

A Survey of Ocular Injuries at the University Hospital

by *S. Chandran*
MBBS, FRCS (Eng), DO (Lond)
and
Vincent Ooi Eu-sen
AM, MBBS, FRCS (Eng), FRACS,
FRCSI, FACS, DO (Lond)

Department of Ophthalmology,
Faculty of Medicine,
University of Malaya,
Kuala Lumpur.

Introduction

THE AREA AROUND the University Hospital is becoming industrialised with a rising population so that a survey of ocular injuries to identify main causes and to assess visual loss would be desirable.

Methods and Materials

This series of 335 accidents involving the eyes were seen at the Eye Clinic of this hospital over a period of 2½ years (October 1967 – March 1970) – the percentage of accident to new cases was 9.1% – see Table I. The injuries were nearly all unioocular – many of the damaged eyes had more than a single structure involved.

The orbit was X-rayed in cases with history of penetrating injury to exclude radio opaque I.O.F.B. The fundus was examined for any retinal lesions where possible. Gonioscopy to look for any damage to the filtering angle was done.

Results and comment

Sex: The ratio of males to females was 285:51 i.e. nearly 6:1 and this ratio rises higher in the industrial group. Even in the home, males are injured in a ratio to 2:1 to the females.

Age: Excluding the children, most of the victims belonged to the 15 – 35 age group (with a peak at the 20 – 25 age group). This economically active group accounted for 226 out of 335 i.e. 70% (see graph).

More than half the corneal F.B. and nearly half the superficial corneal lesions were seen in industry. (Table III and IV). Agricultural injuries (lallang, branch of trees, etc.) also contributed to one-quarter of the superficial corneal lesions.

Corneal perforations (42 cases) are associated with severe damage and a corresponding high incidence of severe visual loss. There are three main groups:-

- (a) children accounted for 17, mainly resulting from sticks and stones
- (b) industries 15, usually from handling wires
- (c) vehicular accidents 10, caused by broken glasses.

The visual prognosis is better if there is no associated traumatic cataract or other serious injury. A number of the corneal scarring and perforations could be helped by corneal grafting.

The total number of traumatic cataracts is 44 – 36 from perforation and intraocular foreign body and 8 from blunt injuries (Table III). If the corrected vision after cataract extraction (or spontaneous absorption)

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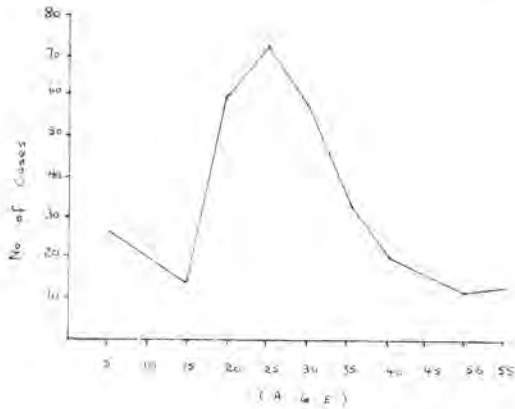


TABLE I
Incidence

Year	Ocular Injuries	Total of New Cases	Percentage of injuries
1967 (Oct – Dec)	19	265	7.2
1968	128	1,014	12.5
1969	142	1,909	7.4
1970 (Jan – Mar)	46	383	12.0
Total	335	3,671	9.1

is better than 6/12, the patient was advised corneal contact lens (11 out of 19) to restore binocular single vision; however, a number could not afford contact lens.

Intraocular Foreign Body: Nearly all 14/17 occurred in industries – usually the result of the use of a hand hammer. Two-thirds of these have associated traumatic cataract. 50% of I.O.F.B. have visual acuity of less than 6/60. One quarter (4 out of 17) with between 6/18 and 6/60, only one-quarter are better than 6/12 and even this may deteriorate with time due to late complications.

Flash burns (Table IV): All 17 resulted from acetylene and oxyacetylene welding. The victims were usually bystanders and sometimes the welders themselves. Flying metal particles may cause pitting of the glass and so, obscure vision and this may lead

TABLE II
Classification of Accidents

Class	No. of Cases	Percentages of total
1. Industrial	157	47%
2. Home	39	11.5%
3. Sticks & Stones	38	11.2%
4. Vehicular	29	8.5%
5. Agricultural	27	8.3%
6. Sports	24	7.5%
7. Assault	15	4%
8. Firecracker	6	2%
	335	100%

TABLE III
Nature of All Injuries

	No. of Cases
1. Corneal foreign body	87
2. Corneal (non-penetrating)	48
3. Conjunctival	46
4. Cut corneas with perforation	42
	(26 with traumatic cataract)
5. Lid and adnexa	35
6. Hyphaema	23
7. Intraocular foreign body (I.O.F.B.)	17
	(10 with traumatic cataract)
8. Retinal	10
9. Iris & ciliary body	9
10. Traumatic cataract (non-perforating)	8
11. Muscle paresis	4
12. Optic atrophy	3
13. Ruptured globe	3
Total	335

to the goggles being removed. For casual visits to welding shops, spectacles of ordinary glass will absorb sufficient U – V light to prevent flash burn. Ideally, the welder should be separated from their neighbours by light proof screen.

Chemical Burns (Table V): There was only one case of severe visual loss and another of moderate loss

TABLE IV
Industrial Injuries

Nature of Industrial Injury	No. of Cases
1. Corneal foreign bodies	51
2. Superficial corneal	22
3. Lids and adnexa	16
4. Welding (flash burns)	17
5. Perforations	15 (with 7 traumatic cataract)
6. Intraocular foreign body (I.O.F.B.)	14 (with 8 traumatic cataract)
7. Chemical	13
8. Hyphaema	4
9. Retinal	2
10. Optic atrophy	1

TABLE V
Chemical Burns

Caustic soda	9	Industry	13
Acid	5	School	7
NH ₃	4	Home	5
Lime and cement	3	Assault	2
Miscellaneous	<u>6</u>		<u>27</u>
	<u>27</u>		<u>27</u>

6/24 – both victims of assault – resulting in corneal scarring. All others had better than 6/12 vision. The good recovery was due to the awareness of the importance of washing the eye thoroughly – before it can do serious harm. Most of these cases had only conjunctival burns – a few with minimal corneal scarring.

Hyphaema: This is usually the result of blunt injury – missile inflicted (stones and sticks) in children and often may be associated with perforation. Lack of parental supervision may be a factor. Children do not realise these things.

Badminton makes up nearly 50% of the sports injury (11/24). This usually results from mishap with own partner (doubles) getting the shuttle-cock or the racquet. Most of the victims end up with hyphaema.

TABLE VI
Slight to Moderate Degree of Visual Loss 6/18 – 6/60

Cause	No.
1. Corneal scarring	11
2. Perforation	6
3. I.O.F.B.	4
4. Traumatic cataract	2
5. Retinal	2
6. Optic nerve damage	1
Total	<u>26</u>

TABLE VII
Gross Impairment of Vision 6/60

Cause	No. of blindness	Percentage of Incidence
1. Perforations	13	35%
2. Corneal scarring	8	22%
3. I.O.F.B.	8	22%
4. Traumatic cataract	2	7%
5. Ruptured globe	3	9%
6. Hyphaema	2	7%
7. Optic atrophy	1	3%
	<u>37</u>	

The wearing of splinter proof glasses gives considerable protection. Turning around to look at one's partner during the game should be kept to a minimum. Apart from one serious injury (commotio retinae) from hockey, the others only received superficial lesion.

Home Injuries (11%) caused mainly by bumping into things, chopping firewood, combs, baby's fingers, falls in bathroom and striking against objects, splashing soda, hot cooking oil, hot water, etc. These largely caused superficial lesion.

Vehicular Accident (8.5%) (Table II). More than half (17) were superficial. One-third (10) were perforations and 2 optic atrophy. Safety belts could have

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prevented the head being thrown forwards towards the wind-screen. In the motor cyclist, the wearing of protective goggles would have saved three perforating injuries.

Assault (4%) mainly caused by the fist, but the bone gives sufficient protection to the globe. The use of weapons, mainly sticks, has caused such serious injuries as commotio retinae, cataract and dislocated lens. Assault by chemicals have already been touched on.

Firecracker injuries: Only six were seen during the festive seasons of 1968 and 1969. Only two had hyphaema and the rest only superficial lesions. The suggestion that a tape recorder be used may be a safer alternative.

Visual results: Perforations, corneal scarring and I.O.F.B. head both the list of visual losses (**Tables VI and VII**). This rather alarmingly high incidence of gross impairment, 11% of the total 37/335, is partly due to a number of serious injuries being referred to us from various parts of West Malaysia.

Accident prevention is improving in the industries. Guards on abrasive machines, presses and cutting devices, and eye guards are reducing the accidents but there are still innumerable tasks which require the use of a hand hammer. The high proportion of industrial eye injuries are caused by lack or failure of wearing suitable eye protection. Even when such protection is available, the workman is not infrequently reluctant to make use of it — he is unfamiliar with the injury.

Prevention of accidents: Propaganda and protection should be more readily available. They reduce waste from industry. The insurance companies could spend some of the money it hands out as compensation in providing propaganda — tailored to the individual firm.

Conclusion

1. Seventy percent of the injuries occurred in the youthful age group of 15 — 35 years.

2. Males outnumber females in the ratio of 6:1 (even so to a lesser degree in the home). Females are more careful and less accident prone than the males doing the same work.

3. Industrial accidents accounted for 47% of the injuries — 157 out of 335.

4. Many of the damaged eye had more than a single structure involved as shown by perforating injury — 26 out of 42 showing traumatic cataract. More than one-quarter of all traumatic cataract can be helped to have binocular vision with contact lens.

5. One interesting feature is the spontaneous absorption of cataractous lens with hardly any trace of the lens. This rare feature (in a Western eye) occurred in three Chinese and two Malays, all under the age of thirty.

6. Perforation 35%, corneal scarring and I.O.F.B. 22% each, are the three commonest cause for gross loss of vision. If corneal grafting is freely available, a number of corneal scarring could be salvaged.

7. Sticks and stones account for over 10% of cases (38), mainly occurring in children. Children do not realise these things and explanations have to be given to them more than once.

8. Most industrial and some of the other accidents could be prevented if anti-accident propaganda and protection are more readily available.

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