Abstract: Objective: To describe the pattern of eye injuries in children at Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, Nigeria. Methods: The records of all children 16years and below presenting with eye injuries to the Eye clinic between January 2007 and December 2011 were reviewed retrospectively. Demographic data, cause of injury, time of presentation, the injured eye, visual acuity at presentation, diagnosis, intraocular pressure, treatment given, post treatment visual acuities at one week, one month and three months were obtained and analyzed using SPSS version 16. Results: A total of 131 case notes were available for analysis. The age range of affected children was 9months to16 years: mean (SD) - 8.56years(4.18).The male female ratio was 2:1. The majority of affected children were age 6-10 years. The right eye was involved in 55.7% of cases. The most common agent of injury was stick (22.1%), followed by slap. Conclusion: Intensifying health education to the children, parents and teachers will go a long way in reducing ocular injuries and vision loss in children.

Introduction

Eye/ocular injuries are a common cause of uniocular blindness in children. Ocular trauma is said to be a leading cause of visual impairment and blindness in young adults and children resulting in ophthalmic morbidity and monocular blindness all over the world1. According to the WHO, about 1.6 million patients become blind out of 55 million ocular injuries occurring yearly world wide2. The burden/impact of this is more and significant when one considers the number of blind years a child has to live compared to adults. Ocular injuries represent approximately 4-20% of all eye injuries3 and is a significant cause of corneal scarring which is the most common cause of childhood blindness in developing countries. Prompt diagnosis and treatment of ocular injuries in children can help reduce morbidity however most cases have been found to report late to the hospitals3,4,5,6. Also even after treatment, visual acuity may not improve in affected children because of amblyopia. This study was carried out to determine the pattern of eye injuries among children presenting at Olabisi Onabanjo University Teaching Hospital (OOUTH) a semi urban city. Findings in this study will assist heath planners in Ogun state plan appropriate prevention/healthcare for children in the state.

Subjects and methods

This is a descriptive, cross-sectional study of patients presenting at OOUTH, one of the two tertiary centres in the state. It is located within a semi urban city with agrarian orientation. The case notes of all children aged 16years and below who presented with eye injuries to OOUTH between January 2007 and December 2011 were retrieved from the Information Management department of the hospital. Demographic data, cause of injury, time of presentation, the injured eye, visual acuity at presentation, diagnosis, intraocular pressure, treatment given, post treatment visual acuities at one week, one month and three months were recorded. Visual acuity was not checked in preverbal children while in verbal children vision was checked with Snellen’s chart and E chart in those who could not read the letters of the alphabet. Ocular examinations were done with pen torches and Haagstreight Slit lamp where the child could co-operate. Intraocular pressures were checked with Goldman’s applanation tonometer. Cases were defined according to the International classifications of Diseases (ICD) published by the WHO. Visual acuity was classified as category 1 (>20/200 =6/60), category 2 (<20/200 to light perception) or category 3 (no light perception). According to the ocular trauma classification system (OTS), mechanical injuries of the globe were divided into “Open globe” or “Closed globe” injuries. An open globe injury was defined as a full thickness wound of
the eyeball. A closed globe injury was defined as a con-
tusion (defined as no corneal or scleral wound), a lamel-
lar laceration (a partial thickness) or superficial foreign
body.
Data was analyzed with SPSS statistical package version
16.0. Variables were calculated and inferential statistics
calculated.

Results
A total of 142 cases of eye injury were seen during the
study period but only 131 (92.3%) case notes were seen
for review. The age range of affected children was
9months to 16 years with a mean of 8.56years ±
4.18years . There were 88(67.2%) males and 43(32.8%)
females with a ratio of 2:1. The majority of affected
children were aged 6-10 years (Table 1). The right eye
was involved in 73(55.7%) of cases while left eye was
involved in 58(44.3%). Open globe injuries constituted
52(40%) of cases while closed globe injuries was much
more common constituting 79(60%) of cases. The most
common cause of injury was stick (22.1%), followed by
slap (8.6%), accidental hitting of face against the door
(8.6%), broomstick (5.3%) pencil (4.6%) (Fig 1). Others
include finger, scissors, cutlass, antenna fall etc. The
earliest time of presentation was 30minutes. Mean pres-
tentation time was 37.5days ± 9.41days: 34(26%) pre-
vented within twenty four hours of injury. Blunt trauma
was the most common mechanism of injury, accounting
for 70(53.4%) while penetrating trauma occurred in 58
(44.3%); chemical injury was 3(2.3%).

The most common visual acuity group at presentation
was category 1(37.4%) - (Table 2). Visual acuity was
not done in preverbal children. Many of the patients
defaulted before the three months follow up hence at this
time only 33 visual acuities were available for analysis
(Table 3). These are category 1- 10(30.3%), category 2-
10(30.3%) and category 3- 13(39.4%). Of these 33,7
(21.2%) were initially in category 1.16 (48.5%) were in
category 2 and 10(30.3%) were in category 3. There was
thus a 9.1% (3) improvement in visual acuity and 9.1%
(3) had worsened visual acuity (Table 4).

Table 1: Age group distribution of study subjects

<table>
<thead>
<tr>
<th>Age group years</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5</td>
<td>36 (27.5)</td>
</tr>
<tr>
<td>6 to 10</td>
<td>48 (36.6)</td>
</tr>
<tr>
<td>11 to 16</td>
<td>47 (35.9)</td>
</tr>
<tr>
<td>Total</td>
<td>131 (100.0)</td>
</tr>
</tbody>
</table>

Table 2: Visual acuity of 107 eligible children at presentation

<table>
<thead>
<tr>
<th>Category</th>
<th>Visual acuity</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≥ 20/200 (6/60)</td>
<td>49 (45.8)</td>
</tr>
<tr>
<td>2</td>
<td>≤ 20/200 to LP</td>
<td>42 (39.3)</td>
</tr>
<tr>
<td>3</td>
<td>No LP</td>
<td>16 (15.0)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>107 (100.0)</td>
</tr>
</tbody>
</table>

LP = light perception

Table 3: Visual acuity at presentation of 33 subjects at the
3-month follow-up

<table>
<thead>
<tr>
<th>Category</th>
<th>Visual acuity</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≥ 20/200 (6/60)</td>
<td>10 (31.6)</td>
</tr>
<tr>
<td>2</td>
<td>≤ 20/200 to LP</td>
<td>10 (31.6)</td>
</tr>
<tr>
<td>3</td>
<td>No LP</td>
<td>13 (36.8)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>33 (100.0)</td>
</tr>
</tbody>
</table>

LP = light perception

Fig 1: Causes of injury

Table 4: Comparison of visual acuity at presentation and at 3-
months follow-up

At presentation | At 3 months | Category 2 | Category 3
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Category 1: n = 07</td>
<td>10</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Category 2: n = 16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category 3: n = 10</td>
<td></td>
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</table>

All: n = 33

Discussion
Eye injuries in children though very common are usually
accidental and can affect any age. In this study the mean
age was 8.56 ± 4.18years and this is similar to the find-
ings of Hamid et al in Iran1 whose mean was 7.6 ±
3.6years. Also in this study, there was a male prepon-
drance of ratio 2:1 similar to the findings of others5,7,8,9.
This has been related to the greater degree of freedom
and stimulus to aggressiveness given to boys in all soci-
eties8. Ocular trauma was more common among the 6-
10years age group and this is also similar to findings in
other countries8,10,11. According to Glynn the estimated
risk of sustaining ocular trauma increases by 80% when
comparing older persons to those who are 10years or
younger12.

In our study the right eye was involved in 55.4% of
cases which was similar to the findings of Thompson et
al13 but in contrast to the findings of Dasgupta et al13 and
Koval14 who found that the left eye was more affect-
ed14. The difference may be related to the socioeconomic
conditions and the larger sample size in our study.
Closed globe injuries were found to be commoner than
open injuries in this study, as previously reported by
Ching who found close globe injuries in 78.1% of his
case9,15,16.
Like in other studies, stick was the most common cause of injury. Many of these occurred while the children are being reprimanded for erring either at home or in schools. Hence teachers, parents and caregivers should be taught to be extremely careful to avoid the face or hands held close to the face in beating erring children. If anything, corporal punishment should be administered on the buttocks and legs. Of note is that bomb blast, bows and arrows, and toys reported by some authors are not found in this study. Also broomstick injury is much more dangerous because majority of cases presenting with this actually developed endophthalmitis before presentation. This is not unexpected since the broom has been used to sweep dirt’s making it contaminated in most cases. Unlike developed countries, only 24% presented within twenty-four hours of injury, a factor that has been found to affect prognosis and visual outcome. Health education of school children, teachers and parents will go along way in helping to correct this.

A high default rate was noted in this study, hence ophthalmologists and other eye care workers need to educate the masses on the danger of this and increase awareness on problems associated with ocular trauma among children. We therefore conclude that intensifying health education to the children and their teachers and intensive parental education will go a long way in reducing ocular injuries and vision loss in children.

Authors’ contribution
BOT: Conception and design of study
AAD: Data analysis
AOA: Data collection
Conflict of interest: None
Funding: None

References