

Profile of Pediatric Ocular Trauma in Tertiary Care Centre in Amritsar: An Urgent Need To Review



Medical Science

KEYWORDS : Ocular trauma, paediatric age group, open globe injury, closed globe injury.

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ABSTRACT

Introduction: Ocular injuries are major and under-recognised cause of disability and the morbidity ranges from minute corneal abrasions to whole globe rupture. Objective: To describe the epidemiology of ocular trauma in children. Material and methods: A retrospective review of medical records of the patients aged below 16 years who Regional institute of ophthalmology, Amritsar with history of ocular injury. Results: Of 6,829 pediatric patients, 554 (8.1 %) had ocular trauma. The ocular trauma was more prevalent (38.1 %) in the age group of 5 – 10 years followed by 10-15 years (16.6 %). The boys (62 % vs 38 %) were more prone to ocular trauma than girls (RR = 1.7 and 95 % CI= 1.41 - 2.02). Of 554 ocular injuries, 32 (5.8 %) were open globe injuries. Sub-conjunctival hemorrhage was the commonest presenting finding in 96 (17.3 %) subjects. Forty-seven (8.5 %) of them attended the hospital after 15 days of injury. Home was the most common place for trauma (n =204, 36.8%), followed by playground (n = 140, 25.3 %). Conclusion: Children between the ages of 5-10 years are most impervious to ocular trauma. Home is the commonest place for ocular injury followed by playground. By adopting some common safety factors or by sinking the ocular injury risks factor, ocular trauma can be greatly reduced.

Introduction - The incidence of ocular injuries in children is remarkably high and the damage often serious.⁽¹⁾ Eye injuries are an important cause of ocular morbidity in children, being a leading cause of non-congenital unilateral blindness in this age group. Most ocular injuries in children are preventable particularly those by sport.⁽²⁾ These types of injury are not common but when they do occur they tend to be more serious and frequently require surgical intervention. This may often result in damage to sight.⁽³⁾ Up to 42 % of patients admitted to hospital with an eye injury sustain the injury during sport.⁽⁴⁾ The causes of eye injury and its seriousness have changed significantly over the past 50 years due to various reasons. For example, implementation of seat-belt legislation and application of occupational eye protection have reduced the number of ocular injuries and their seriousness in road traffic and industry accidents due to a better awareness and application of preventative strategies.⁽⁵⁾ Paediatric ocular injuries are distinct from those in adults in many ways. Ocular trauma in children is mainly related to sports and recreational activity.⁽⁵⁾

Materials and methods: It was a hospital based retrospective study where medical records of the patients diagnosed as ocular trauma among the patients below the age of 16 years, who visited the Regional Institute of Ophthalmology (RIO) from 1st January 2013 to 31st December 2014 were reviewed. During that period, a total of 41,928 patients attended the RIO and out of that 6,829 (16 %) were below the age of 16 years. Patient's age, gender, laterality of the eye affected, place of injury, object causing ocular trauma, duration of trauma before presenting to the hospital, type of ocular injury, duration of treatment and number of hospital visits required were reviewed.

Results: Out of the 6,829 pediatric age group patients who visited to RIO in two years, 554 (8.1 %) were having ocular injury. The age group of 5-10 years was the most vulnerable for the injury as 38.1 % of them were of this age group. Male children were more prone to the injury as 62 % of the ocular trauma occurred in boys as compared to 38 % in girls.

Table 1: Age and Gender Distribution of ocular trauma.

| Age Group | Male | Female | Total |
|-------------|------------|------------|---------------|
| ≤ 1 year | 23 | 22 | 45 (8.1 %) |
| 1-3 years | 54 | 32 | 86 (15.5 %) |
| 3-5 years | 72 | 48 | 120 (21.7 %) |
| 5-10 years | 132 | 79 | 211 (38.1 %) |
| 10-15 years | 62 | 30 | 92 (16.6 %) |
| Total | 343 (62 %) | 211 (38 %) | 554 (100.0 %) |

Regarding the laterality of the eyes injured, 267 (48.2 %) of the injuries occurred in right eye and 287 (51.8 %) in the left. This was al-

most the same in all age groups. Nature of the injuries: Out of 554 eyes injured, 32 (5.8 %) had an open globe injury. The age group of 5 - 10 years was the most vulnerable to it as 14 cases out of 32 (44 %) belonged to this group followed by the age group of 10 - 15 years. Treatment taken prior to visiting the eye hospital: Of 554 cases of ocular injuries, 403 (72.7 %) had not used any medicine before attending the hospital. 16.6 % had themselves administered an unknown medicine, 4.9 % had used antibiotics (self), 4.2 % had attended medical practitioners, 0.5 % had administered steroids and 1.1 % attended the traditional healers. Amongst the chief ocular findings at the time of presentation, 96 (17.3 %) had a sub-conjunctival hemorrhage, 95 (17.1 %) had corneal abrasions, 72 (13 %) had conjunctivitis, 58 (10.5 %) had corneal foreign bodies (FB), 47 (8.5 %) had corneal ulcer, 39 (7 %) had conjunctival FB, 29 (5.2 %) had corneal perforation, 20 (3.6 %) had hyphema, 19 (3.4 %) had lid laceration and 17 (3.1 %) had conjunctival laceration. Time of presentation after trauma: Out of 554 persons, 89 (16.0 %) attended the hospital within 24 hours of injury, 261 (47 %) visited within 1-3 days, 120 (21.7 %) visited within 4-7 days, 47 (8.5 %) visited after 15 days or more. Out of 554 patients with ocular trauma, 56 (10.1 %) required admission of which 33 (58.9 %) remained in hospital for up to 3 days, 18 (32.2 %) for 4 - 7 days and 5 (8.9 %) for more than 7 days. The number of patients who improved completely after the first follow up was 326 (58.8 %), 1 whereas 73 (31.3 %) needed 2 - 3 follow ups, 29 (5.2 %) needed 4 - 5 follow ups, 25 (4.5 %) needed 6-10 follow ups and 1 (0.2 %) needed more than 10 follow ups. Agents of trauma: Dust, sand, leaves and thorns were the common objects found responsible for injury at home. The garden and playground were the commonest places of injury, which affected 170 (30.7 %) subjects. Recreational or playing objects like ball, sticks and wood pieces were responsible to cause injury in 90 (16.2 %).

Table – 2: Age group and the agent causing trauma

| Agent causing trauma | Age-Group | | | | Total |
|------------------------------|-----------|---------|----------|-----------|---------------|
| | ≤ 1 yrs | 1-5 yrs | 6-10 yrs | 11-15 yrs | |
| Dust/sand/leaves/thorns/etc | 17 | 58 | 63 | 32 | 170 (30.7 %) |
| Ball/cork /sticks/wood piece | 1 | 38 | 41 | 10 | 90 (16.2 %) |
| Hand/finger/nail | 12 | 34 | 34 | 9 | 89 (16.1 %) |
| Cp hair/insect | 6 | 21 | 17 | 25 | 69 (12.5 %) |
| Pen/pencil/book/etc | 3 | 15 | 16 | 3 | 37 (6.6 %) |
| Traffic accidents/fall | 0 | 10 | 14 | 3 | 27 (4.8 %) |
| Sickle/knife | 1 | 5 | 2 | 1 | 9 (1.6 %) |
| Miscellaneous | 5 | 25 | 24 | 9 | 63 (11.4 %) |
| Total | 45 | 206 | 211 | 92 | 554 (100.0 %) |

Home was the most common place for ocular injury where 204 children (36.8 %) sustained the trauma followed by play ground where 140 (25.3 %) were affected, followed by school where 78 children (14.1 %) were affected. In agriculture farms 77 (13.9 %) children encountered the ocular trauma.

Table 3: Place of injury with age distribution

| Place of injury | Age group | | | | Total |
|-----------------|-----------|---------|----------|-----------|---------------|
| | ≤1 yrs | 1-5 yrs | 6-10 yrs | 11-15 yrs | |
| Home | 43 | 101 | 50 | 10 | 204 (36.8 %) |
| Play ground | 0 | 48 | 63 | 29 | 140 (25.3 %) |
| School | 0 | 24 | 43 | 11 | 78 (14.1 %) |
| Farm | 0 | 7 | 29 | 41 | 77 (13.9 %) |
| Factory | 0 | 0 | 1 | 1 | 2 (0.4 %) |
| Road | 0 | 0 | 1 | 0 | 1 (0.2 %) |
| Unknown | 2 | 23 | 23 | 4 | 52 (9.3 %) |
| Total | 45 | 203 | 210 | 96 | 554 (100.0 %) |

Discussion

In our study, the popularity of ocular injury in children was 8.1 %, which is similar to most of the other studies where it has been reported to be 8 - 14 %.⁽⁶⁾ We have observed the age specific pattern of ocular injury with the lowest prevalence among the children below 3 years of age (23.6 %), which is similar to the study by AlBdour.⁽⁷⁾ This can be explained by the actuality that this age group of children are most of the time under close parental command and that they are physically less active than the older children. However, these children were prone to suffer from handler related injuries like fingernail of sibling, mother or caretaker and domestic materials like toys and domestic uten-

sils. Older children injure themselves accidentally by sharp edges and spikes of toys, pencils, arrows, thorns and stones. Fall during swinging/sliding in parks is an important cause of ocular trauma associated with facial and orbital injuries. Sports-related injuries were commonly seen in children in the 5 - 14 - year-age group. The eye involvement in road traffic accidents does not show any age preference. In our study, injuries by animal tail, bird beak, catapult and fish hook were more prevalent in rural areas, which is similar to the study done by Jalali et al.⁽⁸⁾ Boys were more prone to the ocular injury than girls (62 % versus 38 %, RR =1.7 and 95 % CI = 1.42 - 2.03) and this is similar to the study by Strahlman et al.⁽⁹⁾ The reason for this can be explained to the adventurous and aggressive nature of boys. The age group 5 -10 years was the most vulnerable to ocular injury as these age groups are relatively immature and exposed to varying surroundings making them more vulnerable to injuries. Open globe injury involving the posterior segment of the eye has a poorer prognosis compared to anterior segment trauma but fortunately this was only 5.8 % in our study. Most pediatric trauma is preventable by simple preventive channels as 76.2 % of injury in our study occurred at home, play ground and school. Increased literacy and health awareness is vital. The irretrievable nature of visual loss and gigantic morbidity associated with it needs to be emphasized and revealed as suggested by Kaur.⁽¹⁰⁾

Conclusion: Most of the ocular injuries are escapable. The majority of ocular injuries occur at home followed by playground and school. Application of protective measures and avoiding the risky games can reduce the occasion of ocular trauma to a great extent.

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