

OCCUPATIONAL EYE DISEASES AND INJURIES IN SINGAPORE

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With the recent rapid growth and development of industries in Singapore it was felt desirable that a survey be made of the occupational diseases and injuries of the eye. It is hoped that with the collection and assessment of the data from the records of the Ophthalmic Department, such information will be of some value in assisting the Ministry of Health in its programme of control of industrial health for the future.

Contact injuries to the eye (mechanical chemical, radiational) are quite common in Singapore, especially mechanical ones. However, occupational diseases of the eye due to inhalation or ingestion are rare. As will be seen later on, this study will really be one concerning injuries to the eye in Singapore.

MATERIAL AND METHODS

The Eye Department of Outram Road General Hospital serves a population of nearly 2,000,000 in Singapore. The records of all those who attended the department in 1963, 1964 and 1965 with a history or evidence of injuries or eye diseases arising out of occupations and industries were looked into and studied. A much more detailed study into the industrial and occupational age group, i.e. the economically active, was conducted. This included all those seen during the years 1964-1965 whose ages were between 20 and 40. This special age period was decided upon because studies in several highly industrialised places abroad have demonstrated that this age group showed the highest incidence of occupational and industrial injuries.

TABLE I
RESULTS AND DISCUSSION

Year	Total No. Cases	Trauma	Percentage
1963	10261	836	8.4%
1964	9249	1540	16.7%
1965	9197	915	9.9%
Total	28707	3318	11.6%

Table I shows that an average of about 11.6% of the total number of all new cases of injuries and diseases of the eye treated during a three year period are due to trauma. The exact reason for the high figure in traumatic cases in 1964 is not known—probably the riots in that year would to some degree account for it.

A total of 2455 cases of injuries of the eye was seen in 1964-1965 and is taken for this analysis. Almost 50% of these injuries are in the age group of 20 to 40 years. The male:female ratio is 9:1, showing a high incidence of injuries in the male.

TABLE II
AGE GROUP: 20 TO 40 YEARS

Year	Total Injuries 20-40 years	Male	Female	Ratio
1964	745	652	93	7 : 1
1965	472	432	40	11 : 1
Total	1217	1084	133	9 : 1

A total of 1217 cases and injuries to the eye, occurring in the age group of 20 to 40 years in 1964/65 are taken for detailed study. Classification of these injuries in accordance with their nature is given in Table III:

It is to be noted that of all the injuries, the commonest are surface Corneal injuries, accounting for about 53% of which 38% are due to Corneal foreign bodies, and 10% to Corneal abrasions. Most of these are occupational injuries, as will be shown later. Next in the list comes contusion injuries comprising about 17.4%. Quite a few of these are also occupational.

In Table IV above, the injuries are classified according to the mode of injury and traumatic agent. It shows that industrial and occupational injuries form a major part of the injuries, accounting for 51.3%. As already mentioned, most of these are Corneal foreign bodies and abrasions, occurring amongst mechanics, fitters, plumbers, wire-men, painters, labourers and

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TABLE III

1. Contusion Injuries:			
a) Without intraocular complications	133	10.9%	
b) With Intraocular complications	- 79	6.5%	
2. Perforating Injuries:			
a) Without intraocular foreign body	- 17	1.4%	
b) With intraocular foreign body	- 7	0.6%	
3. Corneal Injuries—(Surface)			
a) Corneal foreign bodies	- - 462	38.0%	
b) Corneal abrasions	- - 121	9.9%	
c) Corneal chemical burns	- - 53	4.4%	
d) Corneal ulcers	- - 17	1.4%	
4. Conjunctival Injuries:			
a) Traumatic conjunctivitis	- - 102	8.4%	
b) Conjunctival chemical burns	- 34	2.8%	
c) Conjunctival abrasions and lacerations	24	2.0%	
d) Conjunctival foreign bodies	- 17	1.4%	
5. Injuries to adnexa:			
Lids and orbit	- - 151	12.3%	

TABLE IV

Mode of Injury	1964	1965	Total	Percentage
Home, Sports etc.	149	85	23	19.2%
Industrial, Occupational	403	221	624	51.3%
Traffic accident etc	33	18	51	4.2%
Assault	82	30	112	9.2%
Unspecified	78	118	196	16.1%

carpenters. It also includes radiational burns from welding and chemical burns from white wash, paints and cement etc. A few cases are from contusions from stones (while breaking stones) and wood. Perforating injuries occur from high velocity metal particles while chiseling, hammering etc. and from sharp pointed objects like wire, screw driver etc.

Next in the list comes injuries occurring at home accounting for 19.2%, accidentally caused by fingernail, stick, piece of wood, broomstick etc. causing abrasions mostly. Then come burns by hot oil amongst housewives, and injuries due to a fall or a knock against any sharp object. Finally injuries in Sport, such as a hit by a shuttle cock or ball, and broken glass particles from spectacles.

Injuries from assault account for 9.2% and include acid burns besides blow with a fist, piece of wood, metal bar etc.

Traffic accidents accounting for 4.2% is the least, rather surprising when one considers the traffic accident rate in Singapore. Probably the explanation lies in the efficient protective mechanism of the eye. Many of these result in haematoma of the lids, Subconjunctival haemorrhage, lacerations of the lids etc. with these extra ocular tissues absorbing the trauma and sparing the eyeball.

The injuries listed under unspecified are those injuries where the exact mode of injury is not known. It accounts for 16.1%.

It is seen from Table V that 95.7% have either no visual loss or slight visual loss only. By the latter, we mean they are left with a residual visual acuity of 6/9 to 6/12 at the worst. About 1.4% of the cases have moderate loss of vision, leaving them a residual visual acuity of 6/18 to 6/36. Residual visual acuity of 6/60 and less

is classified under severe loss, which accounts for 2.9%.

TABLE V
VISUAL DISABILITY

Year	Total	Slight loss or NIL	Moderate loss	Severe loss
1964	745	709	12	24
1965	472	451	5	11
Total	1217	1160 (95.7%)	17 (1.4%)	35 (2.9%)

TABLE VI
COMPLICATIONS AND VISUAL
DISABILITY

Complications	Moderate loss	Severe loss
Hyphema	4	1
Vitreous Haemorrhage	4	4
Subluxation lens	—	4
Cataract (traumatic)	2	—
Perforating injuries	3	13
Choroidal tear	1	1
Optic Nerve Injury	—	10
Chemical burns	3	2

Perforating injuries account for the a maximum number of severe visual loss. Most of these are industrial in origin and a few from traffic accidents and assaults. Almost all the 10 cases of optic nerve injury with total loss of vision are due to traffic accidents. A study of cases in which enucleation was done shows that in the year 1964-67 (up to September 1967) 65 eyes were enucleated from 65 patients. Of these 26 had a history of trauma—19 accidents or assaults, and 7 had previous surgery performed elsewhere.

Of the 19 enucleations due to accidents, 16 were penetrating injuries, 3 severe contusions. 3 eyes were removed within the first week of injury, 1 within two weeks of injury, 5 between 2 weeks to 2 months, and 10 two months after injury. As for the 7 eyes enucleated after surgery, all were removed more than 3 months after initial surgery. The initial surgery in 4 cases was for cataract, and in the other 3 for glaucoma (2 iridencleisis, 1 broad iridectomy). One remarkable fact arising out of this study is that only one case of sympathetic ophthalmia was

diagnosed and subsequently confirmed by histological examination. This particular case was seen 3 months after surgery for cataract elsewhere. The patient was almost blind in both eyes and active uveitis was seen in both eyes. The operated eye was blind and removed. Steroids was started for the other eye. It must be remembered besides the hundreds of traumatic cases seen that more than 1,200 intraocular operations are done yearly in this clinic. Over the past 3½ years, only one case of Sympathetic Ophthalmitis was clinically diagnosed. This is the case mentioned above. This confirms our long established clinical impression that Sympathetic Ophthalmitis is very rare in Singapore.

CONCLUSION

- 11.6% of all patients attending the Eye Department, General Hospital, Singapore in the year 1964, 1965 and 1966 did so because of injury to the eye.
- Nearly 50% of these cases due to injury are in the economically active age group of 20-40 years.
- In this group males are affected nine times more so than females.
- Industrial and occupational injuries took the highest toll, accounting for 51.3% of this age group. Accidents at home or at play account for 19.2%. Traffic accidents account for 4.2% only.
- Surface corneal injuries are the most common, and form 53.7% of the total for this age group. Corneal foreign bodies account for 38%, i.e. a little more than 70% of surface corneal injuries. Contusion injuries form 17.4% of the total for this age group.
- Nearly 3% of all the cases studied in this age group 20-40 suffered severe loss of vision. This is a most important point to remember. Partial or complete loss of vision in one eye will limit the occupational scope of those injured. In the metal, engineering and car industries, severe injuries to the eye arising out of foreign bodies, can mean a need to change occupation for the injured person.

Many of the accidents to the eyes could have been prevented by proper precautions and safety measures and much of the complications and disabling consequences could have been mitigated by proper first-aid treatment. Recommendations concerning these have been submitted to the Ministry of Health.

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