FOLLOW UP OF ONE HUNDRED CORNEAL AND SCLERAL RUPTURES DURING 1988-1990

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ABSTRACT

In a retrospective study, one hundred corneoscleral laceration (CSL) cases were managed at Zahedan Ophthalmic Center from 1988-1990. Our findings showed that CSL is more commonly seen in young and male patients. Seasonal variation in CSL frequency with higher prevalence in the first half of the years was evident. Also it was found that cataract was more common in corneal lacerations while hyphema was more common in corneoscleral lacerations.


INTRODUCTION

The eye is one of the external organs of the body which is exposed to trauma. If ocular trauma is not managed at the proper time it may involve the other eye (sympathetic ophthalmia). The causes and the types and frequency of trauma depend on the occupation, culture, economical situation, geographical location, and the season of the year. We reside in an area where most people work in agricultural fields, while industrial development is negligible. In this study we have analyzed the etiology, the incidence of trauma in different months of the year, sex distribution, comparison of visual acuity before and after operation, comparison of the types of trauma, and the visual outcome after surgery, so that it would enable us to come to a proper program for the management and prevention of these traumas which are common in our area.

Classification of injuries are as indicated below:

1. Perforating or rupturing injuries caused by (a) sharp trauma, (b) blunt trauma.
2. Penetrating injuries, (a) with a foreign body, (b) without foreign body.

MATERIAL AND METHODS

We have followed up 100 cases of corneal injuries at the ophthalmic center of Zahedan between 1988-1990 (Table I).

In the second half of 1988-1990 the number of patients was higher than the first half of 1988-1990. In Aug. 1988, nine patients were visited. All patients were injured by

<table>
<thead>
<tr>
<th>Month</th>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td></td>
<td>1</td>
<td>4</td>
<td>--</td>
<td>1</td>
<td>--</td>
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<td>--</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>1989</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td>--</td>
<td>--</td>
<td>7</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>11</td>
<td>11</td>
<td>14</td>
<td>18</td>
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<td>6</td>
<td>5</td>
<td>7</td>
<td>100</td>
</tr>
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</table>
special toys brought illegally by smugglers from Afghanistan to Iran. As shown in Table 1 the number of patients has increased in the first of every year. In patients below nine years of age if the visual axis is involved, they are at risk of developing amblyopia. Therefore, these patients must be carefully examined. In 1988, 20% and 1989-1990 about 50% of the patients were below nine years of age. Moreover, in 1988 about 70%, in 1989 over 60% and in 1990 more than 70% of the cases were under 20 years of age. Sex distribution of the patients is shown in Table III. According to the above data males are at greater risk compared to females with the male-to-female ratio being 10 in 1988, 3 in 1989, and 3.5 in 1990. This male predominance can be explained in this area by considering the fact that males are involved to a greater degree with high-risk occupations, and they can more freely participate in social activities than females.

No significant difference was found between the right and left eye in this study. As shown in Table IV visual acuity has increased considerably after surgery.

Anterior segment problems were the most common causes of diminished vision after operation (Table V).

Among 21 patients with corneoscleral rupture 14 had rupture on the nasal side. Patients with blunt injuries had more ruptures in the supero-nasal quadrant (Fig. 1).

Hyphema was more common in corneoscleral rupture. In 69 cases with corneal rupture seven had hyphema compared with 16 cases of corneoscleral rupture in which 11 had hyphema. So it is concluded that hyphema is due to limbal trauma, although it is seen in other types of injuries with less frequencies (Table V).

According to the data listed in Table VII traumatic cataract is more common with corneal ruptures. Out of 69 patients with corneal rupture, 29 patients had cataract, but in 16 cases of corneoscleral rupture only 4 patients had cataract. So it is concluded that cataract is more prevalent in corneal ruptures compared to other types of injuries.

Table II. Age distribution of 100 patients with corneoscleral injury from 1988-1990.

<table>
<thead>
<tr>
<th>Age Year</th>
<th>0-10</th>
<th>11-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-60</th>
<th>over 60</th>
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<tbody>
<tr>
<td>1988</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>2</td>
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<td>--</td>
<td>1</td>
</tr>
<tr>
<td>1989</td>
<td>21</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>--</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1990</td>
<td>16</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Table III. Sex distribution of corneoscleral injuries in 100 patients from 1988-1990.

<table>
<thead>
<tr>
<th>Age Year</th>
<th>Male</th>
<th>Female</th>
<th>OD</th>
<th>OS</th>
<th>OD</th>
<th>OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>21</td>
<td>2</td>
<td>2</td>
<td>--</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>1989</td>
<td>33</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>1990</td>
<td>26</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>30</td>
<td>11</td>
<td>9</td>
<td>42</td>
<td>38</td>
</tr>
</tbody>
</table>

Fig. 1. Distribution of sites of rupture in 100 patients with scleral rupture from 1988 to 1990.
TABLE V. Frequency and causes of diminished vision after operation in 100 patients with corneoscleral rupture from 1988 to 1990.

<table>
<thead>
<tr>
<th>Order</th>
<th>Causes of diminished vision after operation</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Corneal lesions</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>Failure to refer for follow up</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>High M.G. (Marcus-Gunn)</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Corneal lesions with cataract</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Corneal lesions with amblyopia</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Choroidal rupture / optic atrophy</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Phthisis</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Eccentric corneal graft</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Mental retardation</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Macular edema / degeneration</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Corneal lesions / Aphakia</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>Vitreous hemorrhage</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>Glaucoma</td>
<td>1</td>
</tr>
</tbody>
</table>

TABLE VI. Distribution of rupture type and frequency of hyphema in 100 patients with corneoscleral rupture from 1988-1990.

<table>
<thead>
<tr>
<th>Type of rupture</th>
<th>Rupture</th>
<th>Hyphema</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>Corneal Rupture</td>
<td>69</td>
<td>69%</td>
</tr>
<tr>
<td>Corneoscleral Rupture</td>
<td>16</td>
<td>16%</td>
</tr>
<tr>
<td>Scleral Rupture</td>
<td>15</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

RESULTS

1. Ocular trauma is more common in the first half of the year, most probably due to absence of public places for children during the summer vacation.

DISCUSSION

We found that the incidence of trauma increased every year. This may partly be due to the growth rate of the population. Ocular trauma is more common in spring and summer which is directly related to the activity of the children, and accordingly ocular injuries are more common in younger children.

In 1990 more than 70% of the cases were under 20 years of age. Post-operative visual outcomes were directly related to severity of injury. It is our impression that anterior segment complications are more frequently associated with low visual outcomes, in comparison with posterior segment complications (Table V).

According to our results cataract is more common in corneal laceration than other types of injuries.

2. Boys are at higher risk than girls due to social and cultural traditions and habits of this area.

3. Hyphema is more common in corneoscleral and limbal injuries.

4. Cataract is more common in corneal lacerations.

5. Endophthalmitis rate was low among our patients possibly due to early transfer to the hospital and prompt management.

6. Scleral ruptures are more common on the nasal side.

7. Thanks to modern technology, we are able to maintain some of the fine structures of the injured eyes. But still we lose some of the anatomical and physiological function of the eye.

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REFERENCES