

Original Research Paper

Ophthalmology

PERFORATING OCULAR INJURIES- A RETROSPECTIVE STUDY FROM TERTIARY CARE HOSPITAL OF NORTH INDIA.

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ABSTRACT

Background: Ocular trauma is one of the main cause of corneal blindness which affects 12% of world's population & is amenable to treatment. The leading cause of non-congenital unilateral blindness in children is ocular trauma. Children suffer a higher percentage of open globe injuries than adults which yield worse visual outcomes in ocular trauma.

Aims: The objective of the study was to analyse epidemiological pattern of perforating/penetrating ocular injuries.

Materials & Methods: The present 5 years retrospective study involves all the patients who had been reported as a case of perforating/penetrating ocular injury in the tertiary care hospital. The records of all patients with perforating/penetrating ocular injury seen during this period were $reviewed \& data \, such as \, demographic \, details, presenting \, visual \, acuity, all \, ocular findings, examinations \, etc \, were \, collected.$

Results: Total of 365 perforating/penetrating ocular injury patients were seen during study period. Maximum incidence of perforating/penetrating ocular injuries were noticed ≤10 years of age i.e. 36.2%. Males (79.5%) outnumbered females in the present study. Regarding structural involvement, cornea constitute (65.5%) perforating/penetrating injuries followed by corneoscleral i.e. 19.7%.

Conclusion: From present study, we may conclude that maximum incidence of perforating/penetrating injuries are noticed in children with more preponderance in males. Corneal perforation is more common as it is the most exposed part of eye.

KEYWORDS : Ocular injury, perforating/penetrating, retrospective.

INTRODUCTION:

Ocular trauma which is commonest cause of monocular visual impairment & blindness worldwide can be sudden, devastating & can change a life in a moment.^[1] It is the third most important cause of blindness after cataract and nutritional blindness as per report of WHO's 2nd International symposium on ocular injury in Geneva, 1992.^[2] About 55 million eye injuries occur every year globally which restrict normal activities for more than one day. Children suffer a higher percentage of open globe injuries than adults, comprising 19% - 58.3% of all cases of ocular trauma.^[1] Up to 5% of all blindness occurs due to direct result of trauma. Due to the curiosity & underdeveloped motor skills children are more commonly injured than adults.^{3]} Perforating injury causes structural damage with or without visual disturbances, introduction of infection, development of sympathetic ophthalmitis & specific effects due to retained ocular foreign bodies.^[4] Nearly 90% eye injuries can be prevented by relatively simple measures but the use of ocular protective devices in India is very low.^[3] If ocular injuries are not treated in children, they will lead to functional reduction of visual acuity & ambylopia. Moreover, ocular injury in children lead to physical disability with major impact on social & psychological development of child.^[2]Early diagnosis & appropriate management of the injuries helps the patients to restore the vision & avoid complications to these injuries.^[4] The purpose of this study was to evaluate the epidemiology of perforating/penetrating ocular injury in patients attending tertiary care centre.

MATERIAL AND METHOD:

The present study was retrospective from January 2013 to January 2018 of all the patients who had been reported as a case of perforating/penetrating ocular injury in the department of ophthalmology of a tertiary care hospital. The records of all patients with perforating/penetrating ocular injury seen during this period were reviewed. The following data were taken from the patient's records (admission files/emergency register) such as demographic details, presenting visual acuity, place of injury, all ocular findings, examinations & imaging studies done. World Health Organisation (WHO) and Birmingham eye trauma terminology system (BETTS) were used as operational definitions.^[5]

STATISTICAL ANALYSIS:

Analysis of data was done using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

OBSERVATION & RESULTS:

One of the important source of ocular morbidity is perforating/ penetrating ocular injuries which carries high risk of visual morbidity in all age groups but are preventable causes of serious visual impairment & blindness. The structural as well as functional capacity of the eye can be restored by treating the injury as an emergency.[4]

Following observations were made:

Table No.1 shows that the maximum incidence of perforating/ penetrating injury was noticed in ≤ 10 years of age i.e. 36.2% followed by 16.7% in 21-30years. Males comprised 79.5% & females were 20.5%

Table no.2 shows that the cornea constitute 65.5% perforating/ penetrating injuries being the most exposed part of eye followed by corneoscleral i.e. 19.7%.

DISCUSSION:

Ocular injury is very common, more so in the under privileged and developing countries. Ocular trauma constitutes 5% of all cases admitted in developed countries and about 12.9% in developing under privileged & developing countries.^[6] Ocular trauma is one of the main cause of corneal blindness which affects 12% of world's population which is amenable to treatment.^[7]Also, in rural children incidence of ocular injury are higher due to the fact that majority of population lives in rural areas & they play games like cricket ball-bat, gilli-danda, bow-arrow etc without any supervision.¹

In the present study maximum incidence of perforating injury was noticed ≤ 10 years of age i.e. 36.2% followed by 16.7% in 21-30 years. This might be due to reason that children in this age group are immature, curious about their surroundings, making them more susceptible to injuries. Singh let al in their study found that 6-10 year age group have highest incidence (41.82%) of ocular injuries.^[2] Saxena R et al in a study showed that childhood ocular trauma in age

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group <2 years is less prevalent & main reason is the greater parental care & children being less exposed to outer world. $^{\scriptscriptstyle [8]}$

In the present study males comprised 79.5% & females were 20.5%. The reason behind is probably due to greater liberty & stimulus to aggressiveness given to boys in all societies. Singh I et al in their study found 83.63% boys had ocular trauma as compared to 16.36% girls.^[2] Aghadoost D et al in a study showed higher incidence of eye injuries in males.^[9] Ranjan A et al in their study found that prevalence of ocular trauma was more in males.^[3]

In the present study, cornea constitute 65.5% perforating injuries followed by corneoscleral i.e. 19.7%. This might be due to reason that cornea is the most exposed part of eye. Tharanivel V et al in his study found that cornea is the commonest structure involved in perforating injuries & constitutes 77%. ^[4] Singh I et al in their study found that cornea was involved in maximum number (70.90%) of cases.^[2]

Main causes of injury in the present study were scissors, knife, pen/pencil, nail, iron piece, stone, wood, fall from height etc. Also the commonest location for ocular trauma was at home. Fire cracker injuries were sustained during festive season of Dussehra & Diwali. Saxena R et al in a study showed that the commonest etiological agents causing open globe injuries were needle, knife, glass, arrow etc.^[8]

Simple limbal, scleral & peripheral corneal wounds without uveal involvement have better visual prognosis in the present study whereas structural and functional recovery is poor in iris, ciliary body & posterior segment involvement which shows grave prognosis. Also because of problem in the removal & more trauma to ocular structures posterior segment intraocular foreign body has poor visual prognosis when compared to anterior segment. To prevent encapsulation, chemical changes & inflammation due to retained intraocular foreign body early removal of foreign body should be done.^[4]

In the present study, with the help of magnet intraocular foreign body was removed in 7 patients as per records whearas 1 patient having intraocular foreign body referred at PGI chandigarh.

Initial good visual acuity and primary management are important factors for final visual outcome. Penetrating injuries and posterior segment involvement adversely affect visual results.^[2]

Data collection was done from emergency record & admission files. Thus at the end of the study it has been concluded that children need more supervision at home and family should be made aware of them various modes of eye injuries using safety measures like goggles and helmets while driving and supervising the objects to be played with.

Sharp objects like needles, knives, household chemicals like acids should be out of reach of children. In case of mishap, it is mandatory to seek medical attention at the earliest.

LIMITATIONS:

As this was a retrospective record based study only data entered in the emergency register /admission files could be used. The long term outcome of the patients were not available as during active follow-up records were not entered in hospital register. Also the figures might under represent as some patients could have attended other service provider in the area.

CONCLUSION:

From present study, we may conclude that maximum incidence of perforating/penetrating injuries was noticed in children with more preponderance in males. Corneal perforation is more common as it is the most exposed part of eye. Thus, children need more supervision at home and family should be made aware of them about various modes of eye injuries using safety measures like goggles & helmets while driving and supervising the objects to be played with.

RECOMMENDATIONS:

Authors recommend that sharp objects like needles, knives, household chemicals like acids should be kept out of reach of children. In case of mishap, it is mandatory to seek medical attention at the earliest. Preventive eye care programs (safety measures & following traffic rules) for the travelling population is of utmost priority. A reduction in ocular trauma will reduce permanent visual impairment leading to a significant reduction in the burden on the health services of the region and the nation on the whole.

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Declaration:

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Table no. 1 Age & sex distribution of studied patients

| | Number | Percentage |
|----------------|--------|------------|
| Age (in years) | | |
| ≤10 | 132 | 36.2 |
| 11-20 | 53 | 14.5 |
| 21-30 | 61 | 16.7 |
| 31-40 | 54 | 14.8 |
| 41-50 | 32 | 8.8 |
| 51-60 | 15 | 4.1 |
| ≥60 | 18 | 4.9 |
| Sex | | |
| Males | 290 | 79.5 |
| Females | 75 | 20.5 |

Table no. 2 Distribution of studied patients on the basis of structure involved.

| structure involved | No of patients | %age |
|--------------------|----------------|------|
| Cornea | 239 | 65.5 |
| Sclera | 35 | 9.6 |
| Corneoscleral | 72 | 19.7 |
| Limbal | 10 | 2.7 |
| Others* | 9 | 2.5 |
| Total | 365 | 100 |

Others* include globe perforation/Traumatic evisceration

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