out of which 62.7% had final visual acuity of >3/60 which was significant (p <0.05).

In the present study, 16(50%) of the patients gained final visual acuity of more than 6/9. 8 patients had final visual acuity of 6/9- 3/60 and 2(6%) patients had visual acuity less than 3/60.

Majority of the patients had good visual outcome without any sequel. The visual prognosis was related to the type and severity of injury. Better visual outcome was achieved for the patients with non penetrating injuries or superficial foreign bodies. Severe contusion or penetrating injuries had much worse visual outcome despite very active treatment.

CONCLUSION:

Eye injuries are not rare in children and can lead to significant visual impairment that can hinder children's development. There is a broad spectrum of injuries in terms of cause, type and severity of the injury. Some eye injuries in children are preventable by means of more public education, closer supervision from parents and teachers, and improved safety measures in household, school and sports settings are recommended.

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