



OCULAR FEATURES IN VARIOUS OCULAR TRAUMA -A CLINICAL STUDY

Ophthalmology

Dr. Vaddiboina Nalini

Postgraduate Department of ophthalmology Alluri sitaramaraju academy of medical sciences Eluru – 534005, West Godavari district Andhra Pradesh, India

Dr. Ande Venkateswara Rao

Professor Department of ophthalmology Alluri sitaramaraju academy of medical sciences Eluru – 534005, West Godavari district Andhra Pradesh, India

Dr. M. S. S. Keerthi*

Associate professor Department of ophthalmology Alluri sitaramaraju academy of medical sciences Eluru – 534005, West Godavari district Andhra Pradesh, India
*Corresponding Author

ABSTRACT

PURPOSE: The purpose of this study is to determine incidence of various types of ocular trauma and their features attending emergency department and ophthalmology department in a tertiary care hospital. Impact of trauma on human eye ranges from minute subconjunctival hemorrhage to lacerated globe. **MATERIALS AND METHODS:** Study was conducted in a tertiary care hospital from November 2020 to April 2021. A total of 206 cases attending emergency and ophthalmology department were included in the study. All the cases underwent detailed ocular examination including anterior and posterior segment examination. **RESULTS:** Out of 206 cases, 55.338% (n=114) were men and 44.60% (n=92) were women. RTA injuries were 37.864% (n=78) and Non RTA injuries were 62.135% (n=128). Most common cause of ocular injury was foreign body 27.184% (n=56) followed by lid laceration 21.359% (n=44), remaining cases were 51.457% (n=106). Closed globe injuries were most common injuries and open globe injuries were least common. **CONCLUSION:** Ocular trauma is an important and preventable cause of ocular morbidity in the society. Impact of trauma on human eye ranges from minute subconjunctival hemorrhage to lacerated globe. Most of the cases of trauma are closed globe mechanical injuries affecting young adults resulting in economical and social burden. Proper evaluation of severity of ocular trauma at the time of initial examination may help in planning for skillful management and help in prevention of severe visual morbidity.

KEYWORDS

INTRODUCTION

One of the major cause of unilateral ocular morbidity has been reported to be is Ocular trauma.¹

Male gender, workplace, road traffic accidents and lower socioeconomic status are several risk factors associated with ocular trauma. Impact of trauma on human eye ranges from minute subconjunctival haemorrhage to a lacerated globe.² Common ocular complications include traumatic cataract, changes in refraction following sharp trauma to the corneal surface, and even more serious retinal problems following severe trauma.³

Decrease or loss of vision, in either one eye or both the eyes, may result in significant burden economically due to time lost from work, or school and family care giving, expensive hospitalization, special visit and treatment, prolonged follow-up, and visual rehabilitation.⁴

Several studies have reported the prevalence of trauma history. Due to the potential for visual morbidity and public health burden of ocular trauma, knowledge of the prevalence of ocular trauma in different populations is required.⁵ Work-related injury, according to Schelp, is an injury that has occurred at a work place, either as part of the job or on a work-related assignment.⁵

Children are at greater risk of ocular trauma because of immature motor skills, careless activities and inability to identify dangerous and harmful objects. The impact of eye injury is devastating as it leads to prolonged suffering, disability as well as increased economic burden.⁶

This study aims at providing epidemiological data on ocular injuries in Eluru and surrounding villages, attending tertiary care hospital, Andhra Pradesh. It targets to create awareness among people about range of visual morbidity after trauma and educating safety measures preventing accidents.

AIM:

To study incidence of road traffic accident ocular injuries and non-road traffic ocular injuries in patients of various ages attending Alluri Sitarama Raju Academy of Medical Sciences Hospital.

MATERIALS AND METHODS:

All the patients attending ophthalmology and emergency departments with either history of road traffic accident or non road traffic accident

ocular trauma from November 2020 to April 2021 are included in the study.

All the demographic data including age, sex, address, occupation & financial status of all the patients were recorded. A detailed history was obtained regarding the trauma, its nature & complications are recorded.

Detailed ophthalmological examination was carried out for all patients. Visual acuity is recorded by Snellen's chart. Slit lamp examination, 90D examination & indirect ophthalmoscopy was carried out. Intraocular pressure was measured with Goldman applanation tonometer or Noncontact tonometer depending on patients general health and stability. Gonioscopy was done in closed globe injuries. Radiological investigations like X-Ray orbit, CT Scan, MRI were done as indicated. Complete details of ophthalmological examination included initial best corrected visual acuity, ruling out any eyelid injury, conjunctival tear or subconjunctival haemorrhage, examination of the cornea for foreign body, abrasion, laceration or perforation, any scleral tear or laceration, ruling out hyphema, iris injuries or afferent pupillary defect. Examination of posterior segment was carried out for detection of vitreous haemorrhage, retinal detachment, retinal break or tear, choroidal rupture, choroidal haemorrhage or subretinal haemorrhage. The record of previous treatment, if any, was obtained from the patient and findings at the time of initial examination were noted.

Statistical Analysis:

The data was entered regularly in excel sheet. Nominal data was presented as numbers & percentage. Data analysis & percentage calculation was done using Microsoft Office Excel.

RESULTS:

A total of 206 eyes were examined during the period of six months. Among them 55.338% were men and 44.60% were women. RTA injuries were 37.864% and Non RTA injuries were 62.135%. Most of the patients were between the age groups 31-45 years, with 37.86%. Patients between age group 16 -30 years were about 20.388%. Incidence of ocular trauma is less in age groups above 60 years, 9.707%. Most of the cases presented within 72 hours of trauma, 43.203% i.e 89 cases, followed by 36.893%, i.e 76 patients attending within 24hrs of trauma. Most common ocular trauma was ocular (corneal & conjunctival) foreign body with 56 patients, i.e 27.184%, followed

by lid laceration with 44 patients i.e 21.359 %. Chemical ocular injuries were reported as 8.737 %,18 patients. About 6 Fire crackers blast injury cases were reported 2.912%.

Table 1 : time of reporting

Time of reporting (less than)	Number Of Cases	Percentage %
24 HOURS	76	36.893%
72 HOURS	89	43.203%
7 DAYS	14	6.796%
15 DAYS	12	5.825%
30 DAYS	15	7.281%
TOTAL	206	100

Table 2 : RTA & NON- RTA injuries

	Total Number Of Cases	Percentage%
Road traffic accident ocular injuries	78	37.864%
Non road traffic accident ocular injuries	128	62.135%
Total	206	100%

Table3 : Agents causing trauma

Causative Agents	Number Of Cases	Percentage %
Blunt trauma	44	21.359%
Foreign body	56	27.184%
Vegetative matter	23	11.165%
Sharp penetrating injuries	3	1.456%
Sports equipment	0	0
Finger / fist	9	4.368%
Chemical	18	8.737%
Animal part	26	12.621%
Fire cracker	6	2.912%
Other	21	10.194%
Total	206	100

DISCUSSION

Ocular trauma is one of the most common and preventable causes of visual morbidity. It is most common in rural population due to lack of awareness of ocular health and nonavailability of ophthalmology speciality services. As agriculture is the most common occupation in rural areas , vegetative matter is the most common causative agent , resulting in corneal ulcers and corneal abrasions .

Ocular morbidity due to road traffic accidents is a devastating condition, leading permanent visual and ocular disability, leaving the family members in psychological trauma.

In our study, incidence of ocular trauma is more in males 55.338% , between the age groups 31-45 years, with 37.86%, indicating that most of the working males are affected .

As most of population affected is rural working males, the most common mode of injuries are due to contact with vegetative matter leading to corneal ulcers, injuries due to spade , chisel causing corneal or scleral lacerations , contact with pesticides while spraying causing conjunctival congestion, corneal melting. In a study conducted by Shailaja Karveetal² 65.25% were found to be in the age group of 15 to 45 years ,total numbers of the patients in this age group, 69.21% were

males ; affecting the working male population and economic burden .

The study by S. Khattry et al⁷ reported that 25.8% cases were due to agricultural agents. We found 4% cases of chemical injuries while S. Khattry has reported 1.30% chemical injuries. Singh D. V. et al⁸ have reported 5% cases of chemical injuries.

Most common causative agent for ocular trauma in our study is ocular foreign body with 56 patients, i.e 27.184%. Among these, conjunctival and corneal foreign bodies are most commonly seen; causes of conjunctival foreign body include insect body or wing, sand particles. Causes of corneal foreign body include, sand particles, rust particles, wooden splinters. As this kind of injuries are seen in working population, protective goggles has to worn by the people to avoid ocular injuries .

In our study incidence of ocular trauma due to road traffic accidents is 37.864%. Various injuries due to road traffic accidents are lid lacerations, bony orbital fractures, traumatic hyphaema, scleral rupture. Lid lacerations are more common among them and scleral rupture is the rarest. In a study conducted by Xi Zhang et al⁹, road Traffic accidents were seen mostly in patients aged between 15 to 29 years.

In our study about 43.203% of patients presented to the hospital within 72 hrs of injury and about 36.893% patients attended hospital within 24hrs of injury . In a study conducted by S K Khattry⁷, stated that time lag between ocular injury and presentation to the hospital is associated with worse visual outcome in any type of injury .

According to ME Gyasi et al, approximately fifty seven percent (57.3%) of the patients presented between 24 and 48 hours after injury while the rest came within one week or thereafter⁸. In our study 43.203% (89 cases) presented within 72 hrs , 36.893% (76 cases) presented within 24 hrs.

Hence creating awareness among patients for effective treatment in appropriate time and place for better visual prognosis is necessary.

In our study about, 6 cases of firecracker injuries are recorded and all the cases were children causing periorbital skin and adnexal abrasions , corneal impaction . No major ocular and visual morbidity is noted. In a study conducted by Sonja Frimmet al, majority of firecracker injuries are seen under the age of 18 yrs associated with gunpowder removal .⁹

Hence, children have to be educated not to deal with crackers in the absence of parents or adults. Parents have to be counselled to take proper precautions while bursting crackers about their children.

The major sign of diagnosis of occult scleral rupture are visual acuity with light perception or less than light perception, bulbar conjunctival edema and subconjunctival hemorrhage, hyphema, ocular hypotension and limitation of ocular movement, etc after ocular trauma. Prompt and appropriate surgery play an important role in the recovery of visual function .¹⁰

In our study one case of scleral rupture has been reported to the casualty, with no perception of light, which has been referred to higher centre for further management ,due to lack of facilities.

Hence Ophthalmology superspeciality services has to be developed in every multispecialty hospital to provide better services for good prognosis, especially in young patients. Ocular trauma results in detrimental effects on the physical and mental health of society and a significant financial burden on the family."Hence professional ethics and traffic morale has to be inculcated in the society.

CONCLUSION

Ocular trauma is an important and preventable cause of ocular morbidity in the society. Impact of trauma on human eye ranges from minute subconjunctival hemorrhage to lacerated globe. Most of the cases of trauma are closed globe mechanical injuries affecting young adults resulting in economical and social burden.. Proper evaluation of severity of ocular trauma at the time of initial examination may help in planning for skillful management and help in prevention of severe visual morbidity.

REFERENCES:

1. Manuscript no. 2005-1014. L. V. Prasad Eye Institute, Hyderabad, India. Vision

- Cooperative Research Center and School of Optometry and Vision Science, University of New South Wales, Sydney, Australia. doi:10.1016/j.opthta.2006.02.020
2. Shailaja Karve, Ankush Kolte, Ansari Alfia, Hemangi Rathi. Study of clinical profile of ocular trauma at a tertiary eye care centre. *International Journal of Contemporary Medical Research* 2017;4(12):4-7.
3. Hashemi H, Khabazkhoob M, Emamian MH, Shariati M, Mohazzab-Torabi S, Fotouhi A. Past history of ocular trauma in an Iranian population-based study: Prevalence and its associated factors. *Middle East Afr J Ophthalmol* 2015;22:377-82.
4. A Retrospective Study on Clinical Features and Visual Outcome of Patients Hospitalized for Ocular Trauma in Cangzhou, China *Hindawi Journal of Ophthalmology* Volume 2017
5. Mackiewicz J, Machowicz-Matejko E, Salaga-Pylak M, Piecyk-Sidor M, Zagórski Z. Work-related, penetrating eye injuries in rural environments. *Annals of agricultural and environmental medicine*. 2005;12(1).
6. Chakraborti C, Giri D, Choudhury KP, Mondal M, Datta J. Paediatric ocular trauma in a tertiary eye care center in Eastern India. *Indian journal of public health*. 2014 Oct 1;58(4):278.
7. K Khatri, A E Lewis, O D Schein, M D Thapa, E K Pradhan, J Katz, Br J Ophthalmol. 2004 Apr; 88(4): 456–460.
8. Gyasi M, Amoaku W, Adjui M. Epidemiology of hospitalized ocular injuries in the upper East region of Ghana. *Ghana Med J*. 2007;41(4):171-175.
9. Frimmel S, de Faber JT, Wubbels RJ, Kniedstedt C, Paridaens D. Type, severity, management and outcome of ocular and adnexal firework-related injuries: the Rotterdam experience. *Acta Ophthalmol*. 2018 Sep;96(6):607-615.
10. Wang YS, Xu JF, Guo CM. [Clinical characteristics of occult scleral rupture]. *Zhonghua Yan Ke Za Zhi*. 2008 May;44(5):431-5.
11. Hashemi H, Khabazkhoob M, Emamian MH, Shariati M, Mohazzab-Torabi S, Fotouhi A. Past history of ocular trauma in an Iranian population-based study: Prevalence and its associated factors. *Middle East Afr J Ophthalmol* 2015;22:377-82.