



CLINICAL PROFILE AND VISUAL OUTCOME IN OCULAR INJURIES-AN OBSERVATIONAL STUDY AT TERTIARY CARE CENTRE

Ophthalmology

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ABSTRACT

Background: Ocular injury is a major health problem in India, blunt trauma being one of the important causes of ocular morbidity and blindness. Eye injuries are avoidable, if prevention is quiet effective at work place, on the sports field, and in home. Patients and ophthalmologist must be aware of activities that incur high of eye injury and must take advantage of a protective eye wear that is available, which varies with the need of the patient and when used in proper manner can reduce eye injuries in certain settings by as much as 90 percent.

Methods: A hospital based prospective observational study was conducted at AGMC & GBP HOSPITAL, including 200 patients within 2 years of duration. Patients with ocular injuries were included in this study. Patients who were not willing to participate and patients with pre-existing ocular diseases were excluded.

Results: In our study, out of 200 patients 31(15.5%) eyes had lenticular involvement, 12(6%) had angle recession and 36(18%) cases of posterior segment involvement.

Conclusion: It is clear from this study that ocular trauma is associated with varying degrees of loss of vision. We can infer that children and young adults are more prone to blunt ocular trauma, occupational injuries and road traffic accidents constitute the main bulk of injuries.

KEYWORDS

Blunt trauma, Road traffic accidents, Corneal tear, Vitreous hemorrhage

INTRODUCTION

Vision is the most precious gift given by god and is the most cared for function of the human. This is possible only with healthy eyes. Children at play, young men at work, in factories and construction sites, road side falls, high speed travel and road traffic accident sport injuries, fall upon projecting blunt objects and in a set up like ours agricultural based injuries are the causes of minor and severe blunt injuries.^{[1][2]} The eye is encased within the orbital bony cavity cushioned with a layer of fat and covered with two vertically sliding lids each containing a protective shield of tarsal plate. In spite of this natural protection to eyes, injuries to globe do occur, frequently, potentially devastating from the point of view of visual function. The global annual incidence of ocular trauma is around 55 million, of which 750,000 cases require hospitalization each year.^[3]

Ocular blunt trauma causes ocular damage by the coup and countercoup mechanism or by ocular compression. The concept of coup and contre-coup injury was first introduced to explain brain damage caused by blunt trauma to the head by Courville.^[4-5] This was later used by Wolter to explain eye injuries.^[6] Coup injuries refer to local trauma at the site of impact (e.g. subconjunctival haemorrhage, corneal abrasions, subretinal and choroidal haemorrhages, etc.) Contrecoup refers to injuries at the opposite site of the impact caused by shock waves that traverse the eye (e.g.; commotio retinae).

We observed that the number of trauma patients were significantly high. The major contribution risk factor is road traffic accidents among all. Hence, our study was conducted with an objective to analyze blunt ocular trauma with respect to (i) demographic profile, (ii) mode of injury, and (iii) the ocular structures involved among the population.

This hospital based prospective observational study was conducted in our outpatient department and emergency department of Agartala govt. medical college, after obtaining Ethical clearance from the college Ethics Committee during a 2 year study period.

MATERIALS AND METHODS

Study Design: Hospital based prospective observational study.

Setting: Department of Ophthalmology (Inpatient department, Outpatient department) and General emergency.

Study Duration: 2 years (October 2016-septemember 2018)

Sample Size: 200 number of patients because we found in 4 years ophthalmology IPD registered around 400 numbers of patients so as average number of patient approx 200 in a two year period. So we selected Sample size 200 numbers of patients.

Sampling Method: No sampling was done as it was a census.

Study Population: Patients, both male and female, presenting with ocular trauma in outpatient department, in patient department of Ophthalmology and General Emergency, at Agartala Government Medical College, Agartala.

INCLUSION CRITERIA:

Patients with ocular injuries, attending in Ophthalmology Outpatient department, Inpatient department and general emergency in Agartala Government Medical College & GBP hospital, Agartala, Tripura.

EXCLUSION CRITERIA:

- Patients who were not willing to participate in the study.
- Patients with pre-existing ocular diseases.
- Clinical findings suggestive of non-traumatic causes of visual loss were excluded from the study.

Study Tools: 1. Snellen's chart. 2) Near Vision test type book. 3) Slit lamp examination with +90D lens. 4) Direct & Indirect Ophthalmoscopy 6) Ultrasonography 7) NCT (Non contact tonometry) & Applanation tonometry 8. Gonioscopy (4 mirror) 7) X-ray of orbit.

Data Collection: All patients were informed in details about purpose of study and procedures to be followed and consent was obtained for participation in the study. Patient's data was noted including age, sex, place of residence, date and cause of injury, initial best-corrected (Snellen's) visual acuity, anatomical site, location and nature of injury, time gap between injury and presentation at hospital. The detailed ophthalmic work up of all the patients including slit lamp examination with +90D lens, direct and indirect ophthalmoscopy was carried out. Ultrasonography was used whenever hazy media found for fundus evaluation. Intraocular pressure was measured with non contact tonometer (NCT) and applanation tonometry in all eyes except in fresh open globe injuries.

The injuries were initially classified as Open Globe and Closed globe injuries. Again, the injuries were further classified according to place of occurrence of injury, such as RTA, farm, school, Industrial, school, home etc.

Final best corrected visual acuity was measured. The treatment and duration of hospitalization was recorded. Patients were followed up for 1 week, 2 week, 4 week, 6 weeks and 3 months intervals.

Data Analysis: Data was recorded, entered and analysed with computer using SPSS version 15.0 and Epi-info-version-7. Descriptive statistics and other statistical tests like Chi square test; binary logistic regression analysis etc was used as per applicability. P value of less than 0.05 was considered as statistically significant.

Ethical Issue: Informed written consent was obtained from each and every participant as per modified ICMR template. Confidentiality was ensured while collecting and analyzing the data and was used for research purpose only. Application was placed before the Institutional Ethics Committee of Agartala Government Medical College for approval.

RESULT

A total of 200 patients with ocular blunt trauma who fulfilled the inclusion criteria were studied, and the following observations were made: The study group included 150 men and 50 women (male to female ratio of 7.5:2.5). The age distribution of the patients is shown in Majority of the patients (72 patients, 36%) who sustained trauma belonged to the 26–35 years age group.

Table 1 : number of male and female patients

Sex	No. of Cases	Percent	Sex
Male	150	75.0	Male
Female	50	25.0	Female
Total	200	100.00	Total

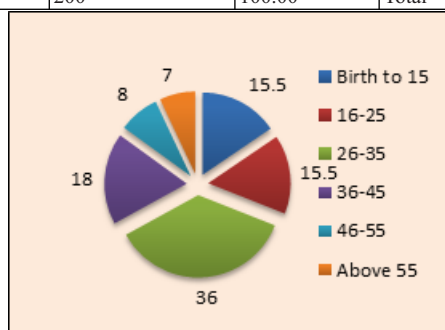


Fig. 1 :Pie chart Showing Age Wise distribution:

In our study, hundred eight patients (54%) presented within less than 24 hours of the trauma, 33 (16.5%) presented within 1–5 days while twenty four patients (12%) after 5 days of injury. Many of the patients had the involvement of more than one ocular structure.

Table 2: Number of patients presenting at different time intervals:

Time interval	No. of Cases	Percent
Less than 24 Hrs.	108	54.0
1-5 days	33	16.5
5- days to 1 month	24	12.0
1 month to 12 months	18	9.0
More than 12 months	17	8.5
Total	200	100.0

Out of 200 patients, 105 patients 52.5% were involved in occupational injuries, 45 patients (22.5%) were in sport and play 45 patients (22.5%) were involved in RTA and assault and 5 patients (2.5%) other types of injuries

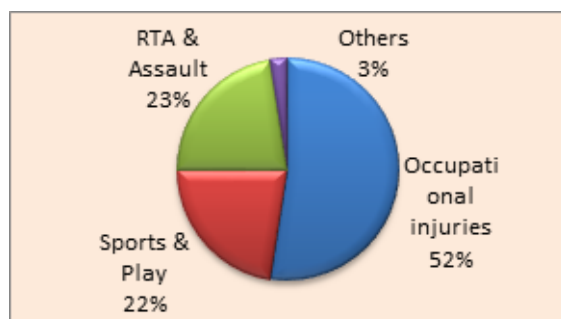


Fig. 3: Pie chart Showing Distribution Of Cases According To Source Of Injury

Out of 200 patients 36 patients (18%) were had injury with stone, 24 patients (12%) Were with stick, 24 patients (12%) with fist, 18 patients (9%) had RTA, 14 patients (7%) with iron rod. Stone injuries were common among stone workers and laborers who are engaged in stone cutting, crushing industries and among agricultural laborers and working in construction industry., Injury with the stick was common among agricultural community, 24 patients (12 %) with fist, and 18 patients (9%) with RTA

Table 3: Showing Object Causing Blunt Injury

Object	No. of Cases	Percent
Stone	36	18.0
Stick	24	12.0
Iron rod	14	7.0
Ball	10	5.0
Fist	24	12.0
Metallic/ wooden extra ocular FB	8	4.0
Branch of tree	8	4.0
Bull gore	12	6.0
Knob of door, Cup board	8	4.0
Whip lash	8	4.0
Cycle/Scooter handle	8	4.0
Bull gore	12	6.0
Handle of handloom/lathe/Silk reeling machine	6	3.0
Finger nail	6	3.0
Pencil/Pen blunt end	6	3.0
Racquet	4	2.0
Tooth brush	4	2.0
others (RTA etc)	18	9.0
Total :	200	100.0

In this study, periorbital lesions were seen in 112 cases (56%), lid lesions in 130 cases (65%), conjunctival lesions in 114 (57%) cases, corneal lesion in 30 cases (15%), hyphema in 12 cases (6%), Iris involvement in 42 cases (21%), angle recession in 21 cases (10.5%), lens involvement in 31 cases (15.5%) and posterior segment involvement in 36 cases (18%) were seen.

Table 4: Showing Ocular structure involved:

Part involved	No. of Cases	Percent
Periorbital region	112	56.0
Lids	130	65.0
Conjunctiva	140	70.0
Cornea	30	15.0
Hyphema (AC)	12	6.0
Iris	42	21.0
Angle Recession	21	10.5
Lens	31	15.5
Posterior segment	36	18.0

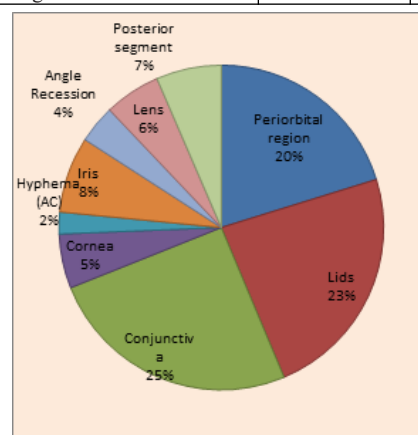


Fig. 4: Pie chart Showing Ocular structure involved:

DISCUSSION

In this study consisting of 200 cases, the age range was from 3 months old child to 80 years old;. Incidence of ocular injuries was found to be highest in the younger age group between 15 to 35 years (51.5%).

Maximum cases were below the age group of 35 years that is children's and young adults. It has been observed that they are more prone to injuries due to more exposure to risk of blunt injuries, and lack of awareness. According to Jain BS, Sony SR et. al the maximum incidence of ocular injuries was seen in the age group of 16 to 30 years (63%) and children below 16 years (23.2%).^[7]

In our study 75 % were male and 25% female. The male female ratio was 3:1, this nearly coincides with the study conducted by Eagling EM et al, where the male female ratio was 6.5: 1. In another study, Jain BS, Soni SR et al found incidence was 69.3% in males and 30.7% in females. Possible explanation for significant male preponderance is great mobility and activity of males and higher incidence of violent outdoor activities. All this makes males to be more exposed to ocular injuries.^[7-8]

In our study, out of 200 patients, 108 (54%) were examined within first 24 hours following injury and it was observed that most of the patients presented within 5 days of injury. Only 17(8.5%) cases were presented after 12 months of injury.

In our study, out of 200 cases of segmental involvement 164 (82%) cases had anterior segment injuries, 17 (8.5%) cases had posterior segment injuries and 19 (9.5%) cases had both anterior and posterior segment injuries. Similar study conducted by Macewan CJ et al (1989) studied with 300 patients with ocular injuries. They found that anterior segment involvement in 237 (79%) cases and 57(19%) cases with posterior segment involvement.^[9]

The commonest causative agents were stones and sticks followed by injuries with cricket ball, rubber ball and fist. In this study most common object caused blunt trauma to the eye was stone (18%) followed by stick (12%) and fist (12%), Road Traffic accident (9%) iron rod (7%) bull gore (6%) ball (5%) ,branch of tree (4%) etc. The commonest mode of injuries was by stones In our study, total 36(18%) cases of posterior segment involvement were present and out of these, 17 cases had posterior segment involvement only.. Similar study, conducted by Pulido JS et. Al who evaluated 400 cases, among them 167 cases (12.5%) had Berlin's edema.^[10]

CONCLUSION

It is clear from this study as well as other epidemiological studies conducted over past 15 years that ocular trauma is associated with varying degrees of loss of vision and earning capacity with social and economic consequences. Injury with stone was the most common, next comes with stick (agricultural injuries), in causation of blunt ocular trauma. In this study anterior segment was more often affected. Many of the injuries could have been prevented, if the patients had used protective eye wear during work or play. Need to stress more on the importance of preventive measures by which incidence of these cases can be reduced. In the unfortunate event of trauma, the patient must be seen as early as possible, referred to an ophthalmologist for adequate management.

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