

Clinical Profile of Ocular Trauma in Tertiary Hospital of Central India

Snehal Mahadik¹, Z S Saifee²

¹Associate Professor, Department of Ophthalmology, R. D. Gardi Medical College, Ujjain, Madhya Pradesh, India, ²Assistant Professor, Department of Ophthalmology, R. D. Gardi Medical College, Ujjain, Madhya Pradesh, India

Abstract

Introduction: Ocular trauma is the significant public health problem in developing countries like India. It constitutes 7% of all bodily injuries and 10–15% of all eye diseases. WHO estimated the global annual incidence of ocular trauma of around 55 million per annum. It remains an important cause of monocular visual impairment and blindness. Health education and safety strategies should be addressed for the prevention of the serious ocular trauma, thus, we aim to highlight the clinical profile, risk factors and prevalence of ocular trauma in patients attending outdoor clinic at a tertiary care hospital of central India. **Material and Methods:** A prospective observational hospital based study of the patients with primary diagnosis of ocular trauma attending outdoor clinic of Ujjain charitable trust, Ujjain was conducted for a period of year. A cohort of 156 patients was finally included in the study during the study period. A detailed history of trauma and ophthalmology examination of patient was carried out as needed and the data was analyzed using SPSS software. **Results:** In our study, the prevalence rate is 5.8%. The most common age group is between 16-45 years with male predominance. The most common mode of ocular injury was agriculture followed by industrial and RTA. Corneal aberration, foreign body over cornea, corneal/corneo-scleral tear, iris prolapse were the most common findings. **Conclusion:** The incidence and prevalence of ocular trauma was more in rural population with male predominance. Most common modes of ocular injuries are agricultural followed by industrial. After lid lacerations and conjunctival hemorrhage, cornea was the most commonly affected ocular structure. Emphasis on public awareness and education about the use personal protective measures like goggles during work to reduce the occurrence of ocular trauma must be given.

Key words: Agriculture, Male predominance, Ocular trauma, Prospective observational study, Road traffic accidents

INTRODUCTION

Ocular trauma is among the significant public health problem particularly in developing countries like India. It constitutes 7% of all bodily injuries and 10–15% of all eye diseases.^[1] Ocular trauma is a serious public health problem having high socioeconomic burden that affects a person's quality of life and has psychological impacts on patients.^[2] The World Health Organization (WHO) estimated the global annual incidence of ocular trauma of around 55 million per annum.^[2-5] Worldwide the annual incidence rate of hospitalization for ocular trauma per lakh population per year is 5–16%, while the blindness due to the same is

estimated around 1.6 million people per year.^[5-8] It remains an important cause of monocular visual impairment and blindness. It is a preventable cause of visual morbidity, if treated timely. It may occur at any age and in either gender, with males preponderance.^[4,5,9-13] Late presentation of patient to eye health facilities after 24 h from time of trauma adds on to increase morbidity and complication rates.^[2,3,9,10,14]

The epidemiology of ocular injury is influenced by life style, socioeconomic status, traffic state, and sport and outdoors activities and can be by assault, workplace trauma, road traffic accidents (RTA), self-fall, thermal burns, and non-accidental injuries. These injuries are more common in adults. The most common pediatric eye injuries are sports-related, wooden stick, and thermal burns due to firecrackers. The most common ocular morbidities seen in ocular trauma are corneal tear, sclera tear, and lens damage.^[9,10,14,15]

The occupational injuries can be due to high-risk occupations such as the manufacturing industry, plumbing, mining, and agriculture. Non-occupational can be sports

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Corresponding Author: Snehal Mahadik, Associate Professor, Department of Ophthalmology, R. D. Gardi Medical College, Ujjain, Madhya Pradesh, India.

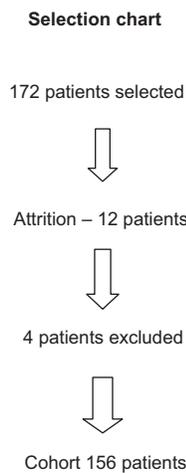
and domestic violence.^[16] The commonly noted ocular traumas are corneal tear, sclera tear, and lens damage^[9,10,14,15] along with associated facial or multiple injuries.

Health education and safety strategies should be addressed for the prevention of the serious ocular trauma; thus, we aim to highlight the clinical profile, risk factors, and prevalence of ocular trauma in patients attending outdoor clinic of Ujjain Charitable Trust Hospital, a tertiary care hospital of central India.

MATERIALS AND METHODS

A prospective observational hospital-based study of the patients with primary diagnosis of ocular trauma attending outdoor clinic of Ujjain charitable trust, Ujjain was conducted for a period of year. Out of total 172 patients were enrolled, following attrition of 12 patients and exclusion of six patients due to severe comorbid conditions, a cohort of 156 patients was finally included in the study during the study period. The ethics permission was granted by the Institutional Ethics Committee. A written informed consent was obtained from the study participants. The data were anonymized and confidentiality was maintained. The demographic data of the patient as age, gender, religion, caste, residential area, marital status, occupation, per capita family income, and educational status were recorded in a predesigned form.

Selection Chart



A detailed history of trauma including time, place, nature of injury whether mechanical or non-mechanical, circumstances of injury either occupational or non-occupational, and type of trauma whether blunt or sharp was recorded. Ophthalmology examination of patient was carried out as needed including visual acuity (Snellen’s chart) check, slit lamp examination; indirect ophthalmoscopy with 90D and 20D; and measurement of intraocular pressure by Goldman applanation tonometer. B-scan was done for

posterior segment. Radiological investigations such as skiagram orbit, computed tomography scan, and magnetic resonance imaging were done as indicated. Past history of any treatment taken for the same problem was also recorded. Terminologies were used based on Birmingham Eye Trauma Technology. All cases that had injury to the eyeball, optic nerve, orbit, upper and lower lids, eyebrows, and the lacrimal system were included in the study. The data were entered in Excel files and analyzed using the version 23 of the Statistical Package of the Social Science (SPSS) software.

RESULTS

Out of the total number of patients, that is, 2653 presenting to ocular outpatient department or casualty with ocular symptoms, a cohort of 156 patients was obtained. This results in prevalence rate of 5.8% in our study.

Sociodemographic Characteristics

In our study, out of 156 patients, 132 (84.61%) were male and 24 (15.38%) were female. Most of the patients were from rural area, that is, 93 out of 156 (Tables 1 and 2).

Age Pattern

The most common age group vulnerable to trauma is between 16 and 45 years (Table 3).

Common Cause of Ocular Injuries

The most common mode of ocular injury was agriculture followed by industrial and RTA (Table 4).

Clinical Findings

Lid lacerations/trauma and subconjunctival hemorrhage were seen in almost all case of ocular trauma, while corneal aberration, FB over cornea, corneal/corneoscleral tear, hyphema, and iris prolapse were also commonly seen (Table 5).

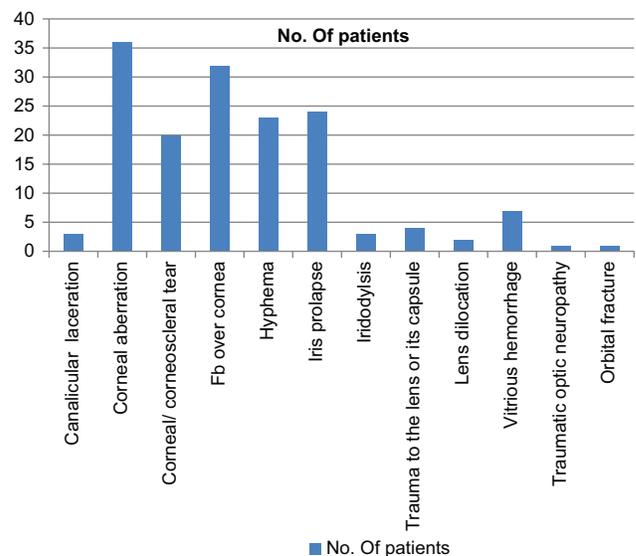


Table 1: Gender distribution

Gender	Total number of patients (n=156)
Male	132
Female	24

Table 2: Demographic distribution

Demographic distribution	Total number of patients (n=156)
Urban	63
Rural	93

Table 3: Age pattern

Age	Number of patients (n=156)
0–15 years	12
16–30 years	46
31–45 years	78
46–60 years	16
61–75 years	4

Table 4: Common cause of ocular injury

Causes	Number of patients
RTA	27
Toys/writing material	4
Firecracker	6
Sports	15
Abuse/assault	7
Chemical burns	13
Agriculture	43
Occupational/industrial	29
Fall	12

Table 5: Clinical findings

Clinical findings	Number of patients
Canalicular laceration	3
Corneal aberration	36
Corneal/corneoscleral tear	20
Fb over cornea	32
Hyphema	23
Iris prolapse	24
Iridodylsis	3
Trauma to the lens or its capsule	4
Lens dislocation	2
Vitrious hemorrhage	7
Traumatic optic neuropathy	1
Orbital fracture	1

Out of 156 patients, 126 patients required minor or major surgical interventions, while remaining patients were treated medically.

DISCUSSION

Ocular trauma is the major cause of preventable blindness and visual impairment, worldwide. In our study, the

prevalence rate of ocular trauma was 5.8% which is in accordance with the Aravind Comprehensive Eye Study^[17] who had prevalence rate of 4.5%. On the other hand, the Andhra Pradesh Eye Disease Study^[18] had higher prevalence rate of 10.6%, while the lower prevalence of ocular trauma was observed in Maurya *et al.*^[19] study (2.4%).

It is established fact that males have more incidence of ocular trauma and our study corroborates the same.^[4,5,9,10,12,13] In our study, out of 156 patients, 132 (84.61%) were male.

The most common age groups observed in our study, who are more prone for ocular trauma, were between 16 and 45 years [124 out of 156 patients], that is, the young active working age group who drives the economy of the society. This is consistent with the study done by Charles *et al.*, where they recorded higher frequency of ocular injuries between 11 and 49 years (85.6%).^[9] Our findings were similar to Dhasmana *et al.* who observed that the predominant age group of patients who are prone to ocular trauma was 21–40 years consisting of 55.29%.^[3] On the contrary, Hawassa university study observed more of pediatric prevalence (62.87%).^[20]

According to our study, the most common cause observed was agricultural [43 cases], followed by occupational and followed by RTA. This pattern may be due to more rural based population presenting at our hospital. While in study done by Guly *et al.*,^[21] RTA was the most common cause [57.3%] of ocular injuries. In a study done by Maurya *et al.*,^[19] the majority of ocular injuries were occurred at work and home.

In our study, Lid lacerations and subconjunctival hemorrhage were seen in almost all case of ocular trauma, while corneal aberrations [36 cases], followed by F.B. over cornea [32 cases], followed by iris prolapse [24 cases] and hyphema [23 cases] were the most common ocular findings. Corneal or corneoscleral tear were seen in 20 cases. The most common ocular morbidities seen in most of the studies in ocular trauma are corneal tear, sclera tear, and lens damage.^[9,14,15] In study done by Guly *et al.*,^[21] they observed 31% of cases having corneal involvement and 12.9% of cases with conjunctival involvement. In a study undertaken at Hawassa University, corneal tear was the most frequently observed case (39.33%),^[20] while, a study done in western India, it was 15.2%.^[10] Alem *et al.*^[20] observed eyelid damage in 12.55%, whereas Tejas *et al.* observed it in 15.66% and Tehmina *et al.* IN 64%.^[5,10] AC abnormality was in 18.37% of cases in Hawassa University study and it was seen in >50% cases in study done at Peshawar.^[14] In contrast, the findings were lower in Nigeria (5.9%) and western India (8.29%).^[9,10] Uveal prolapse was observed in 20.70% cases and about 24% lens damage was observed in study done by Alem *et al.*^[20]



Figure 1: (a) Pre-operative lid laceration, post-operative – after 1 month, (b) before and after lid repair, and (c) open globe injury

Out of 156 patients, 126 patients required surgical interventions, (Figure 1) while remaining patients were treated medically. Our study is in accordance with Hawassa University study who too reported 53.17% of all cases undergoing ocular surgery secondary to ocular trauma.^[20] While in study of,^[19] 64.5% of patients receive medical treatment primarily.

CONCLUSION

The incidence and prevalence of ocular trauma were seen more common in males as compared to female. The prevalence of trauma was observed more in rural population. Most ocular injuries in this rural population occurred at the workplace, that is, on agricultural fields, which, in turn, signify most common cause of ocular trauma being agricultural in our study followed by industrial. After lid lacerations and conjunctival hemorrhage, cornea was the most commonly affected ocular structure. Emphasis must be given on public awareness and strict legislation to use personal protective measures like goggles during work to reduce the occurrence of ocular trauma.

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