

PROFILE OF PAEDIATRIC TRAUMATIC CATARACT AND ITS SURGICAL OUTCOME

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ABSTRACT

INTRODUCTION: Ocular injuries are the most common cause of acquired monocular blindness in children. Ocular trauma in children is mainly accidental and has an age-specific pattern.

MATERIAL AND METHODS: This was a prospective study conducted at Sagarmatha Choudhary Eye Hospital, Lahan, Nepal. All children upto 15 years of age, who were diagnosed and managed for traumatic cataract between October 2012 and March 2014 (18 months period), were included in the study. Altogether 189 cases were enrolled for the study.

RESULTS: Out of total 189 cases, 138(73%) were male, 51(27%) were female. 85% of the children were in the age group of 5 to 15 years while only less than 15% of the children were from the age group of 0 to 5 years. The most common cause of injury was wooden stick(34.4%) while 14.5% of the cases did not know the mode of trauma.

CONCLUSION: Taking measures for prevention of ocular trauma among children is strategically important to reduce the stubborn prevalence of blindness in children.

KEY WORDS: Cataract; Ocular trauma; Open globe injury

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INTRODUCTION

Ocular injuries are the most common cause of acquired monocular blindness in children.¹ Ocular trauma in children is mainly accidental and has an age-specific pattern. It is well known that infants and children less than 3 years of age sustain less injuries due to close parental supervision.² However, they generally suffer handler-related injuries like from the fingernail of siblings, mother or caretaker, sewing and knitting needles, as well as scissors and knives. A marked preponderance of injuries is seen in the 6-10 years age group as children in this age group are relatively immature and exposed to varying surroundings making them more vulnerable to injuries. Male children are affected more due to their adventurous and aggressive nature.^{3,4}

Cataract is by far the commonest complication causing loss of vision following any type of ocular injury.⁵ Traumatic cataracts form a separate category of cataracts as they present with other ocular morbidity like corneal tears, iris injury, vitreous haemorrhage, and retinal tears; and they are to some extent preventable.⁶ The methods used to evaluate the visual outcome in eyes managed for traumatic cataracts and senile cataracts are similar, but the damage to other ocular tissues due to trauma may compromise the visual gain in eyes operated on for traumatic cataracts.⁷

The greatest concern in children with cataract is irreversible visual loss secondary to lack of a formed focused image (visual deprivation). This is compounded in unilateral cataracts because, even after surgical removal, there still exists anisometropia, aniseikonia, and intraocular competition that is often very difficult to treat. Amblyopia is another entity to be considered in long standing cases and young children. So, the ideal way of management would be early removal of cataract, accurate optical correction and patching of the sound eye to prevent amblyopia. Parental cooperation is an essential part of the management program. Surgery is only the first step and it must be ensured that the optical correction remains appropriate and parents are complying strictly with the occlusion therapy throughout this long and tedious program to obtain useful vision.⁸

This study aims at evaluating the visual outcome of children undergoing cataract surgery following trauma to the eyes, in a tertiary based hospital located in eastern Nepal. Children are vulnerable because of their outdoor activities and play, and less parental supervision. This study also aims to analyze the demographic profile of ocular trauma causing cataract in rural setup.

MATERIAL AND METHODS

This was a prospective study conducted at Sagarmatha Choudhary Eye Hospital, Lahan, Nepal. All consecutive children upto 15 years of age, who were diagnosed and managed for traumatic cataract between October 2012 and March 2014 (18 months period), were included in the study. Altogether 189 cases were enrolled for the study.

Informed consent was taken from the accompanying parents or guardians for including in the study. All cases were subjected to detailed history including demography, symptoms, cause of injury, type of injury, duration of injury and any previous treatment received.

After enrollment, all patients were examined using a standard method. Visual acuity was recorded using Snellen's Chart or Cardiff card whichever was applicable. Approximate Visual acuity for Infants and very young children were recorded using fixation method. Anterior segment was examined using a slit lamp. Intraocular pressure was measured using a non-contact tonometer.

Based on lenticular opacity, the cataracts were classified into total, membranous, white soft and rosette types. Trauma was classified as blunt or sharp, depending upon the type of object causing the injury. It was also classified as open or closed globe injury depending on whether the ocular coverings were perforated or not.

Posterior segment evaluation was done using Indirect ophthalmoscopy with +20D lens in partially opaque lens, and with B-Scan ultrasonography where media was not clear.

Cataract surgery was performed by 3 surgeons. Older children were operated under peribulbar anaesthesia while Ketamine anaesthesia was used for younger (<5 years of age) and uncooperative children.

On the 1st post-operative day, visual acuity was recorded and slit lamp examination was done to observe for any complications.

All patients were advised to come back for follow-up after 1 month and 3 months, and similar examination procedure was performed.

RESULTS

Total number of children included in the study was 189. 138(73%) were male and 51(27%) were female. The age of the patients ranged from 1 year to 15 years. The average age was 8.8±3.6 (SD) years. (Table 1)

Table 1: showing the age group distributions were as follows

Age group	Number
0 to <5 years	28 (14.8%)
5 to <10 years	69 (36.5%)
10 to 15 years	92 (48.7%)
Total	189

The duration from the time of injury upto the time of presentation at the hospital ranged from 3 days to 8 year ; the median duration from the time of injury was 2 months. (Table 2)

Table 2: showing the Distributions of duration since injury were as follows

Duration since injury	Number
...	7 (3.7%)
>7days to 1month	66 (34.9%)
>1month to ≤6 months	75 (39.7%)
>6 months	37 (19.5%)
Unknown	4 (2.1%)
Total	189

Table 3: showing the laterality of eye involved

Right eye	Left eye	Total
83 (43.9%)	106 (56.1%)	189

Wooden material was the cause of injury in 34.4%, firecracker burst was involved in 6.8% while 6.3% had injury by stone and in 17.5%, the cause of injury was unknown. (Table 3)

Table 4: showing the type of injuries were as follows

Blunt injury	Sharp injury	Unknown	Total
120 (63.5%)	58 (30.7%)	11 (5.8%)	189

The preoperative visual status of the patients were normal because the uninvolved eye had normal vision. The assessment of vision in some of the younger preschool children was difficult due to lack of cooperation.

Table 5: showing the morphology of the cataracts were as follow

Cataract morphology	Number
Total	114 (60.3%)
White soft	55 (29.2%)
Membranous	12 (6.3%)
Rosette	8 (4.2%)
Total	189

Table 6: showing the preoperative visual acuities of the operated eye were as follows

Preoperative visual acuity of operated eye	Number of cases
Normal	0 (0%)
Visual impairment	8 (4.2%)
Severe visual impairment	16 (8.5%)
Blind	165 (87.3%)
Total	189

The average visual acuity in logMAR scale was 1.6.

Table 7: showing the best corrected visual acuities with spectacle at the time of discharge were as follows

BCVA at discharge	Number
Normal	82 (43.4%)
Visual impairment	36 (19.0%)
Severe visual impairment	12 (6.3%)
Blind	59 (31.3%)
Total	189

The average visual acuity in logMAR scale was 0.8.

Causes of visual acuity less than 6/60 during discharge were amblyopia in 46.5%, vitreous opacities in 14%, persistent uveitis in 7%. Corneal opacity in 4.1%, vitreous haemorrhage and hyphaema in 2.9% each.

DISCUSSION

Ocular injury is an important cause of ocular morbidity in children; being a leading cause of non congenital unilateral blindness in this age group.⁹ Most ocular injuries in children are preventable, particularly those by sports. These types of injuries are not common but when they do occur they tend to be more serious and frequently require surgical intervention. In our study, it was observed the age specific pattern of ocular injury with higher prevalence in the age group of 10-15 years (48.7%), while the study done by Dulal S¹¹ and Saxena R et al¹² had higher prevalence in the age group of 5-10 years. Male predominance was seen in our study that was 73% which was similar to Malik A et al. (77.5%)¹³ and Bhattarai B et al (74%).¹⁰ The reason for this can be explained to the adventurous and aggressive nature of boys.

The most common agent responsible for trauma was wooden stick which accounted for 34.4% cases which is similar to a study done by Abebe Bejiga (32.8%)¹⁵ and Bhattarai B et al (51%).¹⁰ Children get injured by wood or stick as our part of the world is basically dependent on agriculture and people belong to low socio economic group. Children work to help their parents which include collecting the woods and cutting the wood into pieces for cooking. Most of our patients presented late after trauma. 39.7% of the patients presented after 1 month to 6 months from the history of trauma. While a study done by Dulal et al¹¹ showed 47% visited hospital within 1-3 days. In a similar study done by Saxena et al,¹² the time of presentation was more than 1 day in 34.3% of the patients. Late presentation of our patients is because of the fact that most of our patients are from very far distance and require days to travel, while other reasons were that most of them were illiterate and were seeking treatment by local healers and when they did not improve, then visited our hospital.

In our study 69.3% of the patients had closed globe injury. In a similar study done by Saxena et al,¹² 42.2% had closed globe injuries. In our study 87.3% patients were blind at the time of presentation, while in a study done by Bhattarai et al,¹⁰ 40% of

the patients were blind in their study. This difference being due to the fact our study concerns the traumatic cataract while their study concerns the open globe injury in totality. During discharge in our study, 43.4% of the patients attained normal vision of 6/18-6/6. Among the patients who had vision less than 6/60, the most common cause was amblyopia, 46.5% and this was due to the fact that most of our patients presented late after trauma resulting in deprivational amblyopia.

CONCLUSION

Ocular trauma is one of the major causes of monocular blindness in children. Preventive measures are necessary for the prevention of blindness. Traumatic cataract is one of the dreaded complication of trauma and if managed properly and on time, the load of monocular blindness can certainly be reduced to a greater extent.

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