A STUDY OF PROFILE OF PATIENTS WITH OCULAR TRAUMA IN TERTIARY CARE CENTER
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ABSTRACT: INTRODUCTION: About 1.6 million people are blind from ocular trauma, 2.3 million bilaterally visually impaired. 19 million suffered from unilateral visual loss worldwide. It is believed that majority of eye injuries are preventable with existing, relatively inexpensive protective devices and health education. MATERIALS AND METHODS: It was a prospective hospital based study, 103 patients with ocular trauma injuries presented to ophthalmology OPD or emergency department, in a tertiary care hospital and assessed by an ophthalmologist were included in the study. Detailed ophthalmic work up of all the patients including slit lamp examination, +90D examination and indirect ophthalmoscopy was carried out. Ultrasonography was performed whenever unclear media prevented fundus evaluation. RESULTS: In our study, majority of the subjects 52(50.4%) had ocular trauma due to road traffic accidents followed by assault injuries 17(16.5%). Majority of the subjects clinically presented with symptoms like sub-conjunctival hemorrhage 29(28.1%), followed by laceration 26(25.2%) and abrasion 21(20.3%). 83(80.5%) cases had closed globe injuries whereas 20(19.5%) had open globe injuries. CONCLUSION: Ocular injuries can be reduced by the use of eye protection devices and the implementation of appropriate preventive strategies to address each risk factor. In addition, there should be a continual assessment of safety and health issues at home and workplace.

KEYWORDS: Eye injury, Ocular trauma, Open globe and Closed globe, Visual deficit.

INTRODUCTION: Globally more than half a million blinding injuries occur every year. About 1.6 million people are blind from ocular trauma, 2.3 million bilaterally visually impaired. 19 million with unilateral visual loss worldwide. Ninety percent of ocular injuries can be prevented using appropriate protective wear. The impact of trauma on a human eye may range from occurrence of minute corneal abrasions/innocuous sub-conjunctival hemorrhage to a badly lacerated globe. The eye is the third most common organ affected by injuries after the hands and feet and most of the information reach the humans through vision.

Consequently, the socioeconomic impact of ocular trauma can hardly be overestimated as those affected often have to face loss of career opportunities, major lifestyle changes and occasionally permanent physical disfigurement. In addition to physical and psychological cost of eye injuries to the individual, there is a direct and indirect financial cost to the society and environment because even minor eye injuries can cause considerable morbidity and time loss from work. It is believed that majority of eye injuries are preventable with existing, relatively inexpensive protective devices and health education. However the lack of health infrastructure, poor health seeking behavior of patients and low level of patient care all compound to create a worse prognosis for those with ocular trauma in developing countries. With regard to the public health problem presented by ocular trauma, it becomes necessary to gather information regarding the mode of
presentation, nature of injuring agent, to observe and detect the extent of involvement of different structures and complications ensuing from them by available clinical and investigational means. This would enable us in the management of ocular trauma so that timely intervention can prevent loss of vision and preserve the eyes.\(^6\)

**MATERIAL AND METHODS:**

**Design:** It was a prospective hospital based study done in a tertiary care hospital.

**Duration:** October 2011 to February 2013.

**Study Population:** 103 patients with ocular trauma injuries presented to ophthalmology OPD or emergency department and assessed by an ophthalmologist.

**Inclusion criteria:** Inclusion criteria were open globe injuries and closed globe injuries.

**Exclusion criteria:** Exclusion criteria were extra ocular foreign body, corneal abrasions, adnexal injuries, orbital injuries and non-mechanical injuries.

**Ethical clearance:** Approved from the ethical committee.

**PROCEDURE:** All patients were examined according to standardized protocol and the data was recorded in proforma developed for the purpose. Demographic data and details of modes of injury were obtained. The patient’s initial complaints, as well as the interval between the time of injury and time of presentation were also recorded. The examination findings of the injured eye, the visual acuity, diagnostic tests, investigations and final diagnosis were obtained and recorded.

Detailed ophthalmic work up of all the patients including slit lamp examination, +90D examination and indirect ophthalmoscopy was carried out. Ultrasonography was performed whenever unclear media prevented fundus evaluation.

**RESULTS:** A total of 103 patients were seen during the study period who were had some form of ocular trauma. Of the study cohort, 63(61.1%) were males while 40 (38.9%) were females. Mean age of the study group was 28.3 ± 17.8 years (range 1 month to 80 years). The people in the children age group (0-10years) were most affected (23.3%), followed by the age group (21-30years). Distribution of the ocular trauma with respect to age and sex of the study subjects is given in table no. 1.

In our study, majority of the subjects 52(50.4%) had ocular trauma due to road traffic accidents followed by assault injuries 17(16.5%). Distribution of the subjects according to the cause of ocular trauma is given in table no. 2.

In our study, 83(80.5%) cases had closed globe injuries whereas 20(19.5%) had open globe injuries. Distribution of the study subjects according to the type of ocular trauma is given in table no. 3.

In our study, majority of the subjects clinically presented with symptoms like subconjunctival hemorrhage 29(28.1%), followed by laceration 26(25.2%) and abrasion 21(20.3%). Distribution of the study subjects according to the presenting symptoms is given in table no. 4.

In our study, majority of the subjects 40(38.8%) had no visual deficit, 26(25.2%) had uniocular visual deficit and 15(14.5%) had binocular visual deficit. Distribution of the study subjects according to the visual deficit is given in table no. 5.
DISCUSSION: Out of total 103 study subjects, 63 (61.1%) were males while 40 (38.9%) were females. The people in the children age group (0-10 years) were most affected (23.3%), followed by the age group (21-30 years). Mukherjee AK, Saini JS, Dabral SM (1984) carried out a similar study of 82 patients varying in age group from 5 yrs to 62 yrs which were hospitalized with penetrating ocular injuries. Majority of these were males (60 cases, 73.17%). 37 patients (44.91%) were less than 30 years of age.7

In our study, majority of the subjects 52 (50.4%) had ocular trauma due to road traffic accidents followed by assault injuries 17 (16.5%). Similar findings were observed in a study done by R. N. Kushwaha, Rashmi Rastogi et al. in 2013.8

In the current study ocular trauma was divided into open and closed globe injury. Various epidemiological studies have shown a higher incidence of closed globe injuries. In a Korean study by Oum et al. the prevalence of closed ocular injury was about six times higher than that of open ocular injury.9 Karaman et al. in their retrospective analyses of 383 patients found 67.3% of ocular injuries were closed globe and 32.7% were open globe injuries.10 In a study in Malaysia closed globe injuries were 61.1% and open-globe injuries were 34.8%.11 In our study, 83 (80.5%) cases had closed globe injuries whereas 20 (19.5%) had open globe injuries.

In our study, majority of the subjects clinically presented with symptoms like sub-conjunctival haemorrhage 29 (28.1%), followed by laceration 26 (25.2%) and abrasion 21 (20.3%) which is slightly higher than the study done by Rajappa and Khardenavis et al. in 2014.

In our study, majority of the subjects 40 (38.8%) had no visual deficit, 26 (25.2%) had uniocular visual deficit and 15 (14.5%) had binocular visual deficit. Whereas observed that most of the patients (60%) had poor visual acuity at the time of presentation with appropriate management the above figure drop down to 20% at the end of three months, which indicates if well-treated, these cases of injury can have good recovery and also the importance of establishing the better access to medical facilities.12

CONCLUSION: Ocular injuries can be reduced by the use of eye protection devices and the implementation of appropriate preventive strategies to address each risk factor. In addition, there should be a continual assessment of safety and health issues at home and workplace. A long-term database of all ocular injuries in the country is recommended, to aid research on a larger scale and the development of new preventive strategies for ocular injuries.

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| Age group | Males n (%) | Females n (%) | Total n (%) |
|-----------|-------------|---------------|-------------|
| 0-10      | 11(10.6%)   | 13(12.6%)     | 24(23.3%)   |
| 11-20     | 13(12.6%)   | 08(07.7%)     | 21(20.3%)   |
| 21-30     | 17(16.5%)   | 06(05.8%)     | 23(22.3%)   |
| 31-40     | 06(05.8%)   | 02(01.9%)     | 08(07.7%)   |
| 41-50     | 07(06.7%)   | 05(04.8%)     | 12(11.6%)   |
| 51-60     | 05(04.8%)   | 04(03.8%)     | 09(08.7%)   |
| 61-70     | 03(02.9%)   | 02(01.9%)     | 05(04.8%)   |
| 71-80     | 01(00.9%)   | 00(00%)       | 01(0.9%)    |
| Total     | 63(61.1%)   | 40(58.9%)     | 103(100%)   |

Table 1: Distribution of ocular trauma with respect to age and sex

| Cause                | Number | Percentage |
|----------------------|--------|------------|
| RTA                  | 52     | 50.4       |
| Fall injury          | 03     | 02.9       |
| Blunt trauma         | 08     | 07.7       |
| Penetrating injury   | 07     | 06.7       |
| fireworks            | 02     | 01.9       |
| Assault              | 17     | 16.5       |
| Chemical burn        | 06     | 05.8       |
| Foreign body         | 08     | 07.7       |
| Total                | 103    | 100        |

Table 2: Distribution of the subjects according to the cause of ocular trauma
### Type of Ocular Injury

| Type            | Number | Percentage |
|-----------------|--------|------------|
| Open globe      | 20     | 19.5       |
| Closed globe    | 83     | 80.5       |
| **Total**       | **103**| **100**    |

*Table 3: Distribution of type of ocular injury*

### Clinical Presentation

| Clinical Presentation | Number | Percentage |
|-----------------------|--------|------------|
| Abrasion              | 21     | 20.3       |
| Laceration            | 26     | 25.2       |
| Perforation           | 02     | 1.9        |
| Ecchymosis            | 13     | 12.6       |
| Chemosis              | 04     | 3.8        |
| Subconjunctival hemorrhage | 29 | 28.1 |
| Ulcer                 | 02     | 1.9        |
| Orbital bone fracture | 05     | 4.8        |
| Foreign body cornea   | 01     | 0.9        |
| **Total**             | **103**| **100**    |

*Table 4: Spectrum of clinical presentation in ocular trauma cases*

### Visual Deficit

| Visual Deficit     | Number | Percentage |
|--------------------|--------|------------|
| No deficit         | 40     | 38.8       |
| Uniocular deficit  | 26     | 25.2       |
| Biocular deficit   | 15     | 14.5       |
| Inaccesible        | 22     | 21.3       |
| **Total**          | **103**| **100**    |

*Table 5: Subjective visual deficit at the time of presentation*

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