

## Original Research Article

# A study on ocular injuries following road traffic accidents

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**Received:** 14 December 2016

**Revised:** 16 December 2016

**Accepted:** 07 January 2017

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### ABSTRACT

**Background:** Ocular injuries in road traffic accidents (RTA) constitute a major but preventable cause of visual morbidity worldwide and so it is of public health importance. Aim of the study was to assess the visual outcome in patients attending tertiary care hospital with ocular injuries following RTA and compare various associated risk factors.

**Methods:** A prospective study was done with 60 cases of ocular injuries following road traffic accidents in Assam Medical College and Hospital to find out the visual outcome and compare various risk factors. Detailed history and clinical evaluation was done with follow up at 1<sup>st</sup> and 3<sup>rd</sup> week.

**Results:** Maximum cases were seen in the age group of 30-40 years, more in males (76.66%); with 78.33% in two wheelers. Out of the 60 cases, 38.33% occurred at night, 21.66% was under the influence of alcohol. 15.27% of patients presented with diminished vision, out of which 15% cases reported with severe ocular morbidity like vitreous haemorrhage, lens dislocation, sclera-corneal tear etc.

**Conclusions:** Younger age group was mostly affected with male preponderance, alcohol and two wheelers being quite important risk factors. Early treatment of ocular injuries and use of protective wear result in better visual outcomes.

**Keywords:** Alcohol influence, Ocular injury, Road traffic accidents, Subconjunctival haemorrhage, Two wheeler

### INTRODUCTION

Trauma to eye remains a leading cause of visual morbidity and blindness constituting approx. 75% of ocular emergencies.<sup>1</sup> Road traffic accidents (RTA) being one of the most common risk factor. Worldwide - approx. 1.6 million people are blind from ocular injuries.<sup>2</sup> And further 19 million with unilateral visual loss which makes ocular trauma - m/c cause of unilateral blindness.<sup>2</sup>

So, in view of public health importance, this study aims in providing information on the pattern & magnitude of ocular injuries following RTA at Assam Medical College and Hospital (a tertiary referral unit). It will also help in identifying risk factors and plan strategies for prevention and management of such injuries.

### METHODS

It was a hospital based prospective study and written informed consent was taken for the study.

#### *Inclusion criteria*

Patients of all ages, both sexes, who are co-operative, were included in the study.

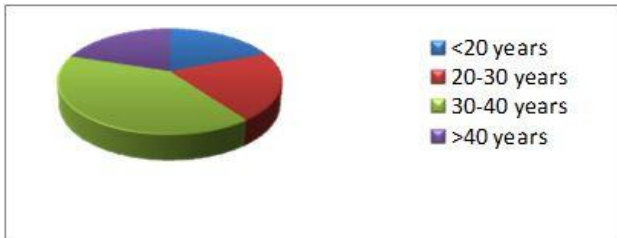
#### *Exclusion Criteria*

Those terminally ill, unconscious, non-co-operative patients and ocular injuries other than RTA were excluded from the study.

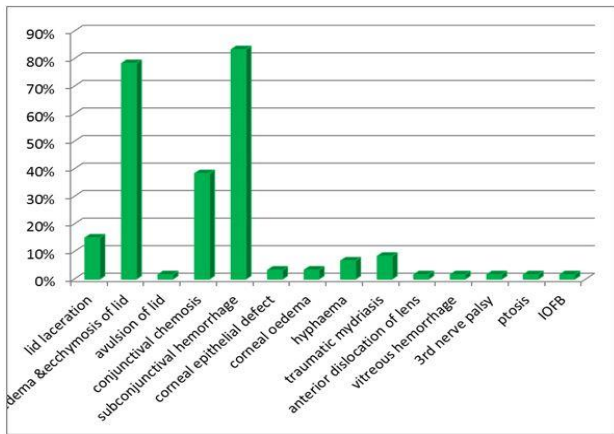
Study was conducted on 60 cases of RTA with ocular trauma attending Casualty & OPD of Ophthalmology dept. of Assam Medical College and Hospital. Detailed history and comprehensive ophthalmological evaluation (local examination including best corrected visual acuity, torch light examination, detailed slit lamp examination, IOP measurement, and fundus examination etc.) was carried out as indicated. USG B scan, CT scan was done whenever indicated. The injuries were classified using Birmingham Eye Trauma Terminology System. (BETTS)<sup>3</sup>. Medical and surgical management was done accordingly. Subsequent follow up on day one, one week & after 3 weeks and at each follow up, visual acuity was recorded.

**RESULTS**

In 60 cases, most of the cases were in the age group of 30-40 years (40%). Male (76.66%) preponderance was seen (Figure 1).

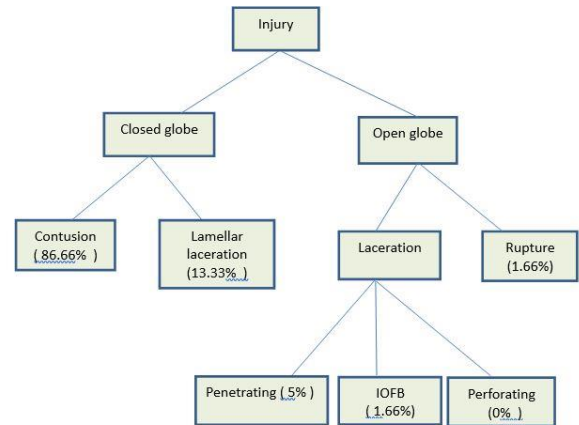


**Figure 1: Distribution based on age groups.**

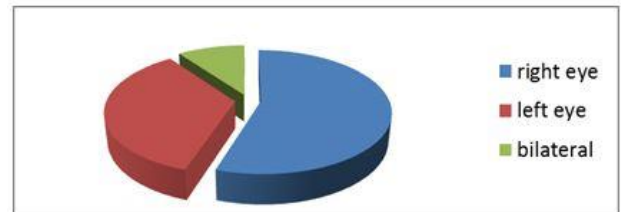


**Figure 2: Classification of injuries based on part of the eye involved.**

Out of these 60 cases (61.66%) took place at daytime and (38.33%) at night with (21.66%) under influence of alcohol. Out of this 60 cases subconjunctival haemorrhage (83.33% maximum) followed by lid oedema and ecchymosis (78.33%). Among serious injuries was a case each of anterior dislocation of lens, vitreous haemorrhage, 3rd nerve palsy, ptosis, IOFB (Figure 2, 3). The right eye involvement was (55%) in compared to left eye (35%) with bilateral involvement in (10%) (Figure 4).



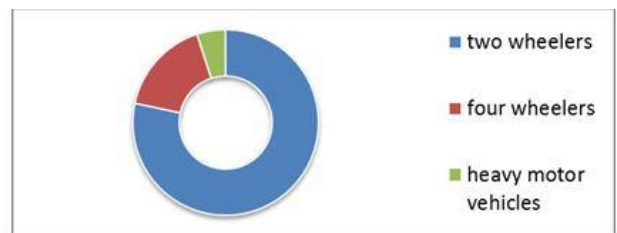
**Figure 3: Injuries classified based on BETTS classification.**



**Figure 4: Laterality.**

**DISCUSSION**

One out of every twenty patient seen by an ophthalmologist is a case of ocular trauma.<sup>4</sup> Review of studies has shown that the majority of trauma resulting in blindness occurs with mean age of presentation below 30 (±5) years and the common cause is road traffic crashes and falls.<sup>5</sup> In present study maximum cases were seen in 30-40 years' age group (40%). Ocular trauma has bimodal age distribution with maximum incidence in young adults and a second peak seen in elderly age group. Incidence is more common in males than female (4:1 ratio) which is similar to present study.<sup>6</sup> Ocular trauma due to road traffic accidents is preventable. A study done in Northern Ireland has shown that there is a 60% reduction in perforating eye injuries following seat belt legislation.<sup>7</sup>



**Figure 5: Type of vehicle.**

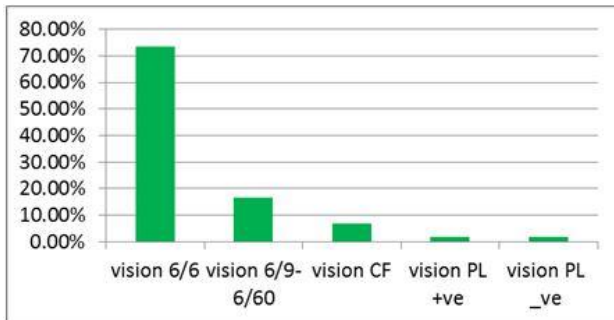
In present study, most of the RTA cases causing ocular trauma were caused by two wheelers (78.33%) which is

inconsistent with study done by Panagiotidis et al found that 86.56% of ocular trauma were following cars accidents while 11.95% were occurred following motorcycle accidents (Figure 5).<sup>9</sup>

**Table 1: Comparison of present study with Shtewi et al.**

| Study                       | Present study | Shtewi et al |
|-----------------------------|---------------|--------------|
| Subconjunctival haemorrhage | 83.33%        | 42.4%        |
| Corneal perforation         | 3.33%         | 46.7%        |
| Hyphaema                    | 6.66%         | 50%          |
| Lens dislocation            | 1.66%         | 7.6%         |
| Vitreous haemorrhage        | 1.66%         | 23.6%        |
| IOFB                        | 1.66%         | 9.8%         |

In present study we found very few people using safety measure while driving whereas Panagiotidis et al. found that 5.2% of car drivers were using seat belts and none of the two wheeler driver had used helmets (Table 1).<sup>9</sup>



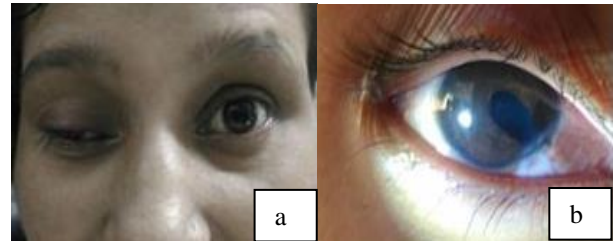
**Figure 6: Visual acuity outcome.**



**Figure 7 (a): Eye injuries; (a) subconjunctival haemorrhage; (b) lid oedema and ecchymosis; (c) lid laceration before and after repair.**

In our study 93.33 % patient had closed globe injury and 6.66 % had open globe injury while in a study done by

Smith et al. found 68.58 % and 3.41% patients respectively In our study 73.33 % patient had visual outcome of 6/6, 16.66 % had 6/9-6/60, 6.66 % had CF, 1.66% had PL and 1.66 % had no perception of light. While in study by Shtewi et al; 30.43 % patient had 6/6, 50.30 % patient had 6/9-6/60, 15.94 % had CF and 3.28 % had no perception of light (Figure 6).



**Figure 7 (b): Eye injuries; (a) ptosis and (b) sclero corneal repair.**

It was seen that although anterior segment injury (eg. Subconjunctival haemorrhage) was more common than posterior segment injury; severity of diminution of vision was seen more in posterior segment injury.

**CONCLUSION**

Early treatment of ocular injuries and use of protective wear results in better visual outcome. RTA being one of the most important and preventable cause of ocular morbidity, should be taken up as an important public health problem and protective measures must be used to decrease its incidence.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Puzari BS, Das RK, Pegu I. A study on ocular injuries following road traffic accidents. *Int J Res Med Sci* 2017;5:627-30.