

Pattern of Ocular Trauma in Tertiary Care Hospital

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Purpose: To analyze the etiology and outcomes of ocular trauma.

Study design: Cross sectional descriptive study.

Place and Duration of Study: Eye Department Lahore General Hospital, Lahore from 1st January 2016 to 28th February 2017.

Material and Method: A total of 180 patients hospitalized with ocular trauma were included in the study. Study was conducted at the Department of Ophthalmology, Lahore General Hospital Lahore from 1st January 2016 to 28th February 2017 and data was collected through pre-designed proforma. The data collected composed of age, sex, etiology, pre-treatment and post-treatment visual acuity. Patients were stratified in 3 groups A, B and C with respect to pre-treatment visual acuity.

Results: A total of 180 patients with ocular trauma were included in the study. In group A 124 (68.8%) patients had pre-treatment visual acuity PL +ve to 6/60. After treatment visual acuity improved in all patients including 21 (16%) patients with visual improvement to 6/36, 90 (72.5%) patients improved to 6/60 and 13 (10.4%) patients gained vision to HM. In group B 43 (23.8%) patients had pre-treatment visual acuity between 6/36-6/12 out of which 12 (27.9%) patients had vision improved to 6/12, 20 (46.5%) patients had vision gain to 6/24 and 11 (25.5%) patients gained 6/36 vision. In group C 13 (7.2%) patients had pre-treatment visual acuity 6/9-6/6 out of which vision of 2 (15.3%) patients improved to 6/6 and 11 (84.6%) patients gained to 6/9 vision.

Conclusion: Metallic foreign body and road traffic accident were the most

common cause of ocular trauma and improvement in post treatment vision was directly proportional to the severity of pretreatment visual loss.

Key words: Trauma, Foreign Body, Vision, Etiology, Road traffic accident, Metallic.

Ocular trauma is a common and unfortunate but preventable disease¹. Trauma to eyeball forms an important cause of visual impairment in children and in persons associated with various occupations such as welders, electricians and people in glass and steel industry. Domestic accidents and assaults each account for approximately one third of injuries².

Ocular trauma is the second leading cause of visual loss in US. According to a survey the incidence of ocular trauma in USA is 2.4 million per a year². Ocular trauma includes penetrating and blunt injuries. Penetrating injuries are at higher risk of developing endophthalmitis as compared to blunt trauma³. Blunt trauma is associated with skin or corneal abrasion, hyphema, posterior vitreous detachment, vitreous hemorrhage and retinal detachment in majority of cases⁴. Injuries caused by sharp objects result in better visual outcome than those caused by blunt objects and injuries limited to anterior segment have better prognosis than those involving the posterior segment⁵.

Pediatric age group accounts for a large proportion of ocular trauma. Most of the times the source of trauma were household objects i.e knives, fork, Pencil, etc⁶. In young age group road traffic accidents and physical abuse came out to be the leading cause of ocular trauma⁷.

This study was undertaken to identify etiological factors, prognostic indicators and determine effective methods of management.

MATERIAL AND METHOD

Study was conducted at Department of Ophthalmology, unit 2, Lahore General Hospital Lahore from 1st January 2016 to 28th February 2017. A total of 180 patients with ocular trauma were included in the study. Pre-operative assessment was done by visual acuity, pupillary reactions, extra-ocular motility, slit lamp anterior segment examination and

indirect ophthalmoscopy for fundus examination. Each patient with penetrating ocular injury underwent CT- scan orbit and brain to rule out the presence of foreign body. B scan was done in patients with no fundus view.

Data was collected on pre designed proforma. Data included name, age, sex, etiology, pre-treatment VA, type of foreign body, investigations done and surgical procedure. Patients were stratified in three groups on the basis of pre-treatment VA. Group A had VA PL+ve- 6/60 and included 124 patients, Group B had VA 6/36-6/12 and included 43 patients and Group C had VA 6/9-6/6 and included 13 patients. Post treatment visual acuity was recorded in all patients.

Data was analyzed by using SPSS (Statistical Package for Social Sciences) version 22. Frequencies and percentages were computed for all categorical variables while mean and standard deviations were computed for all numerical variables.

RESULTS

52 (28.8%) patients less than 10 years of age presented with ocular trauma. 147 (81.6%) male presented with ocular trauma as compared to females 33 (18.3%). A total of 53 (29.4%) patients had metallic foreign body trauma, 37 (20.5%) patients had road traffic accident trauma to eye. In group A 124 (68.8%) patients had pre-treatment visual acuity PL +ve to 6/60. After treatment visual acuity improved in all patients including 21 (16%) patients vision improved to 6/36, 90 (72.5%) patients vision improved to 6/60 and 13 (10.4%) patients vision gain was HM. In group B 43 (23.8%) patients had pre-treatment visual acuity between 6/36-6/12 out of which 12 (27.9%) patients had vision improvement to 6/12, 20 (46.5%) patients gained vision to 6/24 and 11 (25.5%) patients gained 6/36 vision. In group C 13 (7.2%) patients had pre-treatment visual acuity of 6/9-6/6 out of which 2 (15.3%) patients had vision improvement to 6/6 and

11 (84.6%) patients gained 6/9 vision. There were 109 (44.4%) patients who had right eye trauma while 44 (55.6%) had left eye trauma. Lid lacerations were associated with all road traffic accidents.

Table 1: Demographic characteristic of Patients.

Variables	n (%)
Total Patients admitted (n = 1667)	
Ocular Trauma Patients	180 (10.79%)
Eye affected (n = 180)	
Right Eye	109 (60.5%)
Left Eye	71 (39.4%)
Gender	
Male	147 (81.6%)
Female	33 (18.3%)

Table 2: Stratification of Visual acuity with respect to pre and post-treatment condition.

Visual Acuity	Pre-treatment	Post-treatment
PL - 6/60	124 (68.8%)	21 (16%)-6/36 90 (72.5%) -6/60 13 (10.4%) -HM
6/36 - 6/12	43 (23.8%)	12 (27.9%)- 6/12
6/9- 6/6	13 (7.2%)	20 (46.5%)-6/24 11 (25.5%)-6/36 2 (15.3%)-6/6 11 (84.6%)-6/9

Table 3: Cause of injury

Source	No of patients (%)
Glass	6 (7.5%)
Knife	30 (20.5%)
Screw driver	2 (2.5%)

Mirror	3 (3.37%)
Pen	4 (5.1%)
RTA	37 (20.5%)
Scissor	2 (2.5%)
Pencil	9 (11.2%)
Syringe needle	1(1.25%)
Needle	2 (2.5%)
Broken saucer	1 (1.2%)
Blade	2 (2.5%)
Knitting needle	3 (3.75%)
Clipper	2 (2.5%)
Metal piece (metal grinder)	53 (29.4%)
Beak of bird	2 (2.5%)
Nail	13 (7.2%)
Hammering	9 (5.1%)

Table 4: Stratification with respect to age group.

Age Group (yr)	Number (%)
≤ 10	58 (28.8%)
11 - 20	42 (23.3%)
21 - 30	51 (28.3%)
> 30	29 (16.1%)

As total 180 cases were enrolled and 53 were metal piece injury and 1 case was of syringe needle injury so metal piece injury came out to be statistically significant ($p < 0.005$).

DISCUSSION

Ocular trauma is the leading cause of acquired monocular blindness in children and young adults with a male preponderance; the former accounting for

20% to 50% of all ocular injuries⁸. In our study 88.8% were male and 24% of patients were lying in less than 10 year of age group. A review, undertaken for planning purposes in the WHO program for the prevention of blindness, suggests that around 55 million eye injuries responsible for restricting activities for more than one day, occur annually; they account for 750,000 hospitalized cases each year while our study included 180 patients suffering from ocular trauma from Jan 2016 to Feb 2017. There are approximately 200,000 open-globe injuries; with around 1.6 million people blind from such injuries, 2.3 million people with bilateral poor vision from this cause, and almost 19 million people with unilateral blindness or low vision⁹ and in our study 10 patients got HM visual acuity.

Our study focuses on the causes of eye injuries, age group mostly affected, gender and final visual acuity in these patients. Young and children are more susceptible to the ocular trauma, in our study 30.5% children and 50% young age groups were involved because of their occupational hazards, immature motor skills and curious nature. A marked preponderance of injuries is seen in 6-10 years of age group. Adult supervision has been found to be an important factor in the prevention of injuries to children. Infants and children of less than 3 years of age sustain fewer injuries because of close supervision by parents. In our study the mean age of child was high (8.09 years).

A study was conducted in Cairo where 146 unilateral and 3 bilateral cases of ocular trauma were included¹⁰ while unilateral involvement occurred in 100% of cases in our study. Males are affected more than females, because boys generally are granted more liberty than girls in our society and they tend to spend more time outside¹¹. In our study we also found higher number of males affected compared to females (88.8%). A study concluded that the most frequent finding among ocular trauma in their setting was laceration by sharp object and blunt ocular trauma¹² and in our hospital the most frequent finding was corneal laceration and mostly caused by glass, mirror and knife.

The results obtained suggested that socioeconomic and socio cultural status and family negligence are important factors in eye injuries in children that occur during games¹³. Factors predicting final visual outcome after open globe trauma include mechanism or type of injury, preoperative visual acuity¹⁴, time lag

between trauma and surgery¹⁵, relative afferent pupillary defect¹⁶, size and location of the wound, hyphema¹⁷, lens rupture¹⁸, vitreous loss, vitreous hemorrhage, retinal detachment¹⁹, intraocular foreign body²⁰. Prompt visit to hospital and appropriate management^{21,22} at time is the key to avoid the loss of preventable vision as well as restoration of anatomy²².

At the time of presentation the mean visual acuity was less than 6/60 which was consistent with other surveys held in USA²³, Singapore²⁴ and Iran²⁵. The final visual acuity was related to pre-operative vision. Timely and appropriate management of ocular trauma may improve the prognostic value and restoration of ocular anatomy. Damage by ocular trauma may cause blindness which is preventable. So, after getting injury early treatment may prevent from gross visual morbidity provided pre-treatment visual acuity is better.

CONCLUSION

Metallic foreign body and road traffic accident were the most common cause of ocular trauma and improvement in post treatment vision was directly proportional to the severity of pretreatment visual loss.

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