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## Original Research Article

### Pattern of ocular trauma in Benghazi eye hospital, Benghazi, Libya.

*Gebril MM*

*Ophthalmology Department, Faculty of Medicine, University of Benghazi. Consultant Ophthalmologist in El Naher Eye Hospital, Benghazi, Libya.*

*Email address: Mariam.gebri@uob.edu.ly*

#### ABSTRACT:

**Background:** This study was conducted to determine the pattern of ocular trauma in Benghazi- Libya .

**Methods:** All cases of ocular trauma admitted to Benghazi eye hospital from January 2011 to August 2012 were retrospectively reviewed for open- or closed-globe injury (OGI or CGI). Data extracted included age, sex, residence, initial and final visual acuity (VA), cause and treatment of injury. The injuries were classified by Ocular Trauma Classification System.

**Results:** Out of the 805 patients, there were 540 patients (67.0%) with Closed Globe Injury and 254 patients (31.5%) with Open Globe Injury and 11 patients (1.3%) with mixed trauma.

**Conclusion:** This analysis shows a pattern of eye injury largely similar to reports from other parts of the world. Eye injury affected mainly younger age groups and road traffic accidents were the most common cause.

**Keywords:** Open globe injury, closed globe injury, pattern, ocular trauma, eye injury, Benghazi.

#### INTRODUCTION

Despite the fact that the eyes represent only 0.27% of the total body surface area and 4% of the facial area, they are the third

most common organ affected by injuries after the hands and feet [1].

Ocular trauma is the leading cause of uni-ocular visual disability and non-congenital uni-ocular blindness [1, 2]. It has been estimated that 90% of all ocular injuries are

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avoidable [3, 4]. Worldwide there are approximately 6 million people blind from eye injuries, 2.3 million bilaterally visually defected, and 1.9 million with unilateral visual loss; these facts make ocular trauma the most common cause of unilateral blindness [5].

In population-based surveys, the percentage of monocular blindness due to trauma ranged from 20%–50%, and of bilateral blindness from 3.2%–5.5%. Hospital-based studies of eye trauma indicate that about two-thirds of those affected are males, predominantly children and young adults [6].

These numbers increase and also the causes vary when there is an armed conflict; open globe injuries are the most serious eye injuries in war as in peace time.

The aim of this study is to shed a light on the pattern of eye trauma among patients managed at Benghazi Eye Hospital.

**METHODS AND MATERIALS**

A 20 months duration retrospective study was conducted on ocular trauma in Benghazi eye hospital, Benghazi- Libya. It included cases who were admitted from 1-1-2011 to 31-8-2012 embracing the period of the armed conflict in Libya (17-2-2011 to 24-10-2011).

805 patients were included in the study. Data extracted from the hospital records include age, sex, place and date of trauma; other details included the cause, nature and circumstance of injury using a structured data collection form. It was edited, cleaned, checked for completeness and cross-checked for accuracy to ensure quality. Operational definitions were according to World Health Organization (WHO). Cases with surgical repair done before presentation to our hospital or where clinical findings were determined to be of non-traumatic nature were excluded. The patients either presented directly to the

hospital or were referred from other public or private hospitals.

**STATISTICAL ANALYSIS**

Data were entered into a Microsoft Excel spreadsheet and then transferred to Statistical Package for Social Sciences (SPSS®) (trial version 16.0), and was analyzed statistically by descriptive methods.

**RESULTS**

A total of 805 patients were admitted to the hospital in time period from January -2011 to August -2012. In 2011 (466) patients (57.9%), and in 2012 (339) patients (42%). According to residence 506 patients (62.9%) from Benghazi, and 299 patients (37.1%) from outside. There were 540 patients (67.0%) with Closed Globe Injury and 254 patients (31.5%) with Open Globe Injury and 11 patients (1.3%) with mixed trauma. Males were 679 which account for 84.3%, and females 126 (15.7%), with a ratio of 5:1. The mean age was 22.05 with median of 20 year (SD=16.07).

**Table (1): age distribution of patients presenting with ocular trauma**

Age range in years	Number of patients	Percentage
Less than 15	317	39.4
15-30	261	32.4
30-45	165	20.5
45-60	44	5.5
60 or more	18	2.2
<b>Total</b>	<b>805</b>	<b>100</b>

Right eye was involved in 453 (from total of 850 eyes) (53.2%); and left eye in 397 (46.7%) and 45 were bilateral (5.9%). Road traffic

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accident had the maximum number of trauma causation with 164 patient (20.4%), followed by street fight in 136 patient (16.9%), war in 124 patient (15.4%), other accidental causes in 98 patient (12.2%), play 67 patient (8.3%), fall 75 patient (9.3%), and unrecorded cause in 130 patient (15.3%), (Figure 1).

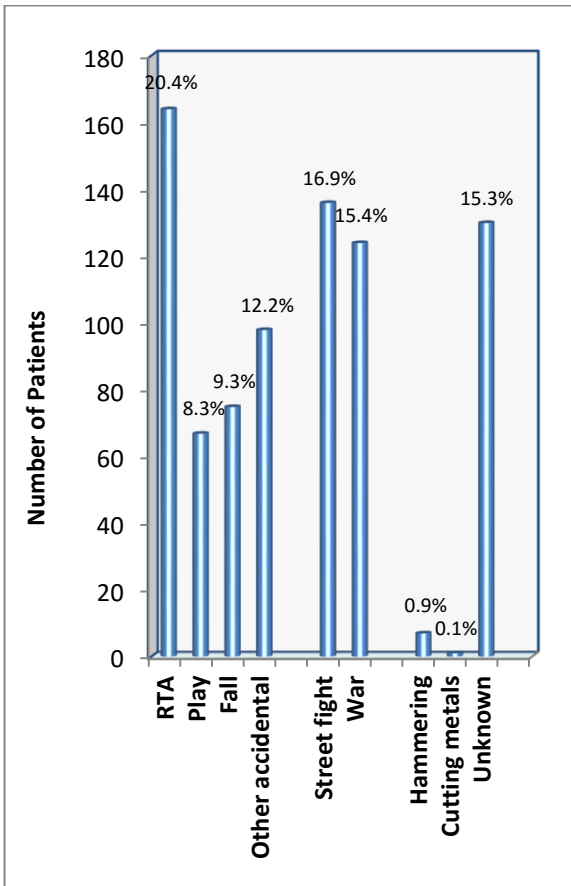


Figure 1: Frequencies of causes of eye trauma.

Regarding the traumatic agent, the common agents were: metallic objects in 208 eyes (25.8%), explosive agents in 117 eyes (14.5%), plastic object in 93 eyes (11.6%), glass in 83 eyes (10.3%), woody object in 68 eyes (8.4%), sharp metallic object in 57 eyes (7.08%), and unrecorded cause in 118 eyes (14.7%), (Figure 2).

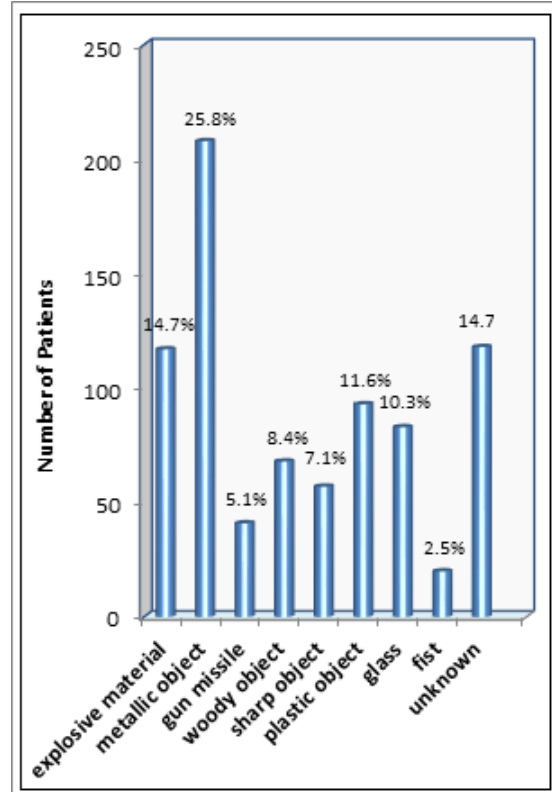


Figure 2: Frequencies of traumatic agents causing eye trauma.

Most of the patients (483, 60%) presented within 24 hours, and 139 (17.3%) in 24-48 hours (Table 2).

Table (2): Time interval until presented to the hospital.

Time interval in hours	Frequency	Percentage
Not recorded	70	8.7
<24	484	60.0
24-48	139	17.3
49-72	32	4.0
>72	81	10.1
<b>Total</b>	<b>805</b>	<b>100</b>



Adnexal injury, orbital wall fracture, and facial injury were present in 534 patients (66.3%).

Visual acuity at presentation in both types of trauma; vision with <6/60 in 411 patient (51%), 6/60 to 6/12 in 202 patients (25%), 6/6 in 62 patient (7.7%), and not recorded in 130 patient (16.1%).

But the story differed with the vision on discharge. According to closed eye injury, number discharged with vision of 6/6 was 203 patients (36.8%), 6/60 and better was 159 patients (28.8%), blind i.e. less than 6/60 was 73 patients (13.2%), not documented was 116 patients (21.05%).

In opened eye injury 8 patients (3.01%) had 6/6 vision, 6/60 -6/9 in 19 patients (7.1%), blind in 153 patients (57.7%), and undocumented in 85 patients (3.0%).

Regarding closed eye injury; 266 eyes (48.2%) had corneal abrasion, and 23 eyes (4.1%) had lamellar cut, 293 eyes (53.1%) had hyphema, 285 eyes (51.7%) with iritis, 3 eyes (0.5%) with iridodialysis, 47 eyes (8.5%) with both. Most of the cases (402 eyes, 73%) did not have posterior segment involvement as retinal detachment or vitreous haemorrhage.

Regarding opened eye injury 23 eyes (8.6%) had exit wound, 74 eyes (27.9%) with intraocular foreign body, traumatic cataract was seen in 162 eyes (61.13%), and retinal detachment in 56 eyes (21.13%).

Surgical repair was performed within 24 hours for 127 (47.9%) eyes, in 24-48 hours for 128 (48.3%) eyes, after 48 hours for 10 (3.7%) eyes, and not done in 10 (3.7%) eyes.

Complications post open eye injury as reopening of wound, endophthalmitis and corneal melt occurred in 105 (39.6%) eyes.

## DISCUSSION

Ocular trauma is an important cause of blindness and ocular morbidity.

As reported by some other studies [7] most of our patients belonged to a young and active age group.

It was found in this study that 71.1% of patients were below 30 years of age with mean age of 22.5 and median of 20 year (SD±16.07), this goes with different studies worldwide which show that ocular trauma is more common in males and in those less than 30 years of age [8-11]. This finding is understandable as such people are likely to engage in risky behaviours and activities which may lead to ocular injuries.

Laterality in ocular injuries also tends to vary in different studies, and there was a slight predominance of injury to the right eye (53.2%) in this study which is similar to (58.5%) in a study by Okoye et al [12].

Commonest cause of ocular injury was road traffic accident (20.4%). Canavan Y.M. et al. reported 32.5% and Mackay et al 70% eye injuries as a result of road traffic accidents [13, 14].

The second cause was street fight (assault, 16.9%) which is similar with MacEwen et al (18.6%) [15]. Groessl et al reported incidence of assault related ocular injuries ranging from 1% to 53% [16].

In this study closed eye injury was more common (67.0%) than open eye injury (34.5%). There is incongruity in the literature regarding the incidence between these two types of injury; this can be interpreted to different hospital protocols on admission and management as some hospitals do not admit mild or uncomplicated hyphema. In addition, different localities where the studies were

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conducted and the time of conducting them does affect the reported frequencies. Such differences may arise from variations in people's living and working conditions or differences in observance of the safety rules in daily activities or in work settings beside our study was conducted mainly in war time.

This finding differs from the result reported by Ojabo CO in Nigeria [17] and Pandita A in New Zealand [18], who reported that closed-globe injuries were more common than open-globe injuries. Cao et al. [19] reported a lower incidence of open-globe than closed-globe injuries. On the contrary, other studies as El-Mekawey et al in Egypt and Jahangir et.al. in Pakistan showed that the open eye injury was higher [20,21] .

534 injuries (66.3%) were associated with injuries of the ocular adnexa, orbital wall fractures, or other non-ocular structures, demonstrating that ocular trauma requires a multidisciplinary approach. In our study, open globe injuries had poorer visual prognosis than closed globe injuries. In a multivariate analysis of prognostic factors in penetrating eye injury, Sternberg et al. noted that a good initial vision statistically correlated with a good final vision [22]. This is consistent with other studies, and is the most important prognostic factor when counselling patients after injury. [22-27]

## CONCLUSION

This analysis shows a pattern of eye injury largely similar to reports from other parts of the world. Eye injury affected mainly younger age groups and road traffic accidents were the most common cause. Health education and appropriate preventive measures should therefore be directed at these high risks.

## CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

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## ملخص باللغة العربية

## نمط اصابات العين في مستشفى بنغازي للعيون- بنغازي، ليبيا

مریم م.ب.جبریل  
 قسم العيون، كلية الطب، جامعة بنغازي. استشاري في مستشفى النهر للعيون.  
 البريد الإلكتروني [Mariam.gabri@uob.edu.ly](mailto:Mariam.gabri@uob.edu.ly)

**خلفية الدراسة:** أجريت هذه الدراسة لتحديد نمط اصابات العين في بنغازي ليبيا.

**طرق الدراسة:** تمت دراسة بأثر رجعي كل حالات اصابات العين التي تمت معالجتها بمستشفى النهر للعيون بمدينة بنغازي في الفترة من يناير 2011 وحتى أغسطس 2012. تضمنت البيانات المستهدفة كل من عمر المرضى وجنسهم ومكان اقامتهم وحدة بصرهم قبل بدء العلاج وبعد انتهائه وكذلك أسباب الإصابة وكيفية المعالجة. تم تصنيف الاصابات اعتمادا على "نظام تصنيف اصابات العين".

**نتائج الدراسة:** تبين انه من بين 805 مصاب يوجد 540 (67.0%) من نوع اصابة العين المغلق و254 (31.5%) من النوع المفتوح و 11 مصابا لديهم النوع المختلط (1.3%).

**الاستنتاج:** بينت هذه الدراسة أن نمط اصابات العين في فترة الدراسة لا يختلف كثيرا عن النمط المذكور في دراسات عالمية ومحلية تناولت نفس الموضوع كما بينت بوضوح ان السبب الرئيسي لاصابات العين هو حوادث الطرق. عليه، فانه يجب توجيه التنقيف الصحي واجراءات الوقاية نحو عوامل الأخطار المذكورة مثل حوادث الطرق والفئات العمرية صغيرة السن.

**الكلمات المفتاحية:** اصابات العين المفتوحة، اصابات العين المغلقة، نمط اصابات العين، بنغازي، ليبيا

