OVERVIEW OF EYE INJURIES IN A TERTIARY HEALTH CENTRE

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ABSTRACT: BACKGROUND: Eye injuries are an important, preventable public health problem worldwide. It is a matter of concern for health sector strategy and rules formulations. **AIM:** To study the epidemiology and clinical profile of eye trauma in a tertiary care centre. **SETTINGS AND DESIGN:** Prospective analysis of all eye injuries presenting to the Out Patient Department of Ophthalmology and emergency and trauma centre from 1st January 2013 to 31st March 2013. **MATERIAL AND METHOD:** All patients with eye injuries were assessed by an ophthalmologist. Data on demographic profile, the type and source of injury of the patients, and clinical presentation and visual profile were documented using a uniform and validated datasheet.
RESULTS: Out of total 141 cases 84.4% were male and 15.6% were females. The average age was 29.8years. The most common mode of ocular injury among adults was Road Traffic Accident (RTA). Pediatric eye trauma constituted 18.4% of total cases which mostly occurred at home. 58.9% cases arrived to our centre between 4-24 hour and 28% presented after 24 hours. Only 13.5% ocular injuries had come to seek treatment within 4 hours of trauma. Among 76 cases of RTA, none of them were using helmets and 29% were under influence of alcohol. 8.5% cases were involved in medico-legal proceedings. Majority of the cases comprised of monocular trauma (89%) although subjective visual deficit was reported in only 15% cases. Closed globe injuries constituted about 87% of total cases of which most cases presented with laceration around globe followed by ecchymosis.
CONCLUSION: A preventive and educational strategy among the population with special focus on traffic rules is necessary to reduce eye injury burden.
KEY WORDS: eye injuries, tertiary health centre
MeSH terms: eye injuries, tertiary health centre

INTRODUCTION: Eye injuries are a matter of concern worldwide. It is an important, preventable cause of ocular morbidity. As many as half a million people in the world are blind as a result of eye injuries. (1)

Eye trauma may range from minute corneal abrasions or subconjunctival hemorrhage to a badly lacerated globe. It is known to be the prominent cause of monocular blindness. Reports suggest that up to 60.5% of cases of ocular injury lead to significant visual loss with higher rates among men under age of 30 years. (2) Studies indicate that one out of every 5 adults have a history of ocular trauma. (3) In pediatric group, these rates are 12% to 38%, making ocular trauma the most avoidable

cause of childhood blindness. [4-8] Penetrating ocular trauma is a well-known cause of visual impairment in young adults and children leading to blindness. [9]

Cost burden due to eye trauma is also an important issue. Severe forms may require expensive hospitalization, specialist treatment, prolonged follow-up and visual rehabilitation. The indirect, secondary economic impact of ocular trauma, due to loss of work or school days, is harder to estimate.

Various methods have been employed to collect data on ocular trauma including eye trauma registries [10-11], hospital discharge data analysis [12-14], case series in emergency room settings[15-16], population-based interviews and questionnaires [17] and blindness prevalence surveys [18].These studies cannot be compared due to difference in the research strategy, the population studied, and the nature of the data.

Moreover most previous studies on the profile and prognostic factors in ocular trauma have been conducted in developed countries where modern facilities for managing ocular trauma are widely available [19-20]. There is paucity of studies on the profile of ocular trauma from the developing countries [21-23].

In our study we have tried to assess the state of eye trauma in a tertiary care centre. Such studies can play an important role not only in defining the target groups for prevention and education on eye trauma but also to formulate various strategies to prevent and decrease the burden due to eye injuries.

MATERIAL AND METHOD: Prospective analysis of all eye injuries presenting to the Out Patient Department of Ophthalmology and emergency and trauma centre from 1st January 2013 to 31st March 2013 was done.

After the basic life support medical and surgical interventions, cases with ocular injury component were selected for our study. The study was performed in accordance with the Declaration of Helsinki protocol. Informed consent was taken from the patients selected. All cases with ocular injuries were assessed by an ophthalmologist. Patients particular (name, age, sex) were documented. History regarding cause of trauma, place of trauma was taken. In case of road traffic accident cases were enquired about use of helmet at time of injury and whether patient was under influence of alcohol. Time between trauma and presentation to our centre was documented. Clinical presentation at time of presentation, type of injury (open globe or closed globe), extent of ocular involvement (monocular or binocular), subjective visual deficit noticed at the time of presentation were documented. Matter of medico-legal concern was also recorded.

RESULT:

Total cases included in our study were 141 (Table 1). Out of total cases 84.4% were male and 15.6% females (Table 1).

The mean age of presentation was 29.8years.Out of total 141 cases 115 (81.6%) were adult (> or = 16 years) (table 2) and 26 (18.4%) belonged to pediatric age group (less than 16 years (Table 3).

Amongst the adults, majority of cases affected belonged to age group between 16-35 years i.e. the reproductive age group accounting for nearly 52.5% (Table 2). Most common mode of injury among the adults was Road Traffic Accident i.e. 64.3% which was far more than any other cause

(table 5).Children were mostly affected at home accounting to 80.8% (Table 6) which was due to fall or blunt trauma, together contributing to 53.8% (Table 7).Out of total 141 trauma cases 76 cases were due to RTA. Interestingly none of them were using helmet during injury and nearly 29% were under the influence of alcohol (table 8).

58.9% cases arrived to our centre between 4-24 hour and 28% presented after 24 hours. Only 13.5% ocular injuries had come to seek treatment within 4 hours of trauma which is regarded as golden period for management of injuries (table 9).8.5% cases were of medico-legal importance while rest 91.5% had no legal proceedings (table 10).

Monocular trauma was more common accounting for 89.4% than binocular trauma (10.6%) (Table 11). There was no side predilection in monocular cases. Majority of cases were closed globe injuries (Table 12). Most common clinical presentation was laceration around the globe followed by periorbital ecchymosis and subconjunctival hemorrhage (Table 13).61% cases had no subjective visual deficit due to trauma while 15% cases reported visual deficit due to trauma (Table 14).Visual deficit assessment was not possible in 42.8% cases because either patient was unconscious or belonged to pre-school age or was under the influence of alcohol (Table 14).

DISCUSSION: Thus our study shows that eye injuries are a matter of concern to ophthalmologist. In our study ocular trauma requiring referral to a tertiary care centre predominantly affected young males. The children and young males due to their outdoor and high-risk activities are at more risk than other groups. Our observations were in accordance to few other studies conducted on ocular trauma in Indian setup.

Mukherjee AK, Saini JS, Dabral SM (1984) carried out a similar study of 82 patients varying in age group from 5 yrs to 62 years which were hospitalized with penetrating ocular injuries. Majority of these were males (60 cases, 73.17%). 37 patients (44.91%) were less than 30 years of age. All patients had uniocular injury. [24] In our study males 84.4% and nearly 68% cases were less than 30 year of age which is more than the compared study. 90% cases had monocular injury which is same as in above study.

Saxena R, Sinha R, Purohit A, Dada T, Vajpayee RB, Azad RV (2002) carried out a study on pediatric ocular trauma. They observed that majority of injuries occurred in children of 5 years and older (87.7%). There were 133 (65.1%) boys and 71 (34.9%) girls. Forty-nine (24%) cases presented within 6 hours of injury while 70 (34.3%) presented after more than 24 hours after trauma. Most common cause of injury was bow and arrow (15.2%) followed by household appliances (14.3%). Closed globe injuries accounted for 42.2% injuries, open globe for 53.9% and 3.9% were chemical injuries. [25]

Vats S, Murthy GV, Chandra M, Gupta SK, Vashist P, Gogoi M (2008) conducted a study on 158 participants. They found mean age at trauma was 24.2 years which is nearly same as in our study i.e. 29.4 years. Males were significantly more affected. Blunt trauma was the commonest mode of injury (41.7%). Blindness resulted in 11.4% of injured eyes. A significant association was noted between ocular trauma and workplace (Chi-square = 43.80, $P < 0.001$) and source (Chi-square = 10.88, $P = 0.028$) of ocular trauma. [26] But in our study road traffic accident was the most common cause for ocular trauma. 61% cases had no subjective visual deficit due to trauma while 15% cases reported visual deficit due to trauma. Visual deficit assessment was not possible in 42.8% cases because either patient was unconscious or belonged to pre-school age or was under the influence of alcohol.

Shah M, Shah S, Khandekar R. (2008)found that out of the 2,607 persons with ocular trauma, 'open globe' and 'closed globe' types of injuries were found in 451 and 2,156 persons respectively. Within 24 hours of injury, only 1,355 patients (52%) had consulted ophthalmologists. [27]We had similar results with 87.2% closed globe injuries and rest 12.8% were open globe injuries. Although in our study 72.4% cases reported to ophthalmologist within 24 hour which was more than the compared study.

Thus our study, inspite of having the limitation of short duration of study, gives a good idea of status of eye trauma. It shows that eye injuries are a matter of concern to ophthalmologist. As RTA has been found to be a major factor for eye injury, more stringent rules are required to reduce the incidence of mishaps as a whole. Increasing incidence of RTA in younger age group is due to changing lifestyle and rash driving which we often see on road. Rules like “do not drink and drive” and use of helmets and safety seat belts need strict implementation. Most eye injuries in children are preventable and occur from unsupervised games like bow and arrow and firecracker. The children and young males due to their outdoor and high-risk activities are at more risk than other groups. Common people should be made aware regarding early referral to trauma unit to help in early treatment, lesser financial loss, early rehabilitation and better visual outcome.

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TABLE 1: Distribution of ocular trauma with respect to gender

SEX	NUMBER	PERCENTAGE (%)
Male	119	84.4
Female	22	15.6
TOTAL	141	100

TABLE 2: Distribution of ocular trauma with respect to age in adult group

AGE (years)	NUMBER	PERCENTAGE (%)

16-25	38	27.0
26-35	36	25.5
36-45	19	13.5
46-55	10	7.1
56-65	7	5.0
66-75	3	2.1
Above 75	1	0.8
TOTAL	115	81.6

TABLE 3: Distribution of ocular trauma with respect to age in pediatric group

Age group	NUMBER	PERCENTAGE (%)
Infant (<1 year)	1	0.8
1-5 year	10	7.1
6-15 year	16	11.4
TOTAL	26	18.4

TABLE 4: Distribution of ocular trauma in adults with respect to place of trauma

PLACE	NUMBER	PERCENTAGE (%)
Road	81	70.4
Home	21	18.3
Workplace	10	8.7
Miscellaneous	3	2.6
TOTAL	115	100

TABLE 5: Cause of trauma in adult group

CAUSE	NUMBER	PERCENTAGE (%)
RTA	74	64.3
Fall from height	10	8.7
Blunt trauma	6	5.2
Penetrating	6	5.2
Electric burn	4	3.5
Blast	3	2.6
Self	3	2.6
Vegetative matter	2	1.7
Fight	2	1.7
Gun shot	1	0.9
Chemical burn	1	0.9
Bike foreign body	1	0.9
Train	1	0.9

TABLE 6: Distribution of ocular trauma in pediatric groupwith respect to place of trauma

PLACE	NUMBER	PERCENTAGE (%)

Home	21	80.8
School	3	11.5
Road	2	7.7
TOTAL	26	100

TABLE 7: Cause of trauma in pediatric age group

CAUSE	NUMBER	PERCENTAGE (%)
Fall	8	30.8
Blunt trauma	6	23.0
Bow and arrow	3	11.5
Play	2	7.7
RTA	2	7.7
Firework	1	3.8
Burn	1	3.8
Boiling milk burn	1	3.8
Self	1	3.8
penetrating	1	3.8

TABLE 8: Road Traffic Accident cases were questioned about following points:

Helmet used at time of trauma

	NUMBER	PERCENTAGE (%)
YES	00	00
NO	76	100%
TOTAL	76	100%

UNDER INFLUENCE OF ALCOHOL

	NUMBER	PERCENTAGE (%)
YES	22	28.95%
NO	54	71.05%
TOTAL	76	100%

TABLE 9: Time duration between trauma and presentation

DURATION	NUMBER	PERCENTAGE (%)
Less than 4 hour	19	13.5
4 – 24 hours	83	58.9
Day 1- day 7	33	23.4
After 7 day	6	4.3

TABLE 10: Distribution of cases on medico-legal basis

MEDICO-LEGAL CASES	NUMBER	PERCENTAGE (%)
Yes	12	8.5
No	129	91.5
TOTAL	141	100

TABLE 11: Extent of ocular involvement:

		NUMBER		PERCENTAGE (%)
MONOCULAR		126		89.4
	Right		63	
	Left		63	
BINOCULAR		15		10.6
TOTAL		141		100

TABLE 12: Distribution of type of ocular injury

TYPE	NUMBER	PERCENTAGE (%)
Open globe	18	12.8
Closed globe	123	87.2
TOTAL	141	100

TABLE 13: Spectrum of clinical presentation in ocular trauma cases

CLINICAL PRESENTATION	NUMBER
Laceration	63
Ecchymosis	43
Subconjuctival hemorrhage	26
Perforation	14
Chemosis	6
Foreign body cornea	3
Abrasion	2
Cataract	2
Orbital bone fracture	1
Ulcer	2

TABLE 14: Subjective visual deficit at the time of presentation:

VISUAL DEFICIT	NUMBER	PERCENTAGE (%)
No deficit	86	61.2
Uniocular deficit	20	14.2
Binocular deficit	1	0.8
Inaccessible	35	42.8
TOTAL	141	100

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