

Epidemiology of Penetrating Ocular Trauma

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Purpose: To study the epidemiology of penetrating ocular trauma at the Institute of Ophthalmology, King Edward Medical University, Mayo Hospital, Lahore

Material and Methods: The study was conducted at the Institute of Ophthalmology, Mayo hospital Lahore which included 480 patients. Most of the cases were admitted through emergency. Detailed history was taken with special consideration to the duration of injury and the object causing injury. Visual acuity was recorded using Snellen chart and slit lamp examination included documentation of the size of the tear, its location, involvement of visual axis, iris prolapse, cataract formation, intraocular foreign body (IOFB), and retinal detachment. All cases had pre and post operative B-scan ultrasound. Regular follow up was done and final best corrected visual acuity (BCVA) was recorded.

Results: Mean age of patients was 18.24 year with almost 70% ocular trauma occurring in first two decades of life. In first decade male: female ratio was 1.6:1 but it increased to 10:1 after the first decade. Intraocular foreign bodies (IOFB) were found in 15% of cases and iris prolapse in 62.5% cases. Visual axis was involved in 25% of cases. 75% of the tears were corneal and 24 % were corneo-scleral. Incidence of cataract formation was 61.6%. 35% of trauma was related to sharp objects and 18% to blunt objects. Retinal detachment occurred in 9.81%. Post op Visual acuity was related to the severity of trauma.

Conclusion: Prevalence of trauma was much more common in first two decades of life with significantly higher ratio in males than female. Majority of the trauma was caused by sharp objects. Awareness of ocular trauma should be increased in the populations to reduce the incidence of childhood blindness.

Ocular trauma is a major cause of visual loss in young population. Annually, over 2.5 million Americans suffer an eye injury¹, and globally more than half a million blinding injuries occur every year. World-wide, there are approximately 1.6 million people blind from eye injuries, 2.3 million bilaterally visually impaired and 19 million with unilateral visual loss; however ocular trauma being the commonest cause of unilateral blindness today². Injuries cannot always be prevented but the methods of reducing the incidence of visually damaging trauma can be found by identifying the underlying factors in their etiology.

The age distribution for the occurrence of serious ocular trauma is bi-modal, with the maximum incidence in young adults and a second peak in the elderly³. Both hospital and population based studies indicate a large preponderance of injuries affecting males⁴.

Approximately half of all patients who present to an eye emergency department, present with ocular trauma⁵. The spectrum of injuries ranges from very mild, non-sight threatening to extremely serious with potentially blinding consequence⁶.

The aim of this study was to study the epidemiology of penetrating ocular trauma at the Institute of Ophthalmology, King Edward Medical University, Mayo Hospital, Lahore.

MATERIAL AND METHOD

The retrospective study was conducted at the Institute of Ophthalmology, Mayo hospital Lahore from January 2005 to December 2010. A total of 480 patients with penetrating ocular trauma were included in the study. No discrimination of gender and age was made for admission. Most of the cases were admitted through emergency. Detailed history was taken with

special consideration to the duration of injury and the object causing injury. Visual acuity was recorded using Snellen chart where possible and slit lamp examination included documentation of the size of the tear, its location, involvement of visual axis, iris prolapse, cataract formation, IOFB, and retinal detachment. All cases had pre and post op B-scan ultrasound. General physical examination of the patient and laboratory tests for various investigations especially general anaesthesia, total leukocyte count, differential leukocyte count, hemoglobin, complete urine analysis, x-ray chest and skull, electro cardiogram, electrolyte balance and kidney functions were done to avoid complications. Regular follow ups were done for at least 3 months and final BCVA was recorded on each visit.

Data was entered and analyzed using SPSS version 11. The age was analyzed by descriptive method with mean \pm SD. The variables like sex, preoperative visual acuity, treatment, postoperative visual acuity and complications were analyzed as frequency and percentages.

RESULT

Total numbers of patients was 480. Mean age of patient's was 18.24 year with almost 70% ocular trauma occurring in first two decades of life. In first decade male: female ratio was 1.6:1 but it drastically increased to 10:1 after the first decade. Intraocular foreign bodies (IOFB) were found in 75 cases (15%) and iris prolapse in 300 cases (62.5%). Visual axis was involved in 120 cases (25%), 360 (75%) were corneal tears and 24% were corneo-scleral. Incidence of cataract formation was 61.6%. 35% of trauma was related to sharp objects and 18% to blunt objects. Retinal detachment occurred in 47 (9.81%). Post op Visual acuity was related to the severity of trauma. Improvement in best corrected visual acuity was 30.24% cases, BCVA lower than pre op visual acuity was in 57 cases (11.76%), Pre op and BCVA was same in 280 cases (58%). 48(10%) eyes became NPL (no projection of light), 21(4%) became phthisical eyes, 2(0.04%) were enucleated, 3(0.06%) were eviscerated. Eleven eyes were lost to follow up.

Presentation after 24 hours was very common 80% which was associated with poor prognosis. Different treatment options were used in the management of trauma. Corneal tear repair was done in 317 (66%) patients, scleral tear repair was done in 73 (15%) patients, and corneoscleral tear repair was done in 90 (18%) patients. 75 patients had intraocular foreign

body, 47 patients had retinal detachment, 14 patients had retinal hemorrhage, 3 patients had retinal tear.

Objects causing ocular trauma

Objects causing trauma	Frequency n (%)
Metal piece / rod	92(19)
Wooden piece/stick	82(17)
Glass	60 (12)
Stone	49 (10.2)
Firecracker	22(4.5)
Knife	26(5.4)
Finger Nails	20 (4.1)
Needle	18 (3.7)
Fire arm	15(3.1)
Animal	11(2.2)
Scissors	17(3.5)
Pen/pencil	12(2.5)
Misc	56 (11.6)

Corneal vs Scleral tear

Site of tear	Frequency n (%)
Corneal tear	317 (66)
Scleral tear	73 (15)
Corneoscleral tear	90 (18)

DISCUSSION

Ocular trauma is the cause of blindness in approximately half a million people worldwide, and many more have suffered partial loss of sight. Trauma is often the most important cause of unilateral loss of vision, particularly in developing countries⁷. Males tend to have more eye trauma than females. Young adults have the highest incidence of ocular injury⁸. Lower socioeconomic classes are also more associated with ocular trauma. Due to severity of ocular trauma, majority had poor visual outcome⁹. The setting for the occurrence of trauma is most commonly the workplace and, increasingly, road accidents. On the other hand, domestic accidents are probably under-reported. Of particular importance in some developing

countries is the occurrence of superficial corneal trauma in agricultural work, often leading to rapidly progressing corneal ulceration and visual loss.

Open globe injuries, especially ruptured globes, had the worst visual outcomes¹⁰. Vitreous hemorrhage followed by open globe injury is usually associated with very poor prognosis¹¹. Delayed presentation is very common, which is associated with very poor prognosis¹², but early referral to eye causality can improve outcome.

Ocular trauma in children is associated with visual loss. Many of the cases were preventable. Public education, general awareness and aggressive primary management may be indicated to optimize visual outcome¹³. There is a need for systematic periodic awareness to reduce these accidents and blindness¹⁴.

Ocular trauma in childhood is more frequent in the male schoolchildren and is mostly due to injury with agents like stone, wood and iron pieces, domestic utensils and leisure objects. The injuries occurred most frequently at home. Programs of education and prevention for ocular trauma in childhood are necessary. Awareness of ocular trauma should be increased in the populations to reduce the incidence of childhood blindness.

CONCLUSION

Prevalence of trauma is much more in first two decades of life with significantly higher ratio in males than females. Majority of the trauma was caused by sharp objects. Awareness of ocular trauma should be increased in the populations to reduce the incidence of childhood blindness. Health education and awareness about the morbidity caused by delayed presentation is needed, especially in peripheral areas to save vision. Basic Health Units should provide initial treatment as early as possible and refer serious cases to nearest tertiary care centre.

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