

Original research article

An Investigation to Assess the Prevalence of Ocular Trauma in the Rural Population of Bihar Rohtas District

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Abstract

Aim: The aim of this study to determine the epidemiology of ocular trauma in the rural population of Rohtas district of Bihar India.

Methods: A cross-sectional was conducted in the Department of ophthalmology, Narayan Medical College and Hospital, Sasaram Bihar, India from July 2018 to July 2019. 150 cases of the ocular trauma of all age group, due to various causes were included in the study. Demographic data and detailed history were recorded from each participant that includes the mode of injury and place of ocular trauma, the age at trauma and treatment for the trauma was taken from an ophthalmologist.

Results: The data was collected on ocular trauma from 1556 persons. History of ocular trauma was there in either eye of 150 (10.37%) participants in which 10 patients were having bilateral ocular involvement. The mean age at which ocular trauma sustained was 28.1 ± 13.7 years (range 8-69 years) including 73.33% male. The association between gender and ocular trauma was statistically significant ($p=0.0001$). The place of ocular trauma was significantly associated with blindness ($p = 0.03$). In this study population, Blunt trauma (92.67%) had been the most important cause of ocular injury. 100 participants had milder trauma with vision impairment ($BCVA > 6/18$). Blinding ocular trauma ($BCVA < 6/60$) was found in 50 persons (3.21% of the total studied population).

Conclusion: The epidemiology of ocular trauma among the rural population of Bihar India, revealing ocular trauma is one of the major causes of blindness and visual impairment affecting mainly the young adults.

Keywords: ocular trauma, visual impairment

Introduction

Ocular trauma is a significant cause of ocular morbidity and blindness.¹ The effects of ocular trauma are often underestimated as they are more frequently monocular and reported rarely by epidemiologists. According to the World Health Organisation (WHO) global estimates, the annual incidence of ocular trauma is approximately 55 million and ocular injuries account for 5% to 16% of ophthalmology consultations.² Ocular trauma, once described as a neglected disorder, has recently been highlighted as one of the major etiologies of monocular and non congenital visual impairment and blindness in all part of the world. Eye trauma constitutes 7%

of all bodily injuries and 10%–15% of all eye diseases.³ Globally, there are approximately 1.6 million people who are blind from eye injuries, 2.3 million are bilaterally visually impaired, and 1.9 million have unilateral visual loss.^{4,5} It has been estimated that 90% of all ocular injuries are preventable.⁶ Thus, prevention should form the basis of management of ocular trauma, and in order to formulate the preventive strategies, we need detailed epidemiological data. The climatic and geographical condition, population, and lifestyle of the societies with their cultural and socioeconomic condition influence the nature and cause of trauma.^{7,8} Most of the clinic-epidemiological studies on ocular trauma has been carried out in developed countries.

Materials and methods

A cross-sectional was conducted in the Department of ophthalmology, Narayan Medical College and Hospital, Sasaram Bihar, India from July 2018 to July 2019, after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

Total 150 cases of the ocular trauma of all age group, due to various causes were included in the study. We offered comprehensive ocular examinations, including visual acuity with Snellen visual acuity charts, refraction, anterior segment examination with slit-lamp biomicroscopy (Haag Streit, Switzerland), intraocular pressure measurement with applanation tonometry, dilated posterior segment examination with direct and indirect ophthalmoscope and automated visual field examination. The participants were examined with an informed consent. Demographic data and detailed history were recorded from each participant which includes the mode of injury and place of ocular trauma, the age at trauma and treatment for the trauma was taken from an ophthalmologist. The data collected were suitably coded and entered into pre-designed Microsoft Access software. Data analysis was done with SPSS 21.0 Package.

Results

Data was collected on ocular trauma from 1556 persons. History of ocular trauma was there in either eye of 150 (10.37%) participants in which 10 patients were having bilateral ocular involvement. The mean age at which ocular trauma sustained was 28.1 ± 13.7 years (range 8-69 years) including 73.33% male. The distribution of ocular trauma with respect to age and gender is displayed in (Table 1). The association between gender and ocular trauma was statistically significant ($p=0.0001$). The place of ocular trauma was significantly associated with blindness ($p = 0.03$). 50% persons who reported ocular trauma were literate studied upto 10th standard or more 40% of those who reported ocular trauma, were agricultural laborers. The age at trauma did not differ significantly between genders ($p = 1.5$).

In this study population, Blunt trauma (92.67%) had been the most important cause of ocular injury (Table 2). We found that the most common setting of ocular trauma was agricultural labor (40%), which is More than one - third of all ocular trauma took place in a rural population. The places where ocular trauma eventuated are listed in (Table 3). Education of the subject was not associated with seeking treatment from an ophthalmologist ($p=0.69$).

100 participants had milder trauma with vision impairment ($BCVA > 6/18$). Blinding ocular trauma ($BCVA < 6/60$) was found in 50 persons (3.21% of the total studied population). Out of 50 subjects, 5 subjects were PL denied. Clinical findings in eyes with blinding ocular trauma are listed in (Table 4).

Table 1: Distribution of ocular trauma among participants with respect to gender and age

Gender	<18years	18-40years	>40years	Total
Male	30	70	10	110
Female	10	25	5	40

Table 2: Type and mode of injury in the study population

Best corrected visual acuity	Total (n=150)	Type of injury		Mode of injury	
		Blunt injury	Penetrating injury	RTA	NON RTA
>6/60	100	92 (92%)	8 (8%)	25(25%)	75 (75%)
<6/60	50	47 (94%)	3 (6%)	15(30%)	35 (70%)

Table 3: The place of ocular trauma in the study population

Place of trauma	Number	%
Home	12	8
Workplace	70	48
Pavement	10	6.67
RTA	40	26.67
others	18	12

Table 4: Clinical findings in eyes with blinding ocular trauma

Clinical findings	No, of patients (n=50)
Ptosis	3
Corneal epithelial defects	5
Corneal perforation	5
Hyphema	5
Iridodialysis	3
Angle recession	3
Traumatic cataract	18
Retinal detachment	5
Optic neuropathy	3



Figure 1: Traumatic Subluxated Lens



Figure 2: Right eye corneal ulcer following vegetative trauma



Figure 3: Right eye hypopyon corneal ulcer following vegetative injury

Discussion

Data from our study suggests that ocular trauma is a major problem for the rural population. The prevalence of ocular trauma is higher than that reported for glaucoma, diabetic retinopathy or age-related macular degeneration.^{9,10} however unilateral ocular trauma is more common and did not lead to bilateral blindness. Although annual incidence of ocular trauma was lower in hospital-based studies, a population-based study reported an annual incidence of 10.37% significantly high to require treatment.¹¹ A rural population (4.5%) may have a higher prevalence as compared to an urban one (3.97%).^{9,10} Our study also observed men and young adults are at greater risk for ocular trauma and the majority of ocular injuries eventuated either at home or place of work. The rates of ocular trauma among males and agriculture workers were higher. The result was consistent with other studies worldwide. Literacy has no effect on the occurrence of ocular trauma. The setting of injury in our study was also similar to that reported from rural Nepal, with domestic or agricultural injuries being the most common.¹² Blunt injuries (92.67%) were the major cause of trauma reported in our study while this is consistent with some studies, others have found injuries by sharp objects, such as arrows, to be more common.¹³ Consultation with an ophthalmologist (80%) was similar to that reported by others, but the source of treatment is not significantly correlated with blindness, as noted in previous studies.⁹

In our study education of the participants was not associated with seeking treatment from an ophthalmologist. Previous studies have consistently reported poor utilization rates for eye care services in rural populations of India, although these reports have primarily focused on chronic

diseases like the age- related cataract.^{14,15} Poor utilization of eye care among rural populations has been attributed to the lack of available and affordable eye care services.^{14,15} Nearly 80% of those with a history of ocular injuries consulted for treatment. It may be due to the severity of ocular injuries. Education, occupation, or type of injury was not associated with seeking treatment.

Conclusion

The present study concluded that the epidemiology of ocular trauma among the rural population of Bihar India, revealing ocular trauma is one of the major causes of blindness and visual impairment affecting mainly the young adults. Therefore appropriate first aid care should be provided and educational strategies and eye care programs should be initiated to increase awareness regarding eye care in the rural population which is essential to reduce ocular morbidity due to ocular trauma.

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