

A STUDY OF ETIOLOGY AND SPECTRUM OF EYE INJURIES IN TRAUMA PATIENTS IN A TERTIARY CARE CENTRE IN SOUTH INDIA

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ABSTRACT

AIM

To study the causes and spectrum of eye injuries in trauma patients attending the Ophthalmology department in a tertiary care centre in South India.

METHOD

A prospective hospital based study was carried out in 560 trauma patients with ocular injuries were conducted at Department of Ophthalmology, Dharmapuri Medical College, Dharmapuri from January 2023 to June 2023. Detailed history was taken regarding time, place and session of trauma, mode of injury and type and nature of traumatic agent. All the patients underwent complete ophthalmological evaluation to identify the type, extent and severity of injury and impact on ocular structures and vision. All the trauma patients with eye and orbital injuries were included in the study.

RESULTS

Out of 560 patients, males were most commonly affected. The mostly involved age group was between 21 to 30 years. Periorbital edema with ecchymosis was the most common ocular manifestation. Road traffic accidents were the most common etiology for the trauma followed by assault. Visual acuity at presentation was normal in most cases.

CONCLUSION

Trauma patients are at high risk for vision-threatening injuries. Early detection and management of eye injuries is essential to reduce the rate of complications and save the vision. Young males involved in RTAs represent a risk group.

KEYWORDS

Eye injuries, road traffic accidents, assault, trauma, periorbital edema, ecchymosis, orbital fractures

INTRODUCTION

Ocular trauma is a major cause of vision loss and long term morbidity particularly in young male population. It is the most common cause for monocular blindness. The personal impact of ocular trauma is compounded by socioeconomic costs, such as treatment, hospitalization,

loss of work and rehabilitation. Patients with major facial trauma have a high risk of vision threatening injury.

Lifestyle, culture and socioeconomic condition of the people influence the nature and cause of trauma. Eye injuries constitute about 7% of all bodily injuries and 10 to 15% of all eye disorders. It is estimated that 90% of all eye injuries are preventable.

Road traffic accidents remain the most common etiology of eye injuries followed by assault and accidental self falls. Trauma patients should be carefully evaluated for the presence of hidden eye injuries beyond obvious ones, since they represent a major risk factor for visual impairment.

MATERIALS AND METHODS

Our study was conducted in 560 trauma patients with ocular and orbital involvement at Government Dharmapuri Medical College from January 2023 to June 2023. Patients of all age groups with involvement of one eye or both the eyes were included in the study. Patients with old ocular trauma and other vision threatening diseases were excluded from the study.

Detailed history regarding demographic information and specific history of trauma such as nature of injury, type of injury and mode of injury and characteristics of traumatic agent were noted.

All patients underwent complete ophthalmologic evaluation as follows:

1. Visual acuity by Snellen's chart
2. Refraction
3. Pupillary reaction for normal pupil, sluggish pupil or RAPD.
4. General ophthalmic examination with torch light and slit lamp biomicroscopy
5. Intraocular pressure measurement by non-contact and applanation tonometry
6. Fundus examination by direct ophthalmoscope and slit lamp biomicroscopy using 90 Dioptre lens and indirect ophthalmoscopy.
7. Extraocular movement examination using torch light
8. Force duction test was done in all cases with extraocular movement restriction
9. Test for infraorbital sensation
10. Examination of orbital margins for irregularity, gaps, tenderness and emphysema
11. Colour vision evaluated by Pseudo-isochromatic Ishiharas chart
12. Central fields by Bjerrums screen
13. Visual fields by Automated perimetry
14. Ultrasound B scan
15. Diplopia charting
16. CT Facial bones and orbit

RESULTS

TABLE 1 OCCURENCE IN DIFFERENT AGE GROUPS

AGE	NO OF PATIENTS	PERCENTAGE (%)
0-10 years	12	2.1%
11-20 years	50	8.9%

21-30 years	163	29.2%
31-40 years	130	23.2%
41-50 years	106	18.9%
>50 years	99	17.7%

TABLE 2 OCCURENCE IN DIFFERENT GENDERS

GENDER	NO OF PATIENTS	PERCENTAGE (%)
Male	460	82.1%
Female	85	15.2%
Male children	8	1.4%
Female children	7	1.3%

TABLE 3 MECHANISM OF INJURY IN OCULAR TRAUMA

MECHANISM	NO.OF PATIENTS	PERCENTAGE (%)
RTA	288	51.4%
Assault	198	35.4%
Accidental self fall	58	10.4%
Miscellaneous	16	2.8%

TABLE 4 TYPE OF INJURY

TYPE OF INJURY	NO.OF PATIENTS	PERCENTAGE (%)
Periorbital edema/ecchymosis	388	69.3%
Orbital fractures	76	13.6%
Subconjunctival hemorrhage	63	11.3%
Lacerations	38	6.8%
Traumatic optic neuropathy	9	1.6%
Third nerve palsy	4	0.7%
Comotio retinae	4	0.7%
Globe rupture	2	0.4%
Hyphema	2	0.4%
Corneal tear	2	0.4%
Facial palsy	1	0.2%
Subluxation of lens	1	0.2%

TABLE 5 ORBITAL WALL FRACTURES

ORBITAL WALL INVOLVED	NO OF CASES	PERCENTAGE
Lateral wall fracture	32	42.1%
Medial wall fracture	7	9.2%
Roof fracture	10	13.2%
Floor fracture	12	15.8%
Combined fracture	15	19.7%

TABLE 6: VISUAL ACUITY AT PRESENTATION BY SNELLENS CHART

VISUAL ACUITY	NO OF CASES	PERCENTAGE
6/6	330	58.9
6/6 – 6/12	143	25.5
6/18 – 6/36	47	8.4
6/60 – 1/60	15	2.7
CFCF – PL+	14	2.5
NO PL	11	2

FIGURE 1: PERIORBITAL EDEMA WITH ECCHYMOSES



FIGURE 2: SUBCONJUNCTIVAL HEMORRHAGE



DISCUSSION

In this era of high speed vehicles and industrialization, the incidence of ocular injuries is increasing in general along with other bodily injuries. In spite of the fact that eyes are well protected with lids, margins of orbit, nose and fat cushion from behind, eyes are prone to all form of injuries.

In our study of 560 trauma patients with ocular involvement, most commonly males were involved. The commonest age group involved was young males between 21 to 30 years (29.2%). Males (82.1%) had higher frequency of orbital wall fractures with ocular manifestations when compared to females. Unilateral ocular involvement was more common in our study.

Road traffic accident (51.4%) was the most common etiology followed by assault, self fall, sports injuries and work place injuries. Facial involvement has been considered a risk factor for sight threatening injuries. In our study, patients who sustained facial injuries suffered sight threatening injuries.

Visual acuity was normal (6/6) in most cases (58.9%). 11 cases had no perception of light due to total globe rupture and traumatic optic neuropathy.

The most commonly reported eye injury in our study was periorbital edema with ecchymosis (69.3%). Periorbital edema and ecchymosis was associated with majority of the cases along with other ocular manifestations. The second most common manifestation was orbital fractures (13.6%). Orbital fractures were associated with periorbital edema and ecchymosis in

most cases. The lateral wall of the orbit (42.1%) was most commonly involved in our study patients.

Subconjunctival hemorrhage (11.3%) was seen in 63 patients. Lid lacerations were also commonly seen in our patients. 4 cases had third nerve palsy. Globe rupture was seen in 2 cases. 2 patients had corneal tear. Hyphema was seen in 2 cases. Facial nerve palsy was seen in 1 patient presenting with lagophthalmos and exposure keratitis. One patient had Subluxation of lens.

Comotio retina was present in 4 cases. Posterior segment was less commonly involved than anterior segment in our study. The most common posterior segment finding was Berlins edema. Traumatic optic neuropathy was seen in 9 cases presenting with relative afferent papillary defect.

CONCLUSION

In our study, it was concluded that Road traffic accidents was the most common etiology of ocular injuries. Young males were more commonly involved. Periorbital edema with ecchymosis was the most common ocular manifestation in our study patients followed by orbital fractures and subconjunctival hemorrhage. In orbital fractures, lateral wall was most commonly fractured in our patients. Unilateral involvement was more common than bilateral. Most cases had normal vision. In our study, most ocular injuries were minor without major visual disability.

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