

Original article

Profile of pediatric ocular trauma in mid western hilly region of Nepal

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Abstract

Introduction: Majority of blinding ocular injuries can be prevented.

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 attended the Himalaya Eye Hospital, Pokhara 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 vulnerable to ocular trauma. Home is the commonest place for ocular injury followed by playground. By adopting some common safety factors or by reducing the ocular injury risks factor, ocular trauma can be greatly reduced.

Key-words: Ocular trauma, pediatric age group, open globe injury, closed globe injury

Introduction

The incidence of ocular injuries in children is remarkably high and the damage often serious (Werner, 1952). Eye injuries are an important cause of ocular morbidity in children, being a leading cause of non-congenital unilateral blindness in this age group (Caroline et al 1999). Most ocular injuries in children are preventable (Saxena et al, 2002), particularly those by sport. 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 (MacEwen et al, 2010). Up to 42 % of patients admitted to hospital with an eye injury sustain the injury during sport (MacEwen et al 1986).

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

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injuries and their seriousness in road traffic and industry accidents due to a better awareness and application of preventative strategies (MacEwen et al, 2010). Paediatric ocular injuries are distinct from those in adults in many ways. Ocular trauma in children is mainly related to sports and recreational activity (Luff et al, 1993).

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 Himalaya Eye Hospital (HEH) from 1st January to 31st December 2006 were reviewed. During that period, a total of 41,928 patients attended the HEH 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 HEH in a year, 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 No 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 almost 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				
	< 1 yrs	1-5 yrs	6-10 yrs	11-15 yrs	Total
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				
	< 1 yrs	1-5 yrs	6-10 yrs	11-15 yrs	Total
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 prevalence 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 % (Lithander et al, 1999). 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 Al-Bdour (1998). This can be explained by the fact that this age group of children are most of the time under close parental supervision and that they are physically less active than the older children. How-

ever, these children were prone to suffer from handler related injuries like fingernail of sibling, mother or caretaker and domestic materials like toys and domestic utensils.

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 (1999). 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 (1990). 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 measures as 76.2 % of injury in our study occurred at home, play ground and school. Increased literacy and health awareness is vital. The irreversible nature of visual loss and immense morbidity associated with it needs to



be emphasized and publicized as suggested by Kaur (2005).

Conclusion: Most of the ocular injuries are preventable. 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 occurrence of ocular trauma to a great extent.

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