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Ocular Trauma: 2 Years Retrospective Study in Sari, Iran

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ABSTRACT

Introduction: Ocular trauma is one of the very important causes of blindness and disability in developing countries; despite the fact that it is preventable in the majority of cases. Considering the importance of the topic and the fact that most of such injuries are preventable, a better understanding of the etiology and epidemiology of the injuries has a vital importance in planning for reduction of their prevalence. The current study has aimed to identify the prevalence and epidemiology of the ocular trauma at the University Hospital Boo-Ali-Sina in the city of Sari (Northern Iran) between 2009-2010. **Method:** This is a retrospective study of 178 patients' case notes who were admitted through the ophthalmology service to the above center. A proforma was designed and For the purpose of classification, the International Classification of Diseases (ICD-10) was used. **Results**: During the study period, 178 patients with eye trauma were admitted to the hospital of these, 135 (75.8%) male and 43 (24.2%) were female. 35 (19.7%) aged 25-34 and 98 (55.1%) cases lived in villages. The injuries were most common during winter (55/30.9% of cases). The most common diagnosis was open wound of eyelid (ICD-10 code: S01.1) (40/ 22.5% of cases) and in the majority of cases it was unilateral (left eye) (96/53.9%). The mode of the trauma was contact with blunt object in 22 (12.4%) cases (ICD-10 code: Y29). **Conclusions:** Considering the prevalence of ocular trauma, appropriate education and the use of safety equipment are important measures to prevent the injuries. Our data shows that the prevalence of the injuries amongst the young workers is high and this necessitates the age group to be the target for such education. The education should include the vulnerable population at both extremes of age.

Key words: Eye Injuries, Eye trauma, Ocular trauma, Retrospective study, Iran.

1. INTRODUCTION

Ocular trauma is one of the very important causes of blindness and disability in developing countries; despite the fact that it is preventable in the majority of cases (1). The injuries have major financial implications for patients and the society and are considered an important etiology for the blindness worldwide (2). Corneal injury specifically can cause a permanent disability which can not be corrected by glasses. Moreover lens trauma can lead to cataract which even with appropriate management can lead to disability. Moreover, injuries to the retina or optic nerve are irreversible (3).

Trauma to the eye is extremely common. This is especially so in developing countries like Pakistan. 5% of all ophthalmic admissions in the developed world result from ocular trauma, while in developing world this figure is much higher(4).

According to the research undertaken in north east Colombia, Kuwait, Turkey, Italy and Hong Kong, most of the pediatric ocular injuries occur in boys and the number of non-penetrating injuries have been more than the penetrating injuries. In a study in rural areas of Tanzania, most of the ocular trauma has been related to wood chips which are mainly observed in the workers and farmers during their day to day work. Similar results have been demonstrated in studies undertaken at Australia and India (1).

In Iran little number of studies on the topic has been undertaken and therefore insufficient information is available about the prevalence of the injuries (5). Considering the importance of the topic and the fact that most of such injuries are preventable, a better understanding of the etiology and epidemiology of the injuries has a vital importance in planning for reduction of their prevalence. The current study has aimed to identify the prevalence and epidemiology of the ocular trauma at the University Hospital Boo-Ali-Sina in the city of Sari between 2009 -2010.

2. MATERIAL AND METHODS

This is a retrospective study of 178 patients' case notes who were admitted through the ophthalmology emergency services between 2009 -2010 to the above center. A proforma was designed which contained the following parameters:

- Demographic information;
- Diagnosis and etiology of the injury.

For the purpose of classification, the International Classification of Diseases (ICD-10) was used (6). Statistical analysis was undertaken using the SPSS version 19 software.

3. RESULTS

The number of ophthalmology ward admissions of the Boo-Ali-Sina University Hospital in 2009 and 2010 were 1787 and 1563 patients respectively. Of the above numbers, 178 patients were admitted due to the ocular trauma. All patients in the latter group were included in the study.

Demographic information:

Out of 178 patients, 135 were men and 43 women. The information has been summarized in the Table 1.

Diagnosis and etiology of the injury:

In 53.9% of the cases (96 patients) the ocular surface trauma was left sided, 38.8% (69 patients) right sided and in 7.3% (10 patients) it was bilateral. In 22.5% (40) of the patients "open wound of the eyelid" with a code of S01.1 was documented, of which 18, 14 and 8 patients sustained upper eyelid, lower eyelid and both eyelid injuries respectively. Traumatic Hyphema with the code of S05.1 was documented in 28 (15.7%) of the patients. Moreover corneal ulcer with the code of H16.0 was reported in 13.5% (24) of the patients and traumatic cataract with the code of H26.1 in 7.9% (14) of the patients.

Furthermore, blunt object's trauma with the code of Y29 was reported in 35.4% (63) patients, car accident with the code of V49 in 31 cases (17.4%) and other source of trauma was seen in 20.2% (36) of the patients that etiology and mode of injuries were mainly comprised of cow kick, metal pieces, explosion, nail piercing, sickle contact, explosion, flower thorn, ball contact, iron filing, fist and IOFB. In 23 patients (12.9%) penetrating trauma and in 63 cases (35.4%) blunt trauma has been reported (table 2). The range of referral time from the injury to the center was between 20 minutes to 90 days with a mode of 1 hour. The discharge outcome has been documented as partially treated in 118 (66.3%) of cases.

Characteristic		2009		2010		Sum	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
Sex	Female	29	16.3	14	7.9	43	24.2
	Male	82	46	53	29.8	135	75.8
	Sum	111	62.3	67	37.7	178	100
Age	≤ 1	0	0	1	.5	1	.5
	1-4 Yrs.	6	3.4	4	2.2	10	5.6
	5-14 Yrs.	9	5.1	7	3.9	16	9
	15-24 Yrs.	22	12.4	8	4.5	30	16.9
	25-34 Yrs.	19	10.7	16	9	35	19.7
	35-44 Yrs.	14	7.9	8	4.5	22	12.4
	45-54 Yrs.	11	6.2	10	5.6	21	11.8
	55-64 Yrs.	11	6.2	7	3.9	18	10.1
	65-74 Yrs.	13	7.3	2	1.1	15	8.4
	≥ 75 Yrs.	6	3.4	4	2.2	10	5.6
	Sum	111	62.6	67	37.4	178	100
Job	Student	18	10.1	10	5.6	28	15.7
	Worker	13	7.3	14	7.9	27	15.2
	House Wife	15	8.4	6	3.4	21	11.8
	Self-employment	13	7.3	8	4.5	21	11.8
	Retirement	12	6.7	7	4	19	10.7
	Farmer	8	4.4	9	5.1	17	9.5
	Non-employment	11	6.2	4	2.2	15	8.4
	Child	6	3.4	5	2.8	11	6.2
	Driver	6	3.4	2	1.1	8	4.5
	Employment	2	1.1	2	1.1	8	4.5
	Soldier	1	.6	0	0	2	1.1
	Prisoner	111	62.3	0	0	1	.6
	Sum			67	37.7	178	100
Living place	City	53	29.8	20	11.2	73	41
	Village	52	29.2	46	25.9	98	55.1
	Not documented	6	3.4	1	.5	7	3.9
	Sum	111	62.4	67	37.6	178	100
Admission date	Spring	32	17.9	9	5.1	41	23
	Summer	30	16.9	0	0	30	16.9
	Autumn	26	14.6	26	14.6	52	29.2
	Winter	23	12.9	32	18	55	30.9
	Sum	111	62.3	67	37.7	178	100

Table 1. Demographic data of the patients admitted with ocular trauma to the Boo-Ali-Sina University Hospital in Sari, Iran-2009 and 2010

4. DISCUSSION

The current study has focused on identification of the epidemiology and etiology of the significant eye injuries requiring admission, at the Boo-Ali-Sina University Hospital in Sari, Iran between 2009 -2010. The study shows that only one out of every nineteen patients referred to the above center, required admission to the hospital.

Highest prevalence of the admissions belongs to the 25-34 years age group (19.7%). This is in concordance with the data from Mashhad Medical Sciences University (in Iran) ophthalmology center which reported the maximum prevalence of referrals between the age of 25-30 years. It is known that young men are more likely to sustain ocular trauma as a result of occupational hazards (7).

Cause of injury	Frequency (%)
Blunt	63 (35.4)
Sharp	23 (12.9)
Shot gun/air gun	2 (1.1)
Car accident	31 (17.4)
Fall	7 (3.9)
Others	36 (20.2)
Unspecified	16 (9.0)

Table 2. Distribution of ocular trauma with respect to source of trauma

Our study shows that the prevalence of the injuries in the age less than 10 years and elderly population was 12.4% and 4% respectively. As can be seen children under the age of 10 years also have a significant rate of ocular injuries. The data suggests that the other author's advice on education and preventative methods at working environments and schools may reduce the prevalence of the ocular injuries (7).

The data also reveals a male to female ratio of 3 to 1. This is compatible with other similar studies (8-12). Most probably the difference is due to occupational hazards and more frequent involvement of males in violent activities (2).

In terms of occupation of the patients our data shows that the occupational injuries amongst factory and construction workers occur at age groups of 25-34 years (15.2% of patients); however amongst farmers the injuries are more frequent at 35-44 years age group (9.6% of patients). Drivers have had the lowest prevalence of ocular injury amongst all occupations. In a study published by Ostadi-Moghadam et al. in Mashhad, the authors

reported that in 28.8% of the factory workers ocular injuries have occurred due to lack of sufficient precautionary measures and mostly at the age group of 20-40 years old. The authors have divided ocular injuries into 5 categories: 1- foreign body related 2- Blunt trauma 3- chemical, electrical burns/injuries 4- occupational trauma and 5- Any other trauma not mentioned in the previous groups. They have divided the etiology into lack of equipment safety, faulty equipment, lack of precautionary measures, working in the dark environments, lack of occupational education and miscellaneous (such as age).They have proposed that education of the workers, protective equipment, regular servicing of the equipment, abstaining from overtime working and improvement of light in factories can reduce the prevalence of ocular injuries (13). In most studies ocular trauma is reported to occur most often at work (14, 15, 16, 17).

According to the study of Poon et al. in Tanzania, has a high rate of eye injuries in workers and farmers, who have an eye injury while working out (18). Also, studies in Singapore, Australia and India confirm the same has been done (19, 20, 21).

Considering the prevalence of ocular trauma, appropriate education and the use of safety equipment are important measures to prevent the injuries. Our data shows that the prevalence of the injuries amongst the young workers is high and this necessitates the age group to be the target for such education. The education should include the vulnerable population at both extremes of age.

The study was performed retrospectively and many of the desired pieces of information were not documented in the medical notes which reduce the range of conclusions which can be made from the data.

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