ETIOLOGY OF TRAUMATIC CATARACT IN A TERTIARY CARE HOSPITAL, TIRUPATI, A. P.
C. Jagannath¹, P. A. S. Chalapathi Reddy², M. Swetha³, G. Ravi Prabhu⁴

HOW TO CITE THIS ARTICLE:
C. Jagannath, P. A. S. Chalapathi Reddy, M. Swetha, G. Ravi Prabhu. “Etiology of Traumatic Cataract in a Tertiary Care Hospital, Tirupati, A. P.”. Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 36, September 07, 2015; Page: 5732-5737, DOI: 10.18410/jebmh/2015/788

ABSTRACT: BACKGROUND: The incidence of ocular injuries in India is estimated to 20.5% affecting mainly those aged less than 40 years and males. Cataract is the commonest complication after ocular injury resulting from either penetrating injuries from sharp objects like stick or thorn or with blunt trauma by objects like stone, cricket ball etc. MATERIAL & METHODS: This is a cross sectional study conducted among 40 traumatic cataract cases attending outpatient units of SVRR Government General Hospital, Tirupati during July 2014 to June 2015. A predesigned interview schedule was used to collect the socio-demographic information, type of injury, object causing injury, visual acuity and findings of detailed examination. X-ray of the orbit and ultrasound B scan were taken whenever necessary. The results were analyzed using MS excel software and Epiinfo 7 software version statistical software. RESULTS: It was found that a large majority of the cases were aged less than 40 years (67.5%), males (62.5%) and belong to rural areas (82.5%). In terms of occupation, majority of them were students (37.5%), agricultural laborers (32.5%) and stone cutters (17.5%). Penetrating injury was the most common injury (77.5%) than blunt trauma (22.5%). The object causing injury was found to be stick or thorn in a majority of cases (65.0%) followed by pen (25.0%). The most common type of cataract developed was found to be ‘white soft’ type (47.5%). CONCLUSIONS: Most of the ocular injuries could have been prevented if proper protective eye wear had been used. Health education should be imparted for wearing protective eye wear especially those engaged in manual labor. KEYWORDS: Ocular trauma, Traumatic cataract, Penetrating injury, Blunt trauma, White soft cataract.

INTRODUCTION: BACKGROUND: The incidence of ocular injuries in India is estimated to be 20.5% with 75% cases occurring among those aged less than 40 years. Males are predominantly affected than females with a male to female ratio of 9:1. Further, it is the leading cause of unilateral blindness.¹ Cataract is the commonest complication following ocular injury.² Traumatic cataract results most commonly from either penetrating injuries from sharp objects like stick or thorn with direct injury to lens or through blunt trauma by objects like stone, cricket ball etc. Rarely, it can occur from electrical shock, ionizing radiation or infra-red rays (glass blower’s cataract).³ Traumatic cataract following a perforating injury may be localized cataract, rosette cataract, intumescent cataract or lacerated cataract. Blunt trauma leads to concussion type of cataract due to coup or contre coup ocular injury. The lenticular opacity may be voissus ring type localized or diffuse type.⁴⁻⁷
In this background, this present study was conducted to find out the socio-demographic profile, type of object causing injury, type of cataract developed and the associated ocular damage among ocular trauma cases. The findings of the present study are expected to help in proper diagnosis and appropriate treatment of traumatic cataract cases.

MATERIAL AND METHODS: This cross sectional study was conducted among 40 traumatic cataract cases caused by penetrating or blunt trauma attending ophthalmic outpatient services of Sri Venkateswara Ram Narayan Ruia Hospital which is the teaching hospital of Sri Venkateswara Medical College, Tirupati, Andhra Pradesh. A predesigned interview schedule was used to collect the socio-demographic information, type of injury, visual acuity and findings of detailed eye examination. The study was conducted during June 2014 to July 2015. This study included those cases aged 5 years & above with traumatic cataract of Zone I and II and grade III & IV. Those cases with intraocular foreign body, co-morbid conditions like retinal detachment, secondary glaucoma, vitreous hemorrhage etc. Those cases with extensive corneo-scleral lacerations (Zone III) and with no PL (Grade V) were also excluded.

Permission for conducting the study was obtained from the Institutional Ethics Committee of SV Medical College, Tirupati. A written consent was taken from all the patients participating in the study. In case of minors, the consent was obtained from the parent or guardian. Visual acuity was checked using Snellen’s chart and anterior segment was examined using a slit lamp. Wherever possible, a detailed funds examination was carried out. X-ray of orbit and ultrasound B scan were taken whenever necessary. Ocular trauma score was calculated and prognosis explained to the patient or guardian. The intraocular lens power was calculated using the axial length of the traumatized eye (or normal eye in case if it was not possible from traumatized eye).

The associated ocular damage was managed before taking up temporal small incision cataract surgery with Posterior Chamber Intra Ocular Lens (PCIOL) Implantation. The data was analyzed using MS Excel 2010 and Epi-info 7 version statistical software.

RESULTS: It was found that a large majority of the cases were aged less than 40 years (67.5%) and males constituted a higher proportion (62.5%) than females (37.5%). Most of the patients belonged to rural areas (82.5%). Occupation wise, majority of them were students (37.5%) followed by agricultural laborers (32.5%) and stone cutters (17.5%) (Table 1). Penetrating injury was the most common type of injury (77.5%) than blunt injury (22.5%). The object causing injury was found to be stick or thorn in a majority of cases (65.0%) followed by pen (25.0%) (Table 2).

‘White soft’ type of cataract was the common form of cataract developed after ocular trauma (47.5%) while ‘total’ cataract was found 37.5% patients. It was found that the most common structures involved in ocular damage were found to be cornea (77.0), iris (67.5%) and lens matter in anterior chamber (47.5%). The visual acuity at presentation was found to be ‘perception of hand movements’ in 50.0% of cases while it was found to be less than 3/60 in 37.5% of cases.

DISCUSSION: Accidental ocular trauma can occur at any age but young people are more vulnerable. Cataract is a known complication after penetrating or blunt ocular trauma occurring in
around 1-15%. It is estimated that 14% of all cases of cataract in children are due to ocular trauma. The type of trauma, extent of lenticular involvement and associated ocular damage determines the ultimate visual prognosis.

In the present study, a majority of the cases occurred in younger age group (less than 40 years) which may be attributed to greater outdoor and recreation activity as well as work pattern of young individuals. Pondicherry study also showed a higher prevalence of 44.6% of cases in younger age group. A study in rural western India also found that 25.6% cases occurred in 11-20 years. The current study showed a clear preponderance of males (62.5%) as they are more prone to ocular trauma because of their occupation. Similar findings were reported by studies in Gujarat (69.5%) and rural western India (61.7%). In the present study, penetrating trauma was more common (77.5%) than blunt trauma as many patients belonged to rural areas working in fields. Pondicherry study also found that penetrating injury was more common (81.0%). Rural western India study also found that penetrating injury is more common (61.0%) than blunt trauma.

In the present study, the commonest objet involved in injury was found to be stick or thorn (65.0%) due to large proportion of rural patients working in fields. Injury with stone was found mostly in stone cutters. Three students had injury with pen and one girl student had injury with a safety pin. Pondicherry & Gujarat studies also found that stick or thorn is the most common objet causing injury (71.4% and 56.3% respectively). In the current study, 'white soft' cataract with ruptured anterior capsule was most common (47.5%). In contrast, Pondicherry study found that 'total' cataract was the most common type (64.7%).

In the present study, at the time of presentation, as much as 50.0% cases had visual acuity of 'perception of hand movements while another 37.5% cases had visual acuity of less than 3/60. A study in Hyderabad has found visual acuity of less than 6/60 to perception of hand movements or light perception in almost all the patients. Gujarat study had found that 87.8% had preoperative visual acuity of less than 1/60. Rural western India study had found that 51.2% had visual acuity of perception of light.

**CONCLUSIONS AND RECOMMENDATIONS:** The traumatic cataract cases are predominantly common in younger age group (less than 40 years), males, rural areas and those engaged in manual labor as part of occupation. Penetrating injury is the most common cause than blunt trauma. Most of these injuries could have been prevented if proper protective eye wear had been used. Health education regarding the benefits of using protective eye wear should be imparted to rural communities especially those engaged in manual labor. The ocular safety habits should be part of school curriculum. Large scale, multi-centric prospective studies with long term follow up are also recommended.

**REFERENCES:**
1. Memon MN, Narsani AK, Nizamani NB. Visual outcome of unilateral traumatic cataract. J Coll Physicians Surg Pakistan. 2012; 22(8): 497–500.
2. Bhatia IM, Panda N, Sood NN. Management of traumatic cataract. Indian J Ophthalmol. 1983; 31: 290–3.
3. Mulrooney BC. Traumatic cataract. E Med J. 2002;3(7):21–5.
4. Wolter JR. Coup contre coup mechanism of ocular injuries. Am J Ophthalmol. 1963; 56: 785–96.
5. Banitt MR, Malta JB, Main SI, Soong HK. Rupture of anterior lens capsule from blunt ocular injury. J Cataract Refrac Surg. 2009; 35: 943–5.
6. Shingleton BJ, Hersh PS, Kenyon KR. Lens injuries. Eye Trauma. 1991; 1: 126–34.
7. Weidenthal DT, Schepens CL. Peripheral fundus change associated with ocular contusion. Am J Ophthalmol. 1966; 62: 465–77.
8. Braganza A, Thomas R, George T, Mermoud A. Management of phagolytic glaucoma: experience of 135 cases. Indian J Ophthalmol. 1998; 46: 139–43.
9. Ekstein M, Vijayalakshmi P, Killedar M, Gilbert C, Foster A. Use of intraocular lenses in children with traumatic cataract in south India. Br J Ophthalmol. 1998; 82(8): 911–5.
10. Srininivasan R, Kumdhan D. Traumatic cataract: factors affecting visual outcome. JTNOA. 1998; 37(1): 45–8.
11. Gogate P, Sahasrabudhe M, Shah M, Patil S, Kulkarni A. Causes, epidemiology and long term outcome of traumatic cataracts in children in rural India. Indian J Ophthalmol. 2012; 60: 481–6.
12. Shah M, Shah S, Shah S, Prasad V, Parikh A. Visual recovery and predictors of visual prognosis after managing traumatic cataracts in 555 patients. Indian J Ophthalmol. 2011; 59(3): 217–22.
13. Krishnamachary M, Rathi V, Gupta S. Management of traumatic cataract in children. J Cataract Refrac Surg. 1997; 23(Suppl 1): 681–7.

| Sl. No | Variable | Number of cases | Percentage |
|-------|----------|-----------------|------------|
| 1.    | Age group (years) |
| (a)   | Less than 20 | 15 | 37.5 |
| (b)   | 20 – 40     | 12 | 30.0 |
| (c)   | 40 – 60     | 12 | 30.0 |
| (d)   | 60 & above  | 1  | 2.5 |
| 2.    | Gender      |
| (a)   | Male        | 25 | 62.5 |
| (b)   | Female      | 15 | 37.5 |
| 3.    | Residence   |
| (a)   | Rural       | 33 | 82.5 |
| (b)   | Urban       | 7  | 17.5 |
| 4.    | Occupation  |
| (a)   | Student     | 15 | 37.5 |
| (b)   | Agricultural worker | 13 | 32.5 |
| (c)   | Stone cutter | 7  | 17.5 |
| (d)   | Other Manual labor | 4  | 10.0 |
| (e)   | Govt. Employee | 1  | 2.5 |

Table 1: Age, gender, residence and occupation of traumatic cataract cases (N=40)
### Table 2: Type of injury and object causing injury among traumatic cataract cases (N=40)

| Sl. No | Variable                  | Number of cases | Percentage |
|--------|---------------------------|-----------------|------------|
| 1.     | Type of injury            |                 |            |
| (a)    | Penetrating               | 31              | 77.5       |
| (b)    | Blunt                     | 9               | 22.5       |
| 2.     | Object causing injury     |                 |            |
| (a)    | Stick or thorn            | 26              | 65.0       |
| (b)    | Stone                     | 10              | 25.0       |
| (c)    | Pen                       | 3               | 7.5        |
| (d)    | Safety pin                | 1               | 2.5        |

### Table 3: Type of cataract, associated ocular damage and visual acuity at presentation of traumatic cataract cases (N=40)

| Sl. No | Variable                                | Number of cases | Percentage |
|--------|-----------------------------------------|-----------------|------------|
| 1.     | Type of cataract                        |                 |            |
| (a)    | White soft                              | 19              | 47.5       |
| (b)    | Total                                   | 15              | 37.5       |
| (c)    | Membranous                              | 4               | 10.0       |
| (d)    | Rosette                                 | 2               | 5.0        |
| 2.     | Associated ocular damage                |                 |            |
| (a)    | Cornea                                  | 31              | 77.0       |
| (b)    | Iris                                    | 27              | 67.5       |
| (c)    | Lens matter in anterior chamber         | 19              | 47.5       |
| (d)    | Sclera                                  | 7               | 17.5       |
| 3.     | Visual acuity at presentation           |                 |            |
| (a)    | Less than 3/60                          | 15              | 37.5       |
| (b)    | Perception of hand movements            | 20              | 50.0       |
| (c)    | Perception of light                     | 5               | 12.5       |
**AUTHORS:**
1. C. Jagannath
2. P. A. S. Chalapathi Reddy
3. M. Swetha
4. G. Ravi Prabhu

**PARTICULARS OF CONTRIBUTORS:**
1. Associate Professor, Department of Ophthalmology, S. V. Medical College, Tirupati.
2. Civil Assistant Surgeon, Department of Ophthalmology, S. V. R. R. Government Hospital, Tirupati.
3. Senior Resident, Department of Ophthalmology, S. V. Medical College, Tirupati.
4. Professor & HOD, Department of Community Medicine, ACSR Government Medical College, Nellore.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**
Dr. G. Ravi Prabhu,
Professor & HOD,
Department of Community Medicine,
ACSR Government Medical College,
Nellore-524001.
E-mail: raviprabhu1610@gmail.com

Date of Submission: 31/08/2015.
Date of Peer Review: 01/09/2015.
Date of Acceptance: 03/09/2015.
Date of Publishing: 07/09/2015.