

Retrospective study of ocular trauma in Thi-Qar city

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Abstract

Purpose: To review the epidemiology of serious ocular trauma presenting to Habobi teaching Hospital in Thi-Qar city.

Methods: This is a retrospective epidemiological study of ocular trauma patients admitted to Habobi teaching hospital during a three-year period (January 2013-January 2016). Cases were analyzed with respect to: (1) demographics, (2) time, place, activity during trauma and cause of trauma, (3) examination finding.

Results: five hundred and ten patients (five bilateral injuries) sustaining serious ocular injury requiring hospitalization were included

during the study period. 65.5% of ocular trauma occurred in men ($P < 0.001$ chi-square test) with an average age of 23 years (ranging from 2 months to 65 years). There were 415 (81.3%) open globe injuries and 95 (18.7%) closed globe injuries. In open globe injuries, it is shown that 40% had corneal wound, 6.6% had limbal wound, 24% had scleral wound, 27.8% had corneoscleral wound, 37% had iris prolapse, 20.5% had traumatic hyphema, 29.4% had traumatic cataract, 9.8% had IOFB, and 1% had perforating injuries. Of the closed globe injuries, 6.6% of patients had traumatic hyphema, 4% had traumatic cataract, 2.7% had subconjunctival hemorrhage and conjunctival tear, 1.9% had subluxated lens, and 1.5% had corneal intrastromal

Key words: Mechanical eye trauma, Intraocular foreign body, closed globe injury, open globe injury.

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Introduction:

Worldwide interest in the field of ocular trauma is rapidly growing as increasingly effective techniques for prevention and treatment are developed⁽⁸⁾. Ocular trauma is a major cause of monocular blindness and visual impairment throughout the world, although little is known about its epidemiology or associated visual outcome in developing countries^(5,14,19). Although the eyes represent only 0.1% of the total body surface and only 0.27% of the anterior body surface^(2,4), data collection is the initial step in any epidemiological study. Once a sufficient amount of information is available on how injuries occur (to whom, how, where, when, etc), prophylactic measures can be planned and implemented^(1, 2, 4). The continued collection in a standardized fashion of epidemiological information helps to determine whether a certain preventive measure was effective or not^(3, 12).

Aim of work:

- Define population at risk.
- Identify activity at time of trauma, causes, and types of trauma.
- Identify the extent of ocular trauma

Patients and methods:

Different methods have been used to collect data of ocular trauma ranging from

hospital discharge sheet, to studies of the emergency room setting or population based interviews. Each type of study provides different spectrum of information on the rate of ocular trauma. Our study is based on hospital discharge data. It was a retrospective epidemiological study included all patients sustaining serious eye injuries that required hospitalization at Habobi teaching Hospital during three years period (January 2013–January 2016). In our study; we analyzed retrospectively 510 patients sustaining serious eye injuries over three-year period. Patient's data extracted included age, sex, place of residence, time of presentation, cause of injury, anatomical site, location and type of injury. The cause of injury was then categorized into blunt, sharp, projectile or combined. On the basis of location of eye injury, we have classified the data in three categories: work related injuries, home related injuries and street related injury. The condition of the fellow eye was also recorded.

Ocular trauma epidemiological data:

1. Demographics: Age, Sex, Occupation, Residence.

2. Trauma:

- Time of injury: date of presentation: no delay (less than 24h), delayed (24h–1week), or more than 1week.

- Place: street, home, workplace.
- Activity at time of trauma.
- Cause of injury: by sharp, blunt or projectile object.

- Laterality: unilateral or bilateral, condition of fellow eye.
- FB: site, material.

Results:

1. Examination:

- ❖ Orbit:
- ❖ Bone fracture: site and extent, tissue herniation.
- ❖ Eyelid oedema, Laceration, site and extent (lid margin and canaliculi).
- Globe:
- ❖ Closed globe injury: Conjunctival injuries, corneal intrastromal FB, traumatic hyphema, lens. injuries, choroidal rupture, vitreous haemorrhage, retinal damage, optic nerve damage.
- ❖ Open globe injury: Corneal wound with or without iris prolapse, limbal wound, and scleral wound with or without uveal prolapse, IOFB, perforating injuries.

1. Demographics:

A) Age & Sex: In this study, it has been shown that the mean patient age for ocular trauma was 23 years ($23\text{years} \pm 20$), (range: 2 months–65 years). The pediatric age group (15 years and younger) constituted 39.6% of cases while adult age group (above 15 years) constituted 60.3% of cases (figure1). In relating age with sex (table 1), males constituted about 61.3% of patients while females were about 38.6% in the pediatric age group. In adult age group males constituted about 68.2% of patients while females were about 31.8%. Significantly more men were injured than women in our population with male to female 2:1.

Table (1): Age and sex distribution of patients with ocular trauma.

Age	No. of males	No. of females	Total	Sex(ratio) male: female
o-5y	16	23	39	1:1.5
6-10y	38	36	74	1:1
11-15y	70	19	89	3.6:1
16-30y	114	68	182	1.6:1
31-45y	89	14	103	6.3:1
≥ 46y	7	16	23	1:2.2

Total	334	176	510	2:1
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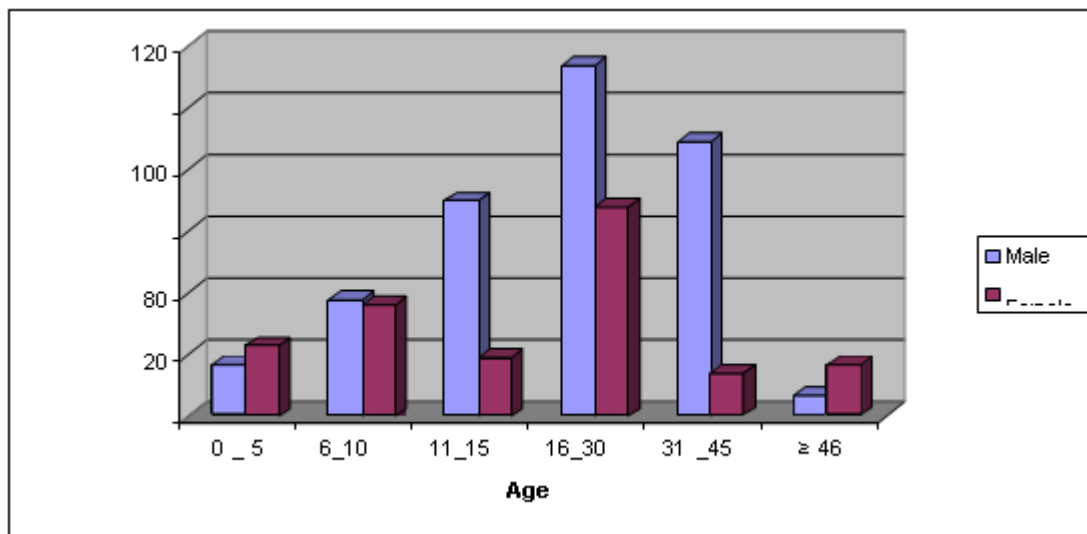


Figure (1): Age and sex distribution of patients with ocular trauma

B) Occupation:

In this study, factory workers represent 19.6% of the total injuries. Farmers represented 8.2% of those injured. Students represented 31.8% of those injured. Drivers constituted 10.7% and represented due to the serious effect of visual impairment on their career (figure 2).

Housewives, although not a real occupation, still represent a large portion of the Iraq society and were also separately recorded to constitute 12.4% of injuries. Those with no occupations include the preschool age and those whose occupation were not properly recorded and constituted 17.3 % (table 2).

Table (2): The different percentage of the different important occupations.

Occupation	Number of patients	Percentage
factory workers	100	19.6
Farmers	42	8.2
Students	162	31.8
Drivers	55	10.7
Housewives	63	12.4
non occupation	88	17.3

Total	510	100
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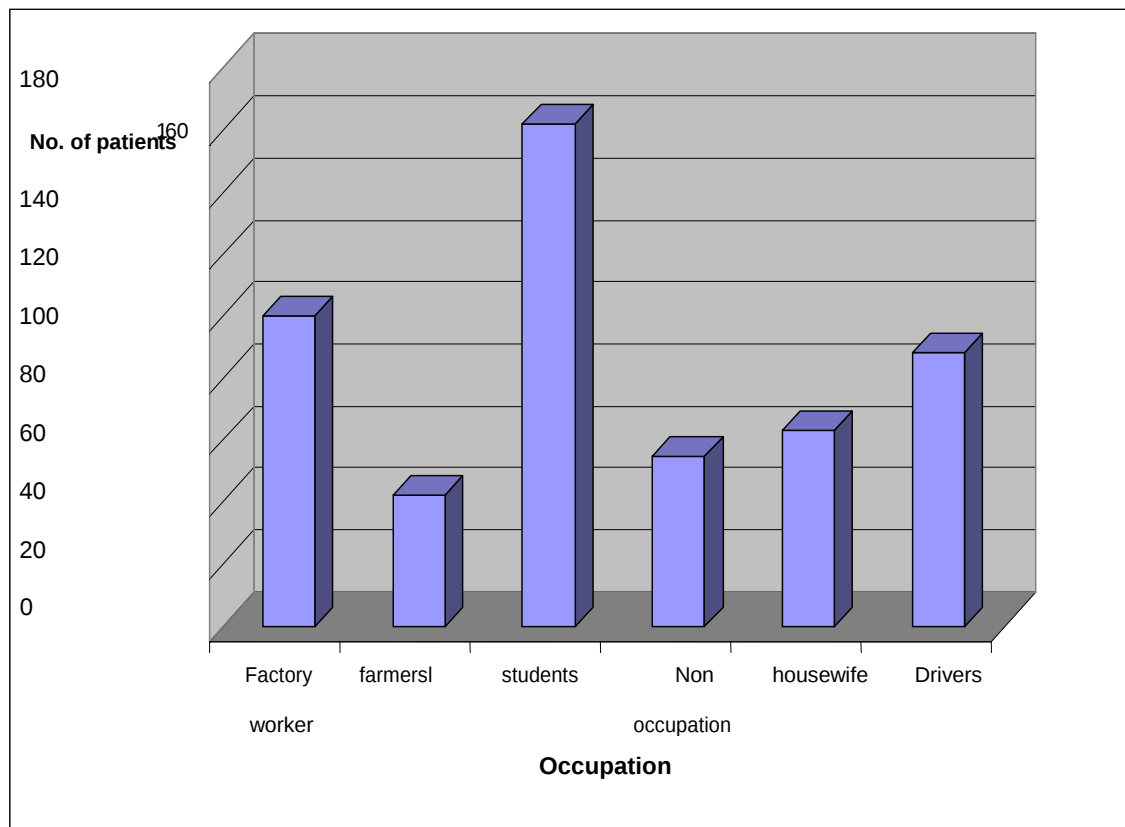


Figure (2): Number of patients with ocular trauma according to different occupation.

2) Trauma:

A) Time of presentation: In this study, there was no delay in presentation to the hospital in 288 cases (56.4%) (Table3). However, 180 patients (35.2%) showed delay of more than 24 hours to

one week, 42 patients (8.4%) showed delay of more than 1 week.

Table (3): Time of presentations of patients with ocular trauma.

Time of presentation	Areas of Nassiryha	Areas outside Nassiryha	Total
No delay(less than 24h)	209(58.1%)	79(1.7%)	288(56.4%)
Delay(24h - 1week)	141(39.2%)	39(7.6%)	180(35.2%)
More than 1week	10(2.7%)	32(6.2%)	42(8.4%)

B) place of trauma: There was a statistically significant difference between gender and the place of trauma. The street related injuries accounted for (73.3%)of injuries in males and (26.7%) in females. Workplace related injuries accounted for (86.5%) of injuries in males and (13.5%) in females. Home re-lated injuries

accounted for (10.2%) of injuries in males and (89.8%) in females. The street and work-place related injuries were more common in males than females. home related injuries were more com-mom in females than males (p<0.001chi square test).

Table (4): The correlation between the place of trauma and gender.

Place	No. of males	No. of females	Total
Street	182(35.8%)	66(12.9%)	248(48.7%)
Workplace	142(27.8%)	22(4.3%)	164(32.1%)
Home	10(1.9%)	88(17.2%)	98(19.15%)

Total	334(65.5%)	176(34.5%)	510(100%)
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C) Cause of injury:

For males and females, blunt objects represent (33%) of eye injuries. In (Table 5) stones are more frequent cause (15%) of eye injury followed by woodsticks (13%), hand fist (3%), metal sticks (1.3%) and balls (1%). Although there was difference in the cause of ocular trauma between males and females, these were not statistically significant ($p > 0.05$ chi square test). Sharp objects represent

(56.2%) of eye injuries. In (Table 6) knives were a more frequent cause (21.5%) of eye injuries followed by scissors (17.2%), metal wire (6.6%), glass (6.2%) and pencils (4.5%). Gun shots represent 10.7% of ocular trauma. In this study, there was a correlation between the type of sharp object as a cause of trauma and gender, trauma by a knife was more common in males than females ($p < 0.001$ chi square test).

Table (5): Different types of blunt objects causing ocular trauma.

Blunt objects	Male	Female	Total
wood sticks	37	30	67
stones	44	30	74
metal sticks	5	2	7
hand and fist	12	3	15
balls	2	3	5
Total	100	68	168

Table (6): Different types of sharp objects causing ocular trauma.

Sharp objects	Male	Female	Total
knife	90	20	110
scissor	43	45	88
metal wires	24	10	34
pencil	16	7	23
glass	18	14	32
Total	191	96	287

3) Examination findings:

In our study all injuries were mechanical trauma which divided into open and closed globe injury. To our surprise chemical injuries were not recorded in the cases of our study. In our study, the prevalence of open globe injury was more predominant than closed globe injury, and was higher in males than in females. Open-globe eye injuries were classified into three categories: perforating injuries (1%), globe ruptures (89.2 %), and IOFB injuries (9.8%).

There was a different incidence of open globe injuries (415 eyes) and closed globe injuries (95 eyes). Fifty eyes (9.8%) had an intraocular foreign body (IOFB). There was no significant difference in frequency of right vs. left eye injuries (266 right vs. 244 left). There were five bilateral perforating injuries.

1) The Globe:

Open globe injuries were reported in 415 cases which represent (81.3%) of total injuries. In Table (7) the different diagnosis of open globe injuries are shown. A patient can have more than one diagnosis. It is shown that 40% had corneal wounds, 6.6% had limbal wounds, 24% had scleral wounds, 27.8% had

corneoscleral wounds, 37% had iris prolapse, 20.5% had traumatic hyphema, 29.4% had traumatic cataract, 9.8% had IOFBs, and 1% had perforating injuries. There was a statistically significant

difference between the number of males and females in open globe injuries which it is more common in males than females ($P < 0.001$ chi square test).

Table (7): Different types of open globe injuries in males and females.

Open globe injury	No. of males	No. of females	Total
Corneal wound	121	82	203
Limbal wound	23	11	34
Scleral wound	91	32	123
Corneoscleral wound	72	70	142
Iris prolapsed	101	89	190
Traumatic hyphema	67	38	105
Traumatic cataract	79	71	150
IOFB	43	7	50
Perforating injuries	2	3	5

Closed globe injuries

Were recorded in 95 cases which represent (18.7%) of total injuries. In table (8), the different diagnosis of closed globe injuries are shown. It is shown that 6.6% of patients had traumatic hyphema, 4% had traumatic cataract, 2.7% had subconjunctival hemorrhage and conjunctival tear, 1.9% had subluxated lens, 1.5% had corneal intrastromal FBs, 0.7% had

dislocated lens, 0.3% had commotio retinae, and 0.3% had avulsed optic nerve head. No significant differences were found in the distribution of closed globe injuries between males and females. ($p > 0.05$ chi square test). Table (8): Distribution of different types of closed globe injuries in males and females.

Closed globe injury	No. of males	No. of females	Total
Corneal intra- stromal FB	5	3	8
Traumatic hyphema	11	23	34
Traumatic cataract	9	12	21
Subconjunctival hemorrhage +conjunctival tear	9	5	14
Subluxated lens	4	6	10
Dislocated lens	3	1	4
Commotio retinae	2	0	2
Avulsed optic nerve head	1	1	2

2) Foreign Bodies:

Penetrating trauma with foreign bodies had been given special attention for the site, pathway and material. However, the pathway was not accurately reported. The study showed 58 cases of foreign body injury. There were 8 corneal intrastromal FBs, 3 patients were females and 5 patients were males. 50 patients were having intra ocular foreign bodies, 37 patients were males and 13 patients were females. 36 of the FBs were metallic (iron) IOFB, 6 were glass, and 8 were shots (lead). Of

these 47.9% of patients with FB were workers, 20.3% were students, 14.6% were drivers, 7% were housewives and 10.2% in non occupation.

3) Laterality:

In our study, the right eye was involved in 266 cases which represent 52.1% of eye injuries. The left eye was involved in 244 cases which represent 47.8% of eye injuries. Bilateral eye injuries were found in 5 patients (1% of cases). In 17 patients the visual acuity in the fellow eye was impaired due to a previous ocular trauma or disease.

Discussion:

Because of the delicacy and the peculiarities of ocular tissues, an injury that would be insignificant elsewhere in the body is a serious one in the eye ^(11,18). Direct trauma invariably results in severe damage and often loss of the eye, and ocular injuries are an important cause of visual loss worldwide. ^(16,17)

The epidemiological data varies from one part of the world to another. In the current epidemiological study, we were aiming at analyzing, as much as we could, all aspects of the trauma presented to Habobi general hospital.

Ocular injuries are common and largely a preventable cause of monocular visual impairment and blindness. The population at a higher risk of trauma had been identified as those involved in street activities. We couldn't identify directly a link between a specific occupation and increased risk of trauma. Although, as mentioned earlier, workers and students were the most involved, this is not an indication of a link to their workplace as they were involved in other places. The risk factors can be summarized, in that we have relatively violent behavior in our streets; throwing stones, fist fights, knives, sticks and guns, in addition to the workers using hammers or rough instruments.

Worldwide interest in the field of ocular trauma is rapidly growing as increasingly effective techniques for prevention and

treatment are developed ⁽⁸⁾. Ocular trauma is often disabling and creates enormous costs to both the victim and society ⁽¹³⁾. Ocular trauma is a global health problem. It is defined as a result of mechanical or non mechanical injury to the eye ^(9, 15). A limitation of a retrospective study of this type is that the data are static, while the epidemiology of ocular trauma is dynamic ^(6, 7, 10). The data were derived from a single hospital's records, the number of people at risk could not be accurately determined and a bias of underestimating the true prevalence of ocular trauma may have occurred due to the loss of many of the cases of minor trauma or those found in polytraumatized patients by motor vehicle trauma.

Recommendations:

Trauma patients should receive comprehensive primary management, due to poor compliance with follow-up examinations and secondary rehabilitation so there are a real need for ophthalmic emergency services in general hospitals. Appropriate management by general phy.

Sicians before ophthalmologic consultation is another key factor in improving the visual prognosis, providing an opportunity for secondary prevention. Proper training of general practitioners should be encouraged to provide adequate medical management of eye injuries, recognize the severity of the trauma, and refer patients as soon as possible.

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الخلاصة

دراسة استرجاعية لحالات إصابات العين في مستشفى الحبوبى التعليمي في ذي قار

لقد تزايد اهتمام العالم من حولنا في مجال إصابات العيون حيث انها احدى الأسباب الرئيسية المؤدية للعمى في جميع انحاء العالم.

تتناول هذه الدراسة الاسترجاعية الخصائص الشخصية والأسباب المؤدية لإصابات العين وذلك لفترة ثلاثة سنين (٢٠١٣-٢٠١٦) في مستشفى الحبوبى التعليمي في الناصرية. جميع المرضى المصابين بإصابات خطيرة في العين والذين كانوا يحتاجون الدخول بالمستشفى للعلاج كانوا ضمن المجموعة المختارة في هذا البحث. لقد قمنا باستخراج البيانات بأثر رجعي من ملفات المرضى وتضمنت هذه البيانات عمر المريض والجنس ومكان الإقامة وقت الدخول وسبب الإصابة ونوع الإصابة. في هذه الدراسة نبين ان متوسط عمر المريض ٢٣ سنة مع الانحراف المعياري ٢٠ سنة. في دراستنا يشكل الأطفال نسبة ٤٠% من المرضى بينما الكبار نسبة ٦٠% من المرضى وأيضا يشكل الذكور نسبة أكبر من الاناث في هذه الدراسة. لقد وجدنا في دراستنا ان عمال المصانع يمثلون ١٩% من مجموعة المرضى والمزارعين نسبة ٨% والطلاب نسبة ٣١% والسائقين نسبة ١٠% وربات البيوت نسبة ١٢% والذين لم يتم تسجيل وظائفهم نسبة ١٧%. من النسب السابقة نجد ان الطلبة والعمال يمثلون نسبة مرتفعة من الإصابات. كما أظهرت الدراسة ان حوالي ١٨٠ حالة تأخرت في المجيء للمستشفى بعد الإصابة أكثر من ٢٤ ساعة وان حوالي ٤٢ حالة تأخرت أكثر من أسبوع والسبب هو اهمال هؤلاء المرضى حيث انهم لا يتوقعون ان تكون الإصابة خطيرة لهذه الدرجة. من الملاحظ في هذه الدراسة ان الشارع يمثل النصيب الأكبر من أماكن وقوع الإصابات يليه أماكن العمل ثم المنزل. كما اننا وجدنا ان العنف بالآلات الحادة مثل السكاكين والحجارة ومسدسات الرش بين الأطفال هي الأكثر شيوعا في الشارع. في دراستنا نجد ان الإصابات كلها ميكانيكية حيث تشمل إصابات العين وهي غير مفتوحة والتي تمثل ١٩% من اجمالي الإصابات.

من نتائج هذه الدراسة نجد ان هناك ضرورة شديدة للوقاية والحماية من إصابات العين الخطيرة والتي قد تؤدي الى العمى حيث ان السلوك العنيف نسبيا في شوارعنا ورمي الحجارة بالإضافة الى الافراد الذين يستخدمون المطارق أحد العوامل الخطيرة لإصابات العين.