

Clinical Profile of Patients with Ocular Trauma at a Tertiary Eye Care Centre

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Abstract-

Purpose - to study the clinical profile of ocular trauma in patients presenting in emergency of MLB Medical College, Jhansi

Materials and Methods-The study was conducted at MLB Medical College, Jhansi between September 2018-May 2019. The study includes a total of 203 patients presenting to emergency with a history of ocular trauma. All cases underwent detailed ocular examination of anterior and posterior segment. Investigations were done wherever needed.

Results: Out of 203 cases, 36.25% were in the age group of 16 to 30 years & 29% in the age group of 31 to 45 years. Males were affected 3.7 times more than females. 26% cases sustained trauma while working on the farm while 23% were workplace injuries. Blunt trauma was the commonest presentation at 25.75% followed by foreign body in 21.25%. Cornea (54%) and conjunctiva (24.75%) were most frequently involved. Most of the injuries were mechanical (95.25%) while non mechanical injuries were less (4.75%). Closed globe injuries were common (80.04%) and open globe injuries were less common (14.96%).

Conclusion: Ocular trauma is an important and preventable cause of ocular morbidity in rural areas. Most of the cases of trauma are closed globe mechanical injuries affecting economically earning young population.

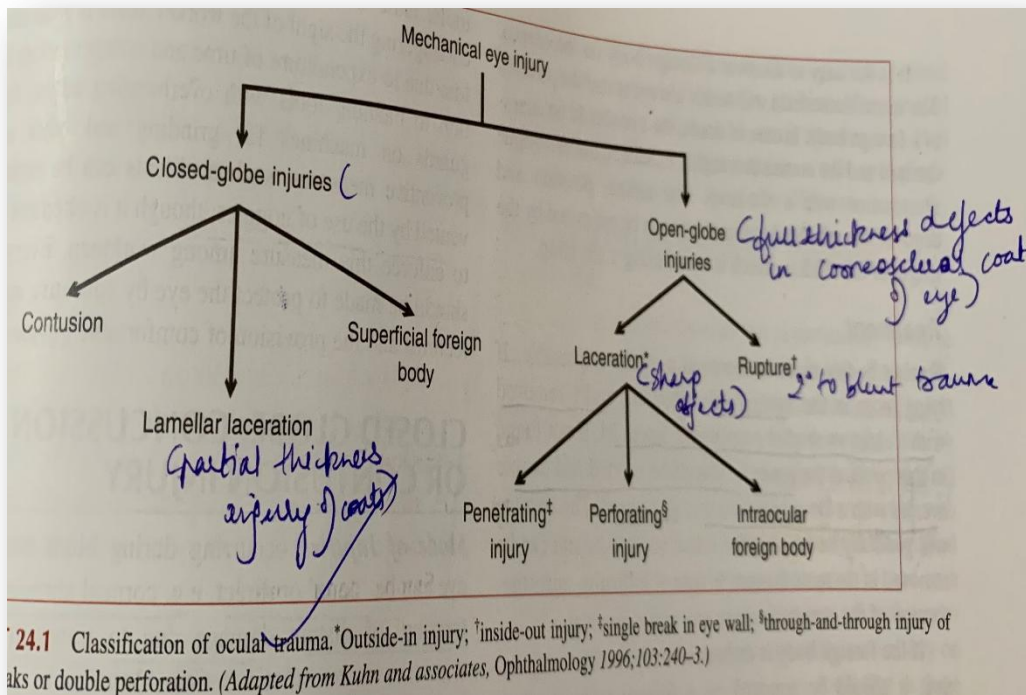
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I. Introduction

Ocular trauma is a major cause of preventable blindness & visual impairment. Ocular trauma once described as the neglected disorder[1] has recently been highlighted as a major cause of visual morbidity and considered as important public health hazard with enormous economic and social consequences[2]. WHO program for the prevention of blindness suggests that around 55 million eye injuries, restricting activities for one day, occur each year. 750,000 cases require hospitalization each year including 200,000 open globe injuries. There are approximately 1.6 million people blind in addition to 2.3 million people with bilateral low vision from the cause. Unilateral blindness or low vision affects around 19 million people. Despite having major socioeconomic impact, very less data is available on the magnitude & risk factors of ocular trauma. Impact of trauma on human eye ranges from minute subconjunctivalhaemorrhage to a lacerated globe. The outcome is generally not good in patients with grossly reduced visual acuity on presentation. Owing to the delicacy of ocular tissues, delayed presentation worsens the visual outcome. The impact of ocular trauma in terms of need for medical care, loss of income & cost of rehabilitation services points towards the need for strengthening of preventive measures worthwhile. Mass awareness regarding potential risk factors & agents causing injury can prevent number of ocular hazards.



Lower lid laceration



Upper lid laceration with associated canalicular rupture



Upper and lower lid ecchymosis



Lower lid laceration sutured



Corneal tear with prolapse of uveal tissue. This patient was later eviscerated

II. Method and material

A prospective study was conducted over a period of 8 months in which all patients of Ocular injury admitted or referred in department of ophthalmology, MLB Medical college, Jhansi during the study period were included. It was performed under the the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study

Inclusion Criteria:

1. Any patient of ocular injury irrespective of age and sex admitted in department of ophthalmology & surgical intervention done in eye OT.
2. Patients of ocular injury referred to with or without primary treatment which are admitted in department of ophthalmology & surgery carried out in eye OT.

Exclusion Criteria:

1. Patients of ocular injury who had been operated elsewhere, attending our department for follow up only.
2. Ocular trauma patients were taking treatment on OPD basis.
3. Patients of ocular injury having associated with severe systemic injury.
4. Patient with posterior segment involvement

A total of 203 patients were examined & data was collected. The demographic data of each patient including age, sex, address, occupation & financial status were recorded. A detailed history was obtained regarding the trauma, its nature & circumstances. Patients residing in the taluka or a smaller place with no district hospital were labelled as rural. The literacy was determined on the basis of educational status as told by the patient. Detailed ophthalmological examination of all patients was carried out. Snellen's chart was used to record visual acuity. Slit lamp examination, 90D examination & indirect ophthalmoscopy was carried out. Intraocular pressure was measured with Goldman applanation tonometer. Gonioscopy was done in closed globe injuries. Radiological investigations like X-Ray orbit, CT Scan, MRI were done as indicated. Complete details of ophthalmological examination included initial best corrected visual acuity, ruling out any eyelid injury, conjunctival tear or subconjunctivalhaemorrhage, examination of the cornea for foreign body, abrasion, laceration or perforation ,any scleral tear or laceration, ruling out hyphaema, iris injuries or afferent papillary defect. Examination of posterior segment was carried out

Statistical Analysis

Standard classification with ocular trauma score was used to classify the injuries. The data was entered regularly. Nominal data was presented as numbers & percentage. Data analysis & percentage calculation was done using Microsoft Office Excel.

III. Results

A total of 203 eyes were examined during the period of 7months. The number of persons sustaining injuries was highest i.e. 73 (36.25%) in the age group of 16 to 30 years followed by 59 cases (29%) in the age group of 31 to 45 years). 22 cases (13.65%) were found to be males in the age group of 1 to 15 years. 10 cases (21.18%) were females in the same age group. Number of cases in the age group of 16 to 30 years was 60 (38.78%) for males & 12 (27.06%) for females. Number of cases in the age group 31 to 45 years was 62 (30.40%) in males &11 (23.53%) in females. Number of cases in the age group 46 to 60 years was 19 (12.06%) in males &8 (18.22%) in females. Number of cases above 60 years of age were 8 (9.41) in males & 4(5.08%) in females.] a total of 160 (78.81%) patients were males & 43 (21.18%) patients were females. Most of the females sustaining injury were agricultural workers (Table 1). Most of the patients had involvement of only one eye, right eye being involved in 99 (49%) cases, left eye being involved in 100 (49.25%) cases & both eyes were involved in only 4 (1.75%) cases. In 53 cases (26%) location of the injury was farm, in 46 (23%) cases, the injury occurred at work place other than farm, 40 (20%) cases sustained injury at home, 28 (13.75%) sustained injury on the street & 7 (3.25%) sustained injury at school. Injuries were most commonly caused by blunt objects in 52 cases (25.75%), foreign bodies were found in 43 cases (21.25%), vegetative matter caused injuries in 34 cases (16.9%). 32 cases (15.75%) sustained injuries with sharp objects. 10(5%) cases sustained injuries with sports equipments. 7 cases (3.5%) sustained injuries with animal parts (horns or tail). 2 cases (1.25%) had cracker injuries and other causes of injury were seen in 23 (3.75%) cases cases (35.9%) reported to the hospital within 24 hours. Closed globe injuries were present in 172 (85.04%) of cases & open globe injuries were present in 31 (14.96%) cases. In case of open globe injuries 25 cases (80.70%) had penetrating injury, 2 cases (7.02%) had intraocular foreign body and 4 cases (12.28%) had mixed injuries. 8 cases (26.32%) had open globe injury involving zone 1, 13 cases (42.11 %) had injury involving zone 2 & 64 cases (31.58%) had injury involving zone 3. In closed globe injuries, 70 cases (41.05%) had contusion, 60 cases (34.88%) had superficial foreign body, 35 cases (20.37%) had lamellar laceration & 6 cases (3.70%) had mixed injuries. 135 cases (78.70%) of closed globe injuries involved zone 1, 21 cases (12.04%) involved zone 2 & 16 cases (9.26%) involved zone 3). As shown in table 4, we found that maximum ocular injury cases involved the cornea 109 (54%) followed by conjunctiva (24.25%) and lens (13.25%)

Age group	Male cases	%	Female cases	%	Total cases	%
Upto 15	22	13.56	10	20.93	32	15.76
16-30	62	38.80	11	26.74	73	35.96
31-45	49	30.59	10	24.41	59	29.06
45-60	19	11.98	8	18.60	27	13.30
Above 60	8	5.04	4	9.30	12	5.91
total	160		43			

Table 1-Age and sex wise distribution of ocular trauma

Causative agent	cases	%
blunt	52	25.53
Foreign body	43	21.09
Vegetative matter	33	16.38
sharp	32	15.63
Sports equipment	10	4.96
Finger/fist	8	4.21
chemicals	8	3.97
Animal part	7	3.22
firecracker	2	1.24
others	8	3.72
total	203	100

Table 2- Distribution of cases by causative agents

Ocular structure involved	Number of cases(including multiple structure injury)	%
cornea	110	54
conjunctival	49	24.25
lens	27	13.25
lid	16	8
retina	15	7.5
iris	14	6.75
AC	13	6.25
vitreous	11	5.5
sclera	9	4.5
orbit	2	1
Optic nerve	1	0.75

Table 3- Distribution of cases by ocular structure involved

IV. Discussion

Ocular injuries can occur in almost any setting. These mainly include rural agricultural farms, occupational work places, homes, recreational and sports centres and road accidents.

Epidemiological profile of ocular trauma varies in developing and developed countries. Economical background, public awareness and availability of resources are responsible for this difference. This data is helpful in defining target population and accordingly, preventive measures can be taken

. In this study, 203 patients were included out of which 33% were found to be in the age group of 15 to 45 years. Out of the total numbers of the patients in this age group, 69.21% were males. So, potential earning group was more commonly affected leading to loss of work days & economic burden on their family.

A similar study carried out by SomenMisra has recorded the percentage of adults in the same age group as 55%. Out of which, 71.67% were males[3]. Our study also observed 3.7% more dominance of ocular trauma in males than females. A study by Wong et al[2] found that males have 4 times higher risk than females. According to Misra, incidence was 71.6% in males & 28.3% in females. This male preponderance is explained on the basis that men are more commonly involved in agricultural & industrial work. In the same study, 26.7% of patients were in the age group of 0-10 years, which indicates trauma as an important cause of childhood ocular morbidity. Vats et al also observed that most of the injuries in children lead to greater ocular damage.

Our study found that most of the ocular injuries are unilateral. We also found that both right and left eye were involved almost equally, right eye injuries being 49% & left eye injuries being 49.25%. We also found 1.75 cases of bilateral injuries. In similar studies Sinha[4] reported right eye preponderance in 68.4% & study in rural South India by Arvind Hospital[5]reported 0.4% cases with bilateral injury. The most common site for ocular injury in our study was farm (13%) followed by workplace (11.5%). Injuries at home were found in 10% injuries on street were found to be

% . Urban slum population study found higher prevalence of ocular trauma at workplace. Krishnaiah et al[6] have reported that majority of eye injuries occurred at the workplace (55.9%) followed by home (21.7%). Playgrounds & schools accounted for 4% injuries in our study. This is comparable to a study carried out by Singh D. V. et al[7] which reports 7.6% injuries at recreational venue. In this study, injuries on street accounted for 13.75% cases. These were in the form of ocular involvement in vehicular accidents or foreign bodies. Similar finding have been reported by S. Khatry et al[8] with 13.7% cases of injuries on the street. Various agents like wooden sticks, vegetable matter, dust or other foreign bodies, animal body parts or sports objects can cause mild to grave ocular injuries.

In our study, blunt objects were the most common agent found in 13% cases. Nirmalan also observed blunt objects to be the common cause of injury in 54.9% of their cases. In our study, foreign bodies were found in 10.25% cases. Abraham et al[9] reported wooden stick as an offending agent for ocular injury in 21% cases. We had 7% of cases of injury caused by sharp objects while Vats et al[4] have reported 2.5% injuries with sharp

objects. The increased incidence of injuries with sharp objects in our study can be attributed to the use of agricultural equipment & industrial injuries as many people in this area are agricultural workers or workers on power looms. The study by S. Khattry et al[8] reported that 25.8% cases were due to agricultural agents. We found 4% cases of chemical injuries while S. Khattry has reported 1.30% chemical injuries. Singh D. V. et al have reported 5% cases of chemical injuries. We also observed few cases of injury due to animal parts 3% & fire cracker injuries were observed to be 1.25% in this study. Delay in seeking medical help after an ocular injury increases the severity of the disease and affects the final visual outcome. The causes of delay are illiteracy, ignorance, rural status & poverty. We found that 35% cases reported within 24 hours, 28% within 72 hours and 18.5% within 7 days. 11% cases presented within 7 to 15 days & 7.25% presented after 15 days. While Saxena[10] observed that 24% cases reported within 6 hours, a study by Gyasi[11] found that 57.3% cases sought medical aid within 48 hours after injury. Anterior segment was most commonly involved in our study with 82.75% while posterior segment was involved in 7.25% cases. Both anterior and posterior segments were involved in 4% cases. These were among the most serious injuries occurring due to penetrating trauma. Extraocular involvement was found in 5.5% which included lid tear, orbital fracture etc. 85.04% of our cases were closed globe injuries and 14.96% were open globe injuries. Closed globe injuries are more common in the form of superficial foreign body & blunt trauma. This is consistent with eye injuries in Singapore Study by Woo[11] in which they found 95% injuries to be closed globe and 5% injuries to be open globe. Out of the total closed globe injuries in this study, 78.70% were involving zone 1, 12.04% cases involved in zone 2 and 9.26% cases involved zone 3. Out of the total 57 open globe injuries, 45.61% were penetrating injuries, 35.09% had rupture of globe, 7.2% had intraocular foreign body and 12.28% had mixed injuries. Out of these, 26.23% involved zone 1, 42.11% involved zone 2 and 31.58% involved zone 3. Out of 19 cases of non mechanical injury, 16 (84.21%) were chemical injuries. Out of 16 cases of chemical injury, 11 (68.75%) cases were grade 1 and 5 (31.25%) cases were grade 2.

V. Conclusion

Ocular trauma sustained during agricultural work is an important cause of ocular morbidity in rural India where farming is a major occupation. It still remains a common and preventable cause of ocular morbidity. The commonest age group affected is that of young adult males. The commonest type of injuries being closed globe injuries affecting the anterior segment of the eye. The visual outcome depends upon severity of the injury and the time taken for reporting to a speciality eye care centre. Effective mass education is needed for prevention of ocular injuries and seeking early medical help. Eye care programmes need to consider ocular trauma as a priority in the rural population

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