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Study of Eye injuries in road traffic accident patients

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Abstract
Background: Road traffic accidents (RTA) are causing high rates of mortality and morbidity. RTA is ranked eighth most common cause of death worldwide and India accounts for almost 11% of accident related deaths. RTA is responsible for a significant number of ocular injuries, like: intraocular hemorrhages, retinal detachment and optic nerve trauma. This study was planned to study the magnitude of ocular injuries following road traffic accidents in Jammu.
Method: A hospital based prospective study was carried out for a period of 6 months on 50 patients in Government Medical College Jammu and written informed consent was taken for the study. The study samples were collected from emergency, patients of all ages, both gender having a road traffic accident related ocular trauma.
Results: Subconjunctival haemorrage was reported in 70% of patients, while lid oedema and ecchymosis in 66%, conjunctival chemosis in 42% and anterior dislocation of lens in 10% of patients. Most of the cases were in the age group of 30-40 years (42%) with predominance of males (44, 88%); Two-wheeler accidents were reported at 64% of times; Bilateral ocular involvement stood at 6%. Involvement of right eye was in 55% of cases.8% patients had open globe injury.
Conclusion: Adult males, riding two wheelers, were the major victims, with a possibility of severe ocular injuries and related trauma.

Keywords: Road Traffic Accidents, Subconjunctival Haemorrage, Ecchymosis, Optic Nerve Trauma.

Introduction
Road traffic accidents (RTA) have been recognized as a major public health problem, causing high rates of mortality and morbidity. RTA is ranked eighth most common cause of death worldwide.[1] India accounts for almost 11% of accident related deaths in the world.[2] In India numbers of RTA cases are increasing day by day due to the growing number of vehicles, new untrained drivers, congested and poor quality of roads and non-compliance to traffic rules. Road traffic accidents are responsible for a significant number of ocular injuries.

Permanent physical disfigurement and visual impairment can cause negative impact on physical as well as mental health of the victim. Orbit and maxilla are most frequently fractured facial bones. The common vision threatening complications in RTA related ocular trauma is multiple complex orbital bone fractures, ruptured globe, intraocular hemorrhages, retinal detachment and optic nerve trauma.[3] Serious injuries in the area of head and neck may present to emergency department, some of them may present to the ophthalmology department wherein eye related injuries are prominent. It becomes mandatory for the ophthalmologist to evaluate head injuries along with the management of ocular injuries.[4]

It has been reported that about 90% of ocular trauma are preventable with appropriate use of protective gear like safety glasses, helmet, seatbelt etc.[5] Lack of awareness of preventive measures and delay in immediate medical care, increase the chance of complications and subsequent visual disability and blindness.[6] Thus prevention should form the basis of management of ocular trauma. To date, no study has been reported from developing countries where the independent impact of characteristics of vehicle occupants and mode by accident on the RTA related eye injuries have been studied, therefore this study was planned to study the magnitude of ocular injuries following road traffic accidents in Jammu.

Material and Methods

It was a hospital based prospective study for a period of 6 months on 50 patients in Government Medical College Jammu and written informed consent was taken for the study. The study samples were collected from emergency, patients of all ages, both gender having a road traffic accident related ocular trauma and those who are cooperative, were included in this study. Those who are terminally ill, unconscious, non-co-operative patients and ocular injuries other than RTA were excluded from the study. Detailed history and comprehensive ophthalmologic examination including best corrected visual acuity, torch light examination, detailed slit lamp examination, IOP measurement, and fundus examination etc. was carried out as indicated. CT scan was done whenever indicated. The injuries were classified using Brimingham Eye Terminology System. (BETTS) Medical and Surgical treatment was done accordingly .subsequent follow-up on day one, one week and after 3 weeks and at each follow-up, visual acuity was recorded.

Results

Out of these 50 cases, 32 (64%) were resultant of day-time accidents and 36% happened at night. Subconjunctival haemorrage happened at 70% of times, while lid oedema and ecchymosis happened at 66% of times. Conjunctival chemosis also took place at 42% of times and several other types of serious injuries like: Anterior dislocation of lens (10%), vitreous hemorrhage (8%), ptosis (4%), hyphaema (4%), etc took place at rather less number of times. (Figure 1)

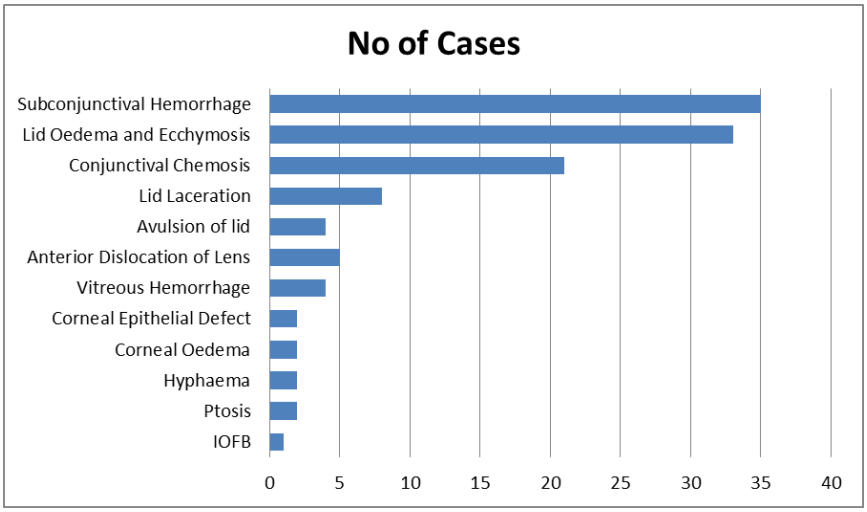

Fig 1: Injury classification, based upon the part of eye involved.

Most of the cases were in the age group of 30-40 years (42%) with predominance of males (44, 88%). (Table 1)

Table 1: Distribution of patients as per age groups.

Age Group	No of Patients	Percentage	Males/Females
<20 Years	5	10 %	4/1
≥20, <30 Years	15	30 %	13/2
≥30, <40 Years	21	42 %	18/3
≥40 Years	9	18 %	9/0

In most of the cases, the right eye involvement was there. (Figure 2).

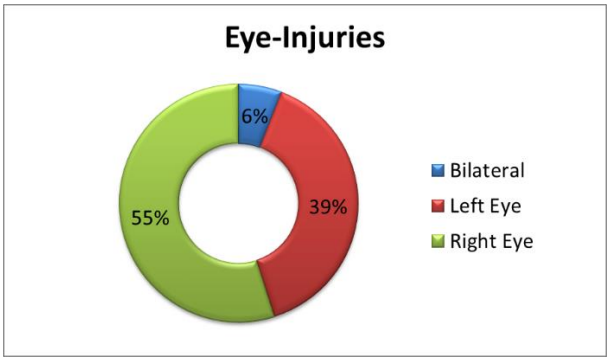

Fig 2: Laterality

The cause of most of the road traffic accidents (RTA), causing ocular trauma, was found to be two-wheeler accidents (64%). (Figure 3)

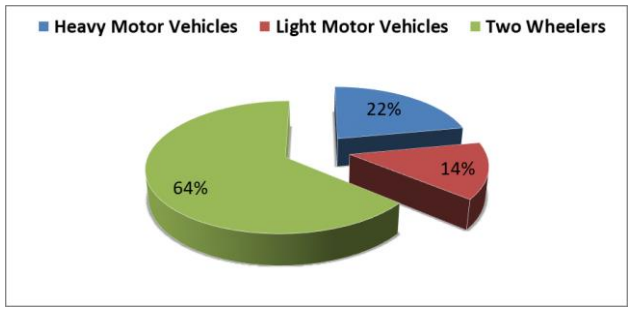

Fig 3: Type of Vehicle of RTA

Discussion

Eyes being in proximity to skull bones also have equal risk to be involved in head injury. [7] A Road traffic accident is a major cause of vision loss in young adult population. Ocular trauma due to RTA is common in both developed and developing countries with different risk factors. Factors responsible for RTA related ocular injuries include human factors (like age, gender, physical impairment, alcohol or any drug intoxication while driving, etc), environmental factors (like season and weather conditions), time of injury (night driving), condition of the roads, mode of transport, type of the vehicle, speed of the vehicle, safety design of

the vehicle, etc. Besides, it was also found that very few people were using safety measures while driving. Besides maximum RTA reportedly occurred on weekends, during afternoon and at night. Incidence is more common in males than females as attested by other studies. [8]

Our study showed that the most vulnerable age group was 30-40 years (42%), however Arora et al reported a peak age of 16-30 years and Muralidhar et al [9] reported 41-50 years as the most vulnerable in their study. They also reported bilateral ocular involvement at 9.7%, while our finding stood at 6%. Involvement of right eye was higher at 55%, similar to the findings of other several studies. [9-11]

Our study also found that only 8% (4 no) patients had open globe injury, similar to the findings of Smith et al.[12] and Marudhamuthu et al.[13] In comparison to a study by Puzari et al [14] in 2016, there was comparatively high percentage of subconjunctival haemorrhage patients (83.33%) but comparable to our study (70%). Muralidhar et al [9] reported subconjunctival haemorrhage as the commonest ocular injury, these findings were quite consistent to our findings as well.

All the outcomes of this study were in consistent with the various studies carried out in India and abroad in recent times, however, further studied in this field could be exapanded to study more diverse parameters like loss of vision or length of treatment involved or the aids and measures that could reduce the trauma.

Conclusion

Findings showed that adult males, riding two wheelers, were the major victims, with a possibility of severe to very severe ocular injuries and related trauma. This study, in long term, will help in identifying risk factors and planning of strategies for prevention and management of ocular injuries.

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