

Penetrating eye injuries in children in Ibadan

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Summary

A retrospective study was carried out on 60 children under 12 years of age with penetrating eye injuries. This formed 28.7% of all penetrating eye injuries seen in the University College Hospital, Ibadan.

Corneal lacerations extending to the limbus was the main type of injury occurring in 65% of the patients. In all, 63% of the patient were males. Visual outcomes was poor in this age group with only 19.3% (11 patients) retaining good vision of $6/12$ or better.

Key words: Eye injury, Penetrating eye injuries

Résumé

Une étude retrospective était mise en exécution sur 60 enfants de moins de 12 ans avec blessures qui pénètrent l'oeil.

Cela formait 28.7% des blessures pénétrant l'oeil examiné au Centre Universitaire Hospitalier d'Ibadan.

La cornée de l'oeil déchirée qui intéresse le limbe était la principale caractéristique des blessures survenues sur 65% des patients. 63% des patients étaient de sexe masculin. Le résultat visuel était pauvre dans ce groupe d'âge avec seulement (15 patients) Soient 19.3% qui conservent une bonne vision de $6/12$ ou améliorée.

Introduction

Penetrating eye injuries in children are a frequent cause of unilateral visual loss [1,2]. These injuries constitute 9% - 48% of all ocular trauma to children [3] while childhood ocular trauma in turn accounts for between 27% and 52% of all ocular trauma [1,4].

Children under 8 years of age are at particular risk from complications of perforation because of the threat of amblyopia [5]. In addition, the eye may become disfigured from corneal scarring and a squint may develop. This study examined 60 children with perforating eye injuries presenting to this tertiary institution, with a view to determining factors which effect the outcome of management and suggest ways for further improvement.

Patients and methods

A retrospective study was undertaken on all children under the age of 12, presenting at the University College Hospital, Ibadan with penetrating eye injury within a 5 year period (1990 - 1995).

Sixty patients were documented, but 3 patients' case notes were not available for the study although some information was gathered from theatre and ward records for them.

Two patients had penetrating injuries in previously blind eyes.

The following details were recorded for each patients: Patient's age and sex; aetiology of injury; length of time prior to presentation and surgery; pre-operative visual acuity; post-operative visual acuity; complications; and length of follow up achieved.

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The extent of injury was classified into zones.

Zone 1 - Involvement of central 3 mm diameter of cornea alone

Zone 2 - Involvement of zone 1 extending to limbus

Zone 3 - Involvement of zones 1 and 2 extending into sclera or involvement of sclera alone.

Posterior segment injuries alone were not included in the study.

Results

All 60 patients were under the age of 12 years, the youngest being 10 months old. This represented 28.7% of all cases of penetrating eye injuries seen in all age groups at the University College Hospital, Ibadan within 5-year period. Thirty-eight patients were males and 22 were females, making a male:female ratio of approximately 2:1. The right eye was involved in 2 cases and the left eye in 35 cases; no patient had both eyes involved.

The aetiology of the injuries is summarised in Table 1. They were all household related injuries, the most common cause being cane/wood/broomstick, none occurring as part of a road traffic accident. The extent of injury is shown in Table 2, with the commonest zone involved being zone 2.

Table 1: Aetiology of injury

Object involved	Number	Percentage
Cane/wood/Broomstick	22	38.6
Stone	6	10.5
Cutlass/Matchet	6	10.5
Glass (Bottle)	5	8.8
Metal (chiselling)	3	5.3
Finger	2	3.5
Biro/Pencil	2	3.5
Hanger	1	1.75
Umbrella	1	1.75
Metallic nail	1	1.75
Catapult	1	1.75
Knife	1	1.75
Door edge	1	1.75
Fall	1	1.75
Unknown	4	7.0

Table 2: Extent of injury

Zone	Number
Zone 1	6
Zone 2	37
Zone 3	14

Presentation was within 24 hours of the injury in 23 cases only (38%), the range being between 2 hours to 14 days after the initial injury with a mean of 4 days.

Forty-five patients (75%) underwent surgery, which was performed within 6 hours to 34 days after the injury; 35 patients had their surgery with the first one week. All the children who underwent surgery were operated upon under

general anaesthesia. All the corneal wounds were sutured with 8/0 virgin silk, iris prolapse was repositioned if the iris was healthy and the injury was less than 24 hours old, otherwise it was excised. Lens capsule rupture, when apparent at the time of initial repair, was treated by washout of the soft lens matter at the same operation. All patients received subconjunctival gentamycin at the end of the surgical repair. Seven patients with extensive corneo-scleral laceration or total rupture of the globe had a primary evisceration and 2 patients had a secondary evisceration. Two patients had retained intraocular foreign bodies removed at surgery while 2 others had corneal foreign bodies, one was removed at time of surgery, one was embedded deep in the stroma.

Follow-up time ranged between 2 weeks to 22 months some patients defaulting from follow-up after discharge from the hospital. Visual acuity at presentation could only be measured in 32 patients. This was because some patients were too young for visual status to be determined and some patients were too distressed for a proper visual assessment at the time of presentation.

In the 32 patients recorded at presentation, visual acuity was 6/36 or better in 9 patients, 18 patients seeing hand movements or worse, the other 5 patients were in between. Final visual acuity was found to be poor in these patients, as only 11 patients (18.3%) retained good vision of 6/12 or better, Table 3.

Table 3: Final visual acuity

Visual acuity	Number of patients
6/12 and better	11
6/18 – 6/60	8
Count fingers – light perception	8
No perception of light	19

Notes: Eleven others were less than 1 year old and so visual acuity could not be recorded.

Complications of the injury in this group of patients are listed in Table 4, some patients having more than one complication. The commonest complications were found to be infection and phthisis bulbi.

Table 4: Complications resulting from eye injury

Complications	Number
Endophthalmitis/Panophthalmitis	8
Phthisis bulbi	8
Primary evisceration	7
Ruptured lens/lens prolapse	5
Traumatic cataract	2
Ruptured globe	2
Anterior staphylococci	1
Blackball hyphaema	1
Vitreous loss	1
Secondary Glaucoma	1
Adherent leucoma	1
Embedded intraconal foreign body	1
Total	38

Discussion

The approximate 2:1 male to female ratio with a male preponderance obtained in the present study is a common trend in eye injuries in children elsewhere [5], and also in adults in this environment [6].

The prognosis of perforating eye injuries are determined to a large extent by two main factors: the extent of intra-ocular damage and the timing and adequacy of surgical management [6,7,8].

In this study 89.5% of the patients sustained injuries in zone 2 and 3, i.e. corneal laceration involving the limbus and sclera. These are quite extensive ocular injuries which are commonly associated with loss of intraocular content and may be responsible for the poor visual prognosis in this study.

Most patients (62%) reported to the hospital more than 24 hours after the initial injury, the maximum being 14 days after the injury. This long delay is typical of our environment as recorded in other studies [6,9]. This delay causes an increased risk of infection, increased inflammation and more anatomical disorganisation due to blepharospasm especially in children [6]. This would partly explain the high rate of evisceration which in this study accounted for 15.8% of the cases unlike studies in developed countries where primary evisceration following injury is rare [5].

Most often, the delay is due to failure on the part of the parent to appreciate the severity of the injury and also to the relative inaccessibility of centres of eye care. This tertiary institution is the only ophthalmic unit in the whole of Oyo State open for eye emergencies after normal working hours. As a result, many patients resort to self-medication and would only report to the hospital only when the situation worsened. Occasionally, the delay is at a primary health clinic or private clinic where the attending health personnel fail to recognise the seriousness of the injury.

In all these, parents and health care personnel need to be educated regarding prompt attendance to hospital after any form of eye injury be it blunt or sharp.

Broomsticks and other plant materials caused several of the injuries (38.6%). These cases may have a poor prognosis because most of the cases were associated with severe intra-ocular infection.

Visual prognosis was generally poor in this study as only 11 patients (18.3%) retained good vision of 6/12 or better comparing favourably with other studies [5,6]. The main reasons for poor visual acuity post-operatively in those who didn't lose the eyes completely have been found to be amblyopia and opaque media (corneal scarring, cataract etc.).

In conclusion, parents, primary health workers and the public in general need to be educated to realise the importance of prompt presentation of any form of eye injury to an ophthalmologist. Children should also be prevented from playing with seemingly harmless objects such as broomsticks, pencils and biro. With improvements in public health education, preventing eye injuries in these children will go a long way in ensuring the future generation with very good vision.

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