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

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ABSTRACT

In a retrospective study, one hundred corneosclerallaceration (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.
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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, comparision 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 I. Incidence of injuries in different months and years in 100 patients with corneoscleral rupture from 1988-1990.

Month / Year	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Total
1988	1	4	--	1	--	--	--	9	2	2	1	3	23
1989	3	1	2	1	3	8	7	5	2	4	4	4	44
1990	--	--	7	4	8	3	7	4	--	--	--	--	33
Total	4	5	9	6	11	11	14	18	4	6	5	7	100

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

Age / Year	0-9	10-20	21-30	31-40	41-50	51-60	over 60
1988	5	13	2	2	--	--	1
1989	21	8	9	4	--	1	1
1990	16	10	5	1	--	1	--

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

Age / Year	Total		Female		Male	
	Male	Female	OD	OS	OD	OS
1988	21	2	2	--	11	10
1989	33	11	7	4	18	15
1990	26	7	2	5	13	13
Total	80	20	11	9	42	38

special toys brought illegally by smugglers from Afghanistan to Iran. As shown in Table I 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.

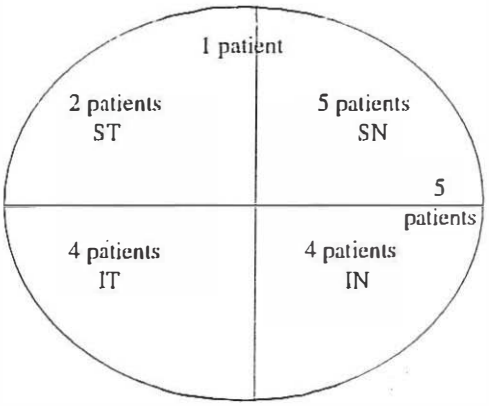
According to the above data males are at greater risk compared to females with the male-to-female ratio being 10 in 1988, 3 in 1989, and 3.5 in 1990.

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).



ST= superotemporal
IT= inferotemporal
SN= superonasal
IN= inferonasal

Fig. 1. Distribution of sites of rupture in 100 patients with scleral rupture from 1988 to 1990.

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 VI).

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 IV. Comparison of visual acuity before and after surgery in 100 patients with corneoscleral rupture during 1988-1990.

Visual Acuity	NLP	GCM	HM LP	6m-10cm	1/10-3/10	4/10-10/10	Non-Cooperative	undefined
Before Operation	6	3	36	18	12	11	11	3
After Operation	6	8	12	21	24	18	8	3

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

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

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

Type of rupture	Rupture		Hyphema	
	NO	%	NO	%
Corneal Rupture	69	69%	7	30.4%
Corneoscleral Rupture	16	16%	11	47.8%
Scleral Rupture	15	15%	5	21.8%
Total	100	100%	23	100%

RESULTS

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

TABLE VII. Comparison of cataract distribution in different types of rupture in 100 patients from 1988-1990.

Type of rupture	Rupture		Cataract	
	NO	%	NO	%
Corneal Rupture	69	69%	29	87.8%
Corneoscleral Rupture	16	16%	4	12.2%
Scleral Rupture	15	15%	--	--
Total	100	100%	33	100%

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.

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.

It would be a good idea if we could arrange programs for cultural development and increasing general awareness about fine structures of the eye by means of communication facilities and establishing an organization for improvement and quality control of toy manufacture and providing safer activities during the summer vacations.

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