



CLINICAL STUDY AND PROFILE OF OPHTHALMIC TRAUMA: FINDINGS FROM A TERTIARY EYE CARE CENTER IN BUNDELKHAND REGION IN NORTH INDIA

Ophthalmology

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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 & Methods-** The study was conducted at MLB Medical College, Jhansi between September 2021-March 2022. The study includes a total of 100 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:** The incidence of ocular trauma was highest in the age group of 31-40 years. There were only 06 patients aged more than 60 years; 17 were in the pediatric age group (1-20 years). The ocular trauma was highest in males (67%) than in females (33%). In this study, both eyes were equally involved. The right eye was involved in 52% of patients and the left eye was involved in 48%. 82% of the patients presented with closed globe injury, and 18% presented with open globe injury. On classifying the open and closed globe injuries into their subtypes, it was observed that the majority of the patients had lid laceration (68%), followed by ecchymosis in 12 patients (12%), corneal penetration in six patients (6%), and subconjunctival haemorrhage in 6 six patients (6%), with corneal abrasion and lid abrasions five and three patients respectively (i.e; 5% and 3%). While 57 patients presented to the hospital with a history of road traffic accidents (57%), fall from height was noted in 16 patients (16%), trauma by vegetative matter in 17 patients (17%), trauma caused due to assault in 8 patients (8%). 2 patients (2%) had sustained trauma from metallic particle exposure while working. **Conclusion:** : Ocular trauma is an important and preventable cause of ocular morbidity in rural areas. Road traffic accidents were the most common cause of ocular trauma in patients.

KEYWORDS

Ophthalmic Trauma, Open Globe Injury, Closed Globe Injury.

INTRODUCTION

Ocular trauma is a significant cause of visual impairment worldwide. It is estimated that 19 million people worldwide have unocular blindness from traumatic injury ⁽¹⁾. Traumatic ocular injury negatively affects the quality of life of the patients and their families, as well as their socioeconomic status and psychological well-being. Injury to a person or a tissue or organ is defined as the interruption of tissue function due to the transfer of external energy (mechanical, thermal, radiant, nuclear, chemical, or electrical) ⁽²⁾. Severe ocular trauma remains a challenge for physicians and may cause permanent blindness and even the loss of an eyeball. As ocular trauma refers exclusively to globe trauma, the use of the term "ophthalmic trauma" has been recommended to involve globe, adnexal, and orbital trauma. Globally, ocular trauma is the most common cause of visual disability and morbidity. In India, over 500 lakh people suffer from blindness, and every year the blind population increases by 38 lakhs. Of note, 1.2% of cases of blindness are caused by avoidable ocular injuries. A rural population (4.5%) may have a higher prevalence of blindness compared to an urban one (3.97%) ⁽³⁾. Many injuries can be prevented by increasing public awareness about potential risk factors and agents that may cause injury ⁽⁴⁻⁵⁾. The incidence of ocular trauma in India reportedly ranges from 1 to 5% ⁽⁶⁾. In light of these, this study aims to provide epidemiological data on ocular injury based on our analysis of patients at a hospital in rural central Maharashtra. We believe that this data can contribute to efforts toward planning and providing improved eye care as well as implementing preventive measures.

MATERIAL AND METHOD

A prospective study was conducted over a period of 6 months in which all patients of Ophthalmic injury admitted or referred in department of ophthalmology, MLB Medical college, Jhansi during the study period were included. It was performed under 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 ophthalmic injury irrespective of age and sex presented to out patient department of ophthalmology and Emergency room.
2. Patients of ophthalmic 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 came for followup only and has been managed at some

other center

2. Patients with ophthalmic injury associated with severe systemic injury.

A total of 100 patients presented with ophthalmic trauma to the hospital during the study period were enrolled. The demographic data of each patient including age, sex, address & occupation were recorded. A detailed history was obtained regarding the nature of trauma. Detailed ophthalmological examination of all patients was carried out. Snellen's chart was used to record visual acuity. Slit lamp examination & indirect ophthalmoscopy was carried out. Intraocular pressure was measured with Schiotz tonometer and in cases of corneal injuries Intraocular pressure was recorded by digital tonometry method. Radiological investigations like X-Ray orbit, CT Scan, MRI were done as indicated. Then the patients were managed as per the injury after obtaining informed consent. The patients were followed up at regular intervals, initially at one week and subsequently at three and six weeks. At every visit, the patients underwent a detailed ophthalmological examination, which included a vision assessment using the Snellen chart and a slit-lamp examination. Changes were properly documented.

RESULTS

This study included patients with age-group ranging from 1 to >60 years. Most of the patients were in the age group of 21-40 years. It was found that elderly patients (aged >60 years) had the least number of ophthalmic traumas.

Table 1: Distribution of patients according to their age.

Age group	Number of patients	Percentage
1-10	05	5%
11-20	12	12%
21-30	26	26%
31-40	28	28%
41-50	14	14%
51-60	11	11%
>60	06	6%
Total	100	100

Out of the total 100 patients, 67 were male and 33 were female. Male-to-female ratio was approximately 2:1.

Table 2: Distribution of patients according to their gender.

Gender	Number of patients	Percentage
Male	67	67%
Female	33	33%

Males	67	67%
Females	33	33%
Total	100	100%

62 patients were residents of rural area while 38 patients were from urban areas. Most of the patients presented with unilateral involvement, out of which 52 presented with left eye involvement while 48 presented with right eye involvement.

Table 3: Distribution of patients according to eye involvement

Eye involvement	Number of patients	Percentage
Right	52	52%
Left	48	48%
Total	100	100

18 patients presented with open globe injury while 82 patients presented with closed globe injury.

Table 4: Distribution of patients according to the type of injury

Type of injury	Number of patients	Percentage
Open globe	18	18%
Closed globe	82	82%
Total	100	100

On further classifying the open globe and closed globe injuries into subtypes of ocular trauma, it was observed that a majority of patients had lid laceration (68%) figure (1 & 2), followed by ecchymosis (12%) ,corneal penetration in (6%), subconjunctival haemorrhage in (6%), corneal abrasion and lid abrasion in 5% and 3% respectively (Table 5).

Table 5: Distribution of patients according to subtypes of injury

Subtype of injury	Number of patients	Percentage
Lid laceration	68	68%
Ecchymosis	12	12%
Corneal penetration	06	6%
Subconjunctival haemorrhage	06	6%
Corneal abrasion	05	5%
Lid abrasion	03	3%
Total	100	100



Figure 1: Full thickness lid laceration involving both upper & lower eyelid extending to forehead and toward cheek upwards and downwards respectively.



Figure 2: Upper & lower lid laceration repaired .

According to mode of injury ,patients who had injury due to road traffic accidents were 57%, patients who had injury due to fall from height were 16% followed by patients with injury due to agriculture related trauma were 17% and due to assault number of patients injured were 8% followed by patients having injury due to exposure to metallic particles were 2%

Table 6: Distribution of patients according to the mode of injury

Mode of injury	Number of patients	Percentage
Road traffic accidents	57	57
Fall from height	16	16
Agriculture related trauma	17	17
Assault	08	08
Metallic particle injury	02	02
Total	100	100

Since the majority of patients presented with lid laceration, lid suturing was the main intervention performed in our study. Various interventions that has been performed on the patients has been shown below in the (Table 7)

Table 7: Distribution of patients according to interventions performed

Intervention performed	Number of patients	Percentage
Lid suturing	68	68%
Medical management	24	24%
Corneal tear repair	04	5%
Corneal tear repair with cataract extraction	01	1%
Foreign body removal	02	2%
Evisceration	01	1%
Total	100	100

DISCUSSION

This study involved 100 patients presented to our center with ophthalmic trauma.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.

In our study, the majority of ocular trauma patients (28%) were in the age group of 31-40 years.. Poy Raiturcar et al. ^[7] conducted a study among 500 patients, and they reported that the prevalence of ocular injuries was highest in the age group of 21-40 years (45%). Kumar and Vishwas ^[8] in their study of 60 patients, found middle-aged males (36-55 years) to be the age group with the highest incidence (43.33%).

In our study, males constituted 67% of the patient population while females comprised 33%, resulting in a male-to-female ratio of 2:1. A study done by Agrawal et al. ^[9] had a cohort with males comprising 84.8% of the total and females making up 15.2%.

Our study found that out of the total 100 patients, 52% had the right eye involved, while 48% had the left eye involved. Almost all injuries were unilateral. Misra et al.'s ^[10] study has shown that most ocular injuries are unilateral. The most common etiology encountered was falls due to road traffic accidents (57%). It was followed by fall from height. Metallic particle related trauma was the least common cause (2%) in our study. The most common mode of injury was road traffic accidents (56.67), which is in line with the 40% rate found in an ocular trauma study done in Karnataka by Kumar et al. ^[11]. Another study by Karve et al. ^[12] found that most ocular traumas occurred due to blunt objects (25.75% of cases). Similar results were found in a study by Nirmalan et al. ^[13] which reported that blunt objects were the most common cause of injury in their study (54.9%). Our study had 82 patients (82%) with closed globe injuries and 18 with open globe injuries (18%). In a study by Shukla et al. ^[14], 66.7% had closed globe injuries, whereas 26.7% had open globe injuries. Poy Raiturcar et al.'s ^[8] study showed that closed globe injuries were seen in 450 (90%) patients, while 26 (5.2%) had open globe injuries.

CONCLUSION

Based on our study, ocular trauma is a cause for concern irrespective of the geographical area, economic status, gender, and occupation of the patients as it causes visual disability that makes a person physically, economically, and psychologically disabled. Road traffic accidents are the major cause of ophthalmic trauma in urban population while Agricultural related trauma stays the amiv=n cause in rural population. Proper mass education is needed for prevention of ocular injuries and

seeking early medical help as most of the ophthalmic traumas are preventable with proper measures taken.

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