

Profile of Ocular Trauma in a Tertiary Centre in Western Nepal

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ABSTRACT

Introduction: Ocular trauma is an important cause of blindness and ocular morbidity throughout the world. The present study was done to establish the common causes of ocular trauma in a Tertiary Care Hospital of Western Nepal.

Methods: In this prospective study, all the patients with ocular trauma visiting eye Out Patient Department (OPD) and Emergency Department of Gandaki Medical College Teaching Hospital (GMCTH) from June 2015 to June 2016 were included. A complete history and detailed ophthalmological evaluation was done.

Results: Over a period of one year, 226 patients attended to the OPD and Emergency Department of GMCTH. Mean age of patients was 30.41 ±15.7 years. Males were 70.8% and females 29.2%. About 82.5% patients had visual acuity better than 6/18 while 17.7% had visual acuity <3/60. Road traffic accident (RTA) was the most common cause followed by foreign bodies.

Conclusions: Males are more prone to ocular trauma than females and majority of ocular trauma occurred at workplace. RTA is the commonest cause of ocular trauma. Very few patients used protective device. Public awareness and strict legislation for the use of personal protective devices can also help reduce the occurrence of ocular injury.

Keywords

Blindness, Ocular trauma, Tertiary centre.

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INTRODUCTION

Although eyes represent only 0.1% of the total body surface and only 0.27% of the anterior body surface, their significance to individuals and society is disproportionately higher.

Ocular trauma is an important cause of blindness and ocular morbidity throughout the world. The available literature on ocular trauma mainly comes from the developed countries with modern facilities of management. There are almost 2.5 million incident cases of eye injuries each year in the United States alone¹. The

annual incidence of hospitalisation for eye injuries is 8.1, 12.6, 13.2 and 15.2 in Scotland², Singapore³, United States⁴ and Sweden⁵ respectively.

In Nepal, with developing economy, poor health facilities and poor access to health care system, trauma is a significant cause of ocular morbidity. According to Nepal blindness survey⁶ done in 1981 blindness due to ocular trauma was 2.4%. Bhaktapur eye survey showed the prevalence of ocular trauma 0.7%⁷. These types of studies are important to define the target groups for prevention and education on ocular trauma.

It is believed that over 90% of all eye injuries can be prevented, making ocular trauma one of the most important preventable causes of blindness^{21,22}. To prevent eye injuries and to develop effective treatments an adequate data is essential. Therefore we performed this study in Gandaki Medical College Teaching Hospital, a Tertiary Centre in Western Nepal with an objective to determine the magnitude of ocular trauma and to identify the factors leading to ocular trauma.

METHODS

In this descriptive and prospective study, all the patients with ocular trauma visiting eye Out Patient Department (OPD) and Emergency Department of Gandaki Medical College Teaching Hospital from June 2015 to June 2016 were included. Detailed histories of all 226 patients were taken including demographic data, mode of injury, type as well as object of injury. The time of injury and the time of presentation as well as the distance travelled to reach hospital was noted.

Mechanism of injury was categorized as mechanical, chemical or thermal. Mechanical injury was further classified according to 'Ocular Trauma Classification Group' by Kuhn and associates into closed globe and open-globe injury⁸. Closed-globe injury was divided into contusion injury and superficial injury. Complete ophthalmologic evaluation was done including presenting visual acuity, measured with internally illuminated Snellen's chart. Detailed anterior segment evaluation was done with slit lamp biomicroscopy, which included an examination of the lids and adnexae (lacerations, abrasions and ecchymosis), conjunctiva (tear, hemorrhages, abrasions), cornea (foreign body, abrasion, laceration) anterior chamber (depth, reaction, hyphaemia), iris, pupil (size, shape, light reaction), lens (clarity, position), vitreous (hemorrhage, detachment, reaction) and fundus (hemorrhages, detachment). The posterior segment evaluation was done with direct or indirect ophthalmoscopes (Heine and Volk 78D/90 D Aspheric Lens). Intraocular pressure of both eyes was measured by applanation or by schiotz tonometer (whenever possible and whenever required). Relevant investigations like USG, X-ray orbit/skull, CT scan and MRI were done whenever indicated. All the patients were examined by the ophthalmologist and appropriate intervention was taken (Medical, surgical). Data was analyzed using a SPSS program.

RESULTS

Over a period of one year, 226 patients attended to the OPD and Emergency Department of Gandaki Medical College Teaching Hospital. Mean age of patients was 30.41 ±15.7 years. Males were more prone to trauma accounting for 70.8% than 29.2% females.

Regarding laterality of the eye involved, 48.2% patients had right eye involvement, 34.4% had left eye involvement and 17.4% had both eye involvements.

82.5% patients had visual acuity better than 6/18 while 17.7% had visual acuity <3/60.

Majority of the patients were in age group 21 - 30 years. Table 1 shows age distribution of patients.

Table 1: Age distribution of patients

Age of patients in years	Frequency	Percent (%)
0 - 10	21	9.2%
11 - 20	38	16.7%
21 - 30	68	30.1%
31 - 40	40	17.9%
41 - 50	36	15.9%
51 - 60	11	4.7%
≥60	12	5.5%
Total	226	100%

Road traffic accident (RTA) was the most common cause followed by foreign bodies. Table 2 shows different causes of injuries.

Table 2: Distribution of different causes of ocular trauma

Cause	Frequency	Percentage (%)
RTA	63	27.9%
Physical assault	26	11.5%
Foreign body	46	20.4%
CP hair	5	2.2%
Chemical injury	5	2.2%
Vegetative material	14	6.2%
Welding arc	18	8%
Fall injury	8	3.5%
Thunder injury	4	1.8%
Animal bite	3	1.3%
Insect bite	11	4.9%
Miscellaneous	23	10.2%

This study showed 61% of ocular injury occurred in workplace. In this study it was observed that out of 226 patients, 15 patients gave history of wearing protective devices while working specially while welding. About 82% of our patients didn't use any medication, 17% used herbal preparation, 0.5% used antibiotics eye drop and 0.5% used unknown medication.

Common ocular findings were corneal foreign bodies, eyelid edema and ecchymosis, subconjunctival hemorrhage. Summary of ocular findings are given in Table 3.

Table 3: Summary of ocular findings

	Frequency	Percentage
Lids		
Lids laceration	22	9.7%
Oedema and ecchymosis	32	14.2%
Conjunctiva		
Subconjunctival hemorrhage	28	12.4%
Laceration	4	1.8%
Foreign body	22	9.7%
Hyperemia	7	3.1%
Cornea		
Foreign body	48	21.2%
Corneal abrasion	14	6.2%
Corneal ulcer	2	0.9%
Laceration	6	2.7%
Uvea		
Uveitis	5	2.2%
Hyphema	2	0.9%
Iridodialysis and sphincter tear	5	2.2%
Iris prolapse	2	0.9%
Lens		
Cataract	3	1.3%
Vitreous		
Hemorrhage	3	1.3%
Retina and optic nerve	5	2.2%
Orbit injuries	7	3.1%
Globe rupture	4	1.8%
Chemical injuries	3	1.3%
Thermal injuries	2	0.9%
Total	226	100%

DISCUSSION

Ocular trauma is a major cause of monocular blindness and visual impairment throughout the world⁸. The age

group most vulnerable to trauma was 21 - 30 years which was consistent with other studies^{9,10}. Similar result showing 21 - 30 years of age as most common age group was seen in the study done in Dhulikhel¹¹.

This comprises the economically productive age group and ocular injury in this age group results in great economic loss. Increased incidence of ocular injuries among young can be explained by their frequent social activity. Decreased visual acuity in elderly population could be due to poor vision as a result of various ocular conditions like cataract, glaucoma, age related macular degeneration and previous ocular surgeries¹². Also 16.7% of the patients were in age group 11 - 20. This can be explained by the fact that young patients are more involved in occupations, sports and a risky and adventure seeking behavior¹³.

In this study, 70.8% of the patients were males and 29.2% were females. This may be due to the difference in exposure risk between males and females due to different social behavior. This again can be attributed to the increased outdoor, occupational and sports, risky adventure seeking behavior and recreational activities with higher risk of injuries in men. Also this could be because of more attention being paid for the health of males. Other studies also showed higher incidence of eye injuries in males than in females^{9-11,14-16}.

This study shows that closed globe injuries occurred more frequently than the open globe injuries. Other studies also have reported closed globe injuries more frequently than open ones^{9,11,14,17}.

In our study, the most common ocular injury documented was corneal foreign body followed by eye lid edema and ecchymosis, subconjunctival hemorrhage, conjunctival foreign body, eye lids laceration, corneal abrasion. Corneal abrasion was seen in 6.2% of patients in our studies. While studies conducted by Upadhyaya M *et al* in Bhaktapur⁷ and Oum BS *et al* in South Korea¹⁷, corneal abrasion has been observed to be the most common finding.

Corneal foreign body was the most common findings in our study. Iron particles accidentally falling on eye during welding was one of the most common causes of corneal foreign body. GMCTH is located at the centre of Pokhara city so these patients had easy access to GMCTH. Other causes of cornea foreign body were dust particles, insect wings.

We observed that major cause of ocular trauma was RTA followed by foreign body, physical assault. Similar result was seen in the study done in Manipal⁹.

This study showed 61% of ocular injury occurred in workplace. Work place injuries were the commonest cause of injury, similar to studies from India and other countries¹⁸⁻²⁰.

In this study it was observed that out of 226 patients, 15 patients gave history of wearing protective devices while working specially while welding. It is believed that with education about use of proper eye protection, 90% of eye injuries could be prevented¹².

About 82% of our patients didn't use any medication, 17% used herbal preparation, 0.5% used antibiotics eye drop and 0.5% used unknown medication. This could be due to ignorance, lack of transportation facilities and lack of eye service facilities lots of patients are first seen by medical shop keepers, family members and traditional healers before coming to the hospital.

CONCLUSIONS

Males are more prone to ocular trauma than females and majority of ocular trauma occurred at workplace. RTA is the commonest cause of ocular trauma. Very few patients used protective device. The planning of treatment and development of strategies should be done according to these findings to prevent ocular blindness due to trauma. Public awareness and strict legislation for the use of personal protective devices can also help reduce the occurrence of ocular injury.

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