

Incidence of traumatic cataract in ocular injuries: a prospective observational study

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Abstract

Introduction: Ocular trauma is an important, preventable public health problem worldwide. Traumatic cataract is the one of the most common type of ocular morbidity observed in the patients of eye injury. The incidence of traumatic cataract shows a great variation which depends on type of ocular injury. Various etiological factors have been observed in traumatic cataract which range from agricultural accidents to occupational accidents. **Aims and objectives:** To study incidence of traumatic cataract and factors associated with it. **Materials and Method:** All the patients of eye injury were enrolled in the study and patients suffering from traumatic cataract were diagnosed from them. The detail of these patients such as age, sex and other demographic detail were asked and were entered in a prestructured Performa. Type of injury, side of the eye involved and the cause of injury were also inquired and were noted down. **Results:** Incidence of traumatic cataract amongst the ocular injuries was 14.76%. Majority (57.5%) of patients less than 30 years of age. Males (67.5%) were predominantly affected. Agricultural injuries and other occupational accident (25.5% each) were the commonest cause. Corneal damage (45%) was most frequently associated with traumatic cataract. **Conclusion:** Incidence of traumatic cataract was 14.76% among the eye injury cases. Traumatic cataract was more common in young males. Agricultural and occupational accidents were the most common cause of traumatic cataract and corneal tear was the most common associated ocular damage.

Keyword: cataract, ocular trauma.

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INTRODUCTION

Ocular trauma is an important, preventable public health problem worldwide. As many as half a million people in the world are blind as a result of ocular injuries. 40% of monocular blindness may be related to ocular trauma.^{1,2,3} High rates of ocular injury in young adults have been observed consistently in nearly all descriptive and controlled epidemiologic studies. This high incidence

reflects a high proportion of work, assault, sports and motor vehicle crash related ocular injuries in the young adult age group particularly among young men.^{4,5,6,7} This result in significant loss of time and leads to high DALY which leads to high economic burdens as compared to other healthy people because of time lost from work or school.⁸ Various causes have been identified leading to ocular injury, which range from agricultural accidents to occupational accidents. Road traffic accidents and injury while playing were also common causes. Post-traumatic inflammation can lead to severe ocular complication. The inflammatory response to ocular trauma can range from mild self-limited posttraumatic iritis to fulminant panuveitis. In penetrating trauma, the chance of posttraumatic inflammation is increased because of lenticular involvement. Acute iritis may be caused by liberation of lens material with resultant glaucoma.^{9,10} Glaucoma, lens subluxation and dislocation, endophthalmitis are also commonly observed in ocular trauma. But most common condition observed in ocular

trauma is traumatic cataract. Crystalline lens forms an important component of optical system of eye and its transparency and integrity is vital for normal functioning of eye. Damage to the crystalline lens is an important manifestation of ocular trauma which results in the formation of a cataract. This forms a special clinical type since it is seen in young individuals and children since trauma is more common in this age group. In this era of industrialization the incidence of traumatic cataract has increased in spite of the fact that the eyes are well protected by the lids, projected margins of orbit, the nose and cushion of fat from behind. Lens can be damaged by both blunt as well as penetrating trauma resulting in the formation of a cataract known as traumatic cataract. Such cataract is usually associated with injuries to other ocular structures. All these factors go a long way in determining the ultimate visual prognosis in this injured eyes.¹¹ Thus this study is undertaken to know the incidence of traumatic cataract, etiological factors and associated injuries.

AIMS AND OBJECTIVES

To study incidence of traumatic cataract and factors associated with it.

MATERIAL AND METHODS

The present observational study was conducted in department of ophthalmology at Lokmanya Tilak municipal medical college, Mumbai. The data was collected from June 2012 to May 2013. All the patients with complaints of eye injury were enrolled in the present study. Then the cases of traumatic cataract were identified further evaluated. Following inclusion and exclusion criteria was used to select the cases of traumatic cataract.

Inclusion Criteria

- All the patients with traumatic cataract attending ophthalmology department during the study period.

Exclusion Criteria

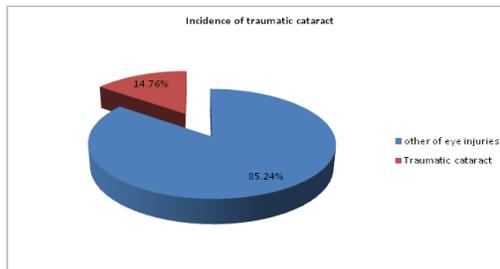
- Patients with preoperative posterior segment pathologies.
- Patients with intraocular foreign body.
- Patients not willing to participate in the study.

Thus total 271 cases of eye injuries presented to the ophthalmic O.P.D. during the study period which included all extra-ocular and intraocular injuries. Using the above mentioned inclusion and exclusion criteria 40 cases of traumatic cataract were diagnosed. The detail of these patients such as age, sex and other demographic detail were asked and were entered in a prestructured Performa. Type of injury, side of the eye involved and the cause of injury were also inquired and were noted down.

RESULTS

Table 1: Incidence of traumatic cataract

	No of cases	Incidence
Total cases of eye injuries	271	
Traumatic cataract	40	14.76%



There were total 271 patients who attended the ophthalmology OPD with the history of eye injury. Out of them 40 were diagnosed of traumatic cataract. Thus the incidence of traumatic cataract in eye injury patients was 14.76%.

Table 2: Distribution of factors associated with traumatic cataract

Variable	No.	Percentage
Age	Below 10	8 20%
	10-20	6 15%
	21-30	9 22.5%
	31-40	8 20%
	41-50	3 7.5%
	51-60	4 10%
	61 onwards	2 5%
Sex	Male	27 67.5%
	Female	13 32.5%
Affected eye	Right	23 57.5%
	Left	17 42.5%
Type of injury	Blunt	21 52.5%
	Penetrating	19 47.5%

It was observed that majority of patients of traumatic cataract were less than 30 years of age. Incidence in males was higher (67.5%) as compared to female (32.5%). Male: Female ratio was approximately 2:1 in the present study. Both eyes were almost equally affected with Right eye slightly more involved (57.5 %) as compared to left eye (42.5%). There was higher percentage of blunt injury leading to traumatic cataract (52.5%) as compared to penetrating trauma (47.5%).

Table 3: Distribution of patients according to aetiology of injury

Agricultural Accidents	Wooden stick	5	10 (25%)
	Branch of tree	3	
	Thorn	1	
	Sugar cane leaf	1	
Other Occupational Accidents	Metal wire	3	10(25%)
	Stone	6	
	Iron rod	1	
Domestic Accidents	Fall on ground	3	6 (15%)
	Glass	1	

	Scissor	1	
	Lead pencil	1	
Road traffic accident		2	2 (05%)
Assault	Hand	2	4 (10%)
	Fist	2	
Accidents while Playing	Cricket ball	3	
	Toy arrow	2	
	Iron nail	1	8 (20%)
	Fire crackle	1	
	Speakle glass	1	

Agricultural Accidents and other occupational Accidents were the commonest cause of injury (10 cases each i.e. 25% each). Agricultural accidents included injury by wooden stick, branch of tree, thorn, sugarcane leaf. Wooden stick and stone were most common insulting agents leading to traumatic cataract. 6 cases (15%) had domestic accidents leading traumatic cataract. In children, injuries sustained while playing was commonest causes of traumatic cataract (8 cases i.e. 20%). 2 cases (5.0%) had traumatic cataract due to assault. Road traffic acceptant was cause in 2 cases (5.0%).

Table 4: Distribution of cases of traumatic cataract with associated ocular damage

Ocular damage	No. of pt	Percentage
Corneal tear	16	40%
Cortex in AC	07	17.5%
Dislocation / Subluxation of lens	04	10%
Secondary glaucoma	03	07.5%
Adherent leucoma	03	07.5%
Strabismus	03	07.5%
Corneal opacity	02	05.0%
Sclearal tear	02	05.0%

It was observed that damage to cornea in the form of corneal tear, (40 %) and cortex in AC (17.5%) were frequently associated ocular damages. Dislocation/ Subluxation of lens was diagnosed in 4 cases (10%). Other associated ocular damage were secondary glaucoma in 3 cases (7.5%), adherent leucoma in 3 cases (7.5 %) strabismus in 3 cases (7.5%) corneal opacity in 2 cases and scleral tear in 2 cases (7.5%).

DISCUSSION

The present study was conducted with the objective to study the incidence of traumatic cataract in patients of eye injury and also to study the various factors associated with it. Total 271 patients attended the ophthalmology OPD with the history of eye injury and 40 were diagnosed to be suffering from traumatic cataract. Thus the incidence of traumatic cataract in eye injury patients was 14.76%. M. Krishnan and RenukaSreenivasan¹¹ reported 6.45% of incidence in their study. Whereas Marcus Blum¹² *et al* found that traumatic cataract was

present in 30.65% cases with eye injury. Variation in the incidence of traumatic cataract was observed in the present study and various authors. This may be because wide variation in the causes of eye injuries and associated factors. In the present study, the age ranged from 2 years to 65 years. The higher incidence (57.5%) was observed in young age group (<30 years). Similar finding were also reported by Duke –Elder *et al*¹³ and David Hiles *et al*¹⁴. In the present study it was observed that incidence in males was higher (67.5%) as compared to female (32.5%). Various authors such as Duke –Elder *et al*¹³, David Hiles *et al*¹⁴, Daljitsingh¹⁵ and Elizabeth Egling¹⁶ also reported higher male incidence in their study. One of the reasons for this may be that young males are more involved in outdoor activities and are more susceptible to trauma. This also reflects traditional Indian culture of giving more freedom to males. In our study both eyes were almost equally affected with right eye slightly more involved (57.5%) as compared to left eye (42.5%). Study carried out in union territory of Pondicherry¹¹ on 1704 cases of ocular injuries left eye was more traumatized (53.2%) than right eye. This difference cannot be explained on scientific basis. In our study, commonest type of injury causing traumatic cataract was blunt injuries (52.5%) as compared to penetrating trauma. Findings inconsistent to our study were also reported by M. Blum *et al*¹² and Koenig *et al*¹⁷. Various etiological factors were identified in the study causing traumatic cataract. Most common cause identified was agricultural accidents and other occupational accidents (25% each) followed by domestic accidents (15%). The commonest object of insult in agricultural accidents was wooden stick as its use to plough is still common practice in rural areas. Other causative agents were stone, branch of tree, thorn, sugarcane leaf. H.K. Tewari *et al*¹⁸, M. Krishnan *et al*¹¹ also reported injuries with stick to be the commonest offending agent in their study. In contrary to this Bhatia IM *et al*¹⁹ had reported articles like gilli danda, bow and arrow as most common cause of injury. The variation the observation was because children formed a major part of their study. Associated ocular damage was also studied in the present study. Most common associated ocular damage was that of cornea in the form of corneal tear 40% and corneal opacity 5%. Overall corneal involvement is 45%. Obviously it was due to fact that cornea is the most exposed part of globe and therefore most liable to trauma. D. Hiles¹⁴ (50%), Koenig¹⁷ (50%), M. Blum¹² (61%) and D.Singh¹⁵ (37.7%) have also noted a similar preponderance of corneal damage in their study. Lens matter in anterior chamber was seen in 7 cases (17.5%) similar findings were also reported by Koenig *et al*¹⁷ (50%) and M. Blum *et al* (26.9%).¹² Subluxation of lens was found in 10% which was slightly higher than that of

D. Hiles¹⁴ (8%) and D.Singh¹⁵ (6.5 %). Much higher incidence was found in study of M. Blum (35.2%)¹². Strabismus was found in 7.5% cases, most of them in the patients who had trauma in their childhood. It might be related to rapidity with which amblyopia and squint develops in children. D. Singh¹⁵ and D.Hiles¹⁴ found 11.4% and 16% of strabismus respectively in their study.

CONCLUSION

Thus from the above discussion we could conclude that Incidence of traumatic cataract was 14.76% among the eye injury cases. Traumatic cataract was more common in younger males. Agricultural and occupational accidents were the most common cause of traumatic cataract and corneal tear was the most common associated ocular damage.

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