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Research Article

Causes of Ocular Trauma in Patients Presenting at a Tertiary Care Center of Rajasthan

Dr Avisha Mathur[1], Dr Arvind Chauhan[2]

[1] Dr Avisha Mathur: Resident, Department of Ophthalmology, MDM hospital, Dr. S. N. Medical College, Jodhpur
[2] Dr Arvind Chauhan: Professor & head, Department of Ophthalmology, MDM hospital, Dr. S. N. Medical College, Jodhpur

Corresponding author: Dr Avisha Mathur
Resident, Department of Ophthalmology, MDM Hospital, Dr. S. N. Medical College, Jodhpur 342003
Address: A-79, Shastrinagar, Jodhpur-342003

Abstract:

Introduction: Traumatic eye injuries are common and may occur as isolated injuries or as part of more extensive maxillofacial trauma and may range from the minor to the sight-threatening. Trauma is the second leading cause of monocular blindness after cataracts. Ocular trauma is one of the leading causes of preventable blindness in world today.

Material and methods: This study was conducted from Sep 2014 to Aug 2015 and total 81 patients were enrolled. It is non randomized observational study in which all patients attending outdoor and emergency of department of Ophthalmology at MDM Hospital, Jodhpur with history of ocular trauma were enrolled after receiving informed written consent.

Results: In our study we found that out of total ocular trauma patients 81.48% patients were males and rest 18.51% patients were females. 90.12% patients were less than 30 years of age group. In 49.38% of patients ocular trauma was due to road traffic accidents. In 32.10% of patients ocular trauma was during sports and in 9.88% of patients ocular trauma was related to occupational hazards. 82.72% of patients presented to hospital with 24 hours of the ocular trauma. Around 11.11% of patients presented within 24-48 hours of trauma. Most common type of ocular injury was penetrating globe injury in 44.44% of patients followed by adnexal injuries in 34.57% of patients. In 48.15% of patients ocular trauma caused severe visual impairment or blindness (vision 3/60 to PL).

Conclusions: Ocular trauma cases were commoner in males (81.48%) than females (18.51%). 90.12% patients of ocular trauma were less than 30 years of age. Road traffic accidents (49.38%) were the most common cause of ocular trauma followed by sports injuries (32.10%) and occupational hazards (9.88%). Most common type of ocular injury was penetrating globe injury in 44.44% of patients followed by adnexal injuries in 34.57% of patients. In 48.15% of patients ocular trauma caused severe visual impairment or blindness (vision 3/60 to PL).

Key words: Ocular trauma, Intra ocular foreign body, Ruptured globe

Introduction

Traumatic eye injuries are common and may occur as isolated injuries or as part of more extensive maxillofacial trauma and may range from the minor to the sight-threatening. Trauma is the second leading cause of monocular blindness after cataracts.[1]

Over 2.4 million eye injuries occur each year.[2] 90% of all eye injuries are preventable, ocular trauma is one of the leading causes of preventable blindness in world today.[3,4] Early detection and management hold the key to trauma management and prevention of further complications.

In general, eye injuries in males outnumber those in females almost 4 to 1, and most serious injuries occur in those under the age of 30.[5] Among all patients with significant trauma, 16% have serious ocular or orbital injuries, whereas over 50% of patients with serious facial trauma have associated eye injuries that could threaten sight or lead to loss of vision.[6] Measures to create awareness about ocular trauma and preventive measures would result in a great decrease in ocular morbidity.

Materials and Methods

This study was conducted from Sep 2014 to Aug 2015 and total 81 patients were enrolled. It is non randomized observational study in which all patients attending outdoor and emergency of department of Ophthalmology at MDM Hospital, Jodhpur with history of ocular trauma were enrolled after receiving informed written consent.

Inclusion criteria:

1. All cases of ocular trauma presented to Ophthalmology outdoor or emergency of MDM hospital were included in the study.

Exclusion criteria:

1. Orbital fractures causing no visual loss were excluded.
2. Refusal for consent.

A detailed history including past history and past ophthalmological status of each patient was recorded. Both eyes were examined, assessing the nature and type of injury. The visual acuity was done with Snellen's chart or finger counting depending upon the patient`s age and condition at the time of presentation.

A detailed slit-lamp and fundus examination was done. The injuries were classified into Extraocular and Intraocular. The intraocular injury was further classified into open and closed globe injury according to Ocular Trauma Classification Scheme as those involving blunt force, resulting in contusion (closed globe injury) or rupture (open globe injury), and those involving sharp forces, resulting in lamellar laceration (closed globe injury) or penetrating, perforating, and intraocular foreign body laceration (open globe injury). The final visual outcome was measured using a Snellen's chart and graded.

Results

Table 1

Age and sex wise distribution of ocular trauma patients

Age (years)	Male (%)	Female (%)	Total (%)
<5 years	06 (07.41%)	02 (02.47%)	08 (09.88%)
5-10 years	18 (22.22%)	05 (06.17%)	23 (28.40%)
10-20 years	23 (28.40%)	05 (06.17%)	28 (34.57%)
20-30 years	12 (14.81%)	02 (02.47%)	14 (17.28%)
30-40 years	04(04.94%)	01 (01.23%)	05 (06.17%)
40-50 years	00 (00.00%)	00 (00.00%)	00 (00.00%)
50-60 years	02 (02.47%)	00 (00.00%)	02 (02.47%)
>60 years	01 (01.23%)	00 (00.00%)	01 (01.23%)
Total	66 (81.48%)	15 (18.52%)	81 (100%)

Table 2 Distribution of patients according to causes of ocular trauma

Cause of ocular trauma	Male (%)	Female (%)	Total (%)
1. Occupation related	08 (09.88%)	00 (00.00%)	08 (09.88%)
2. Violence related	00 (00.00%)	00 (00.00%)	00 (00.00%)
3. Domestic accidents	05 (06.17%)	02 (02.47%)	07 (08.64%)
4. Road traffic accidents	31 (38.27%)	09 (11.11%)	40 (49.38%)
5. Sports related	22 (27.16%)	04(04.94%)	26 (32.10%)
6. Others	00 (00.00%)	00 (00.00%)	00 (00.00%)
Total	66 (81.48%)	15 (18.52%)	81 (100%)

Table 3 Time interval after ocular trauma to seeking treatment by ophthalmologist

Time interval since trauma	Male (%)	Female (%)	Total (%)
1. <24 hours	55 (67.90%)	12 (14.81%)	67 (82.72%)
2. 24 – 48 hours	07 (08.64%)	02 (02.47%)	09 (11.11%)
3. 48 hours – 1 week	03 (03.70%)	00 (00.00%)	03 (03.70%)
4. >1 week	01 (01.23%)	01 (01.23%)	02 (02.47%)
Total	66 (81.48%)	15 (18.52%)	81 (100%)

Table 4 Type of ocular injury

Type of ocular injury	Male (%)	Female (%)	Total (%)
1. Closed globe injuries	01 (01.23%)	00 (00.00%)	01(01.23%)
a. Lamellar laceration	07 (08.64%)	04 (04.94%)	11(13.58%)
b. Contusions			
2. Open globe injuries	29 (35.80%)	07 (08.64%)	36(44.44%)
a. Penetrating	03 (03.70%)	00 (00.00%)	03(03.70%)
b. Perforating			
3. Intra ocular foreign bodies	01 (01.23%)	00 (00.00%)	01(01.23%)
4. Ruptured globe	01 (01.23%)	00 (00.00%)	01(01.23%)
5. Adnexal injuries	24 (29.63%)	04 (04.94%)	28(34.57%)
Total	66 (81.48%)	15 (18.52%)	81(100%)

Table 5 Final visual outcome

Final outcome	Male (%)	Female (%)	Total (%)
1. 6/6-6/18	29 (35.80%)	07 (08.64%)	36 (44.44%)
2. 6/18-3/60	05 (06.17%)	01 (01.23%)	06 (07.41%)
3. 3/60-No PL	32 (39.51%)	07 (08.64%)	39 (48.15%)
Total	66 (81.48%)	15 (18.52%)	81 (100%)

Discussion

Once serious eye injuries are recognized it is important that the patient is stabilized, given appropriate treatment, and transported to a trauma center or hospital with adequate access to ophthalmologic services.

As with all trauma patients, attention should be focused on the ABCs of trauma resuscitation, and any life-threatening injuries should be addressed first.[7,8]

Once the patient is stabilized attention turns toward the ocular injury, and a thorough evaluation can be performed, including a more complete history and eye examination. In the case of known or suspected chemical contact to the face and eye, immediate irrigation with normal saline or water (if saline is not available) should be performed before completing the full assessment process. On one hand there is an increase in the number of cases of ocular trauma and on the other hand newer microsurgery techniques and equipment have helped in improving the visual outcome in such cases.[9]

In our study we found that out of total ocular trauma patients 81.48% patients were males and rest 18.51% patients were females. 90.12% patients were less than 30 years of age group.

Road traffic accidents were the most common cause of ocular trauma. In 49.38% of patients ocular trauma was due to road traffic accidents. In 32.10% of patients ocular trauma was during sports and in 9.88% of patients ocular trauma was related to occupational hazards. In 8.64% of patients ocular trauma was due to domestic accidents.

Review of studies has shown that the majority of trauma resulting in blindness occurs during early adulthood with mean age below 30 years ± 5 years and common cause of injury is road traffic crashes and falls.[10] Ocular trauma due to road traffic accidents is preventable. A study done in Northern Ireland in 1986 has shown that there is a 60% reduction in perforating eye injuries following seat belt legislation.[11]

82.72% of patients presented to hospital with 24 hours of the ocular trauma. Around 11.11% of patients presented within 24-48 hours of trauma. 3.70% of patients presented between 48 hours to 7 days after trauma and only 2.47% patients presented after 7 days of ocular trauma.

Most common type of ocular injury was penetrating globe injury in 44.44% of patients followed by adnexal injuries in 34.57% of patients. In 13.58% of patients ocular trauma lead to contusions and in 3.70% of patients perforating type of globe injury was present. Lamellar laceration, intraocular foreign bodies and ruptured globe were present in only 1.23% of patients each.

Vasu et al in their study found that 38.10% were open globe injuries while 61.90% were closed globe injuries.[12] Most open globe injuries were due to windshield fragment injuries. In their study by Vasu et al found that in the closed globe injury 23.08% were mild, 28.02% were moderate and 48.72 % were severe and in the open globe injuries, 25% were mild, 33.33% were moderate, and 41.6% were severe.[12]

In 48.15% of patients ocular trauma caused severe visual impairment or blindness (vision 3/60 to PL). In 44.44% of patients vision was between 6/6-6/18 and in rest 7.41% of patients had vision between 6/18-3/60.

Conclusions

Ocular trauma cases were commoner in males (81.48%) than females (18.51%). 90.12% patients of ocular trauma were less than 30 years of age. Road traffic accidents (49.38%) were the most common cause of ocular trauma followed by sports injuries (32.10%) and occupational hazards (9.88%). Most common type of ocular injury was penetrating globe injury in 44.44% of patients followed by adnexal injuries in 34.57% of patients. In 48.15% of patients ocular trauma caused severe visual impairment or blindness (vision 3/60 to PL).

Ocular trauma due to road traffic accidents can be drastically reduced if precautionary measures are taken such as seat belts, helmets etc. Public awareness along with stricter road traffic legislation is needed to prevent or decrease ocular trauma.

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