

# Patterns of Eye Emergencies During the Weekend among Egyptians

OLA ZAKARIA ELSHEIKHA, Ph.D., F.R.C.S. (Glasg)

The Department of Ophthalmology, Faculty of Medicine, Cairo University

## Abstract

**Background:** Ocular emergencies are a worldwide cause of visual impairment. The emergency eye service of Cairo University Hospitals is a tertiary referral center for eye emergencies in Egypt. Researchers pointed out that pattern of casualties on weekends differed from weekdays with higher utilization and less severity of presenting patients during the weekends. However; little, if any, was reported regarding weekend eye emergencies.

**Aim of Study:** Casualty service of Cairo University Hospitals is a tertiary referral center for eye emergencies in Egypt. In this study I analyzed patients admitted through this service including trauma and medical eye emergencies during weekends.

**Patients and Methods:** In a prospective observational study I enrolled all patients admitted through the casualty eye service during the same time period every weekend for 3 months from September 2021 till December 2021. Data were tabulated and analyzed regarding the patients' demographic data, presenting visual acuity, patient's diagnosis, ocular imaging investigations and management.

**Results:** 563 patients presented to the emergency service of whom 63 were admitted to the hospital for their emergency eye condition. Age of admitted patients ranged from 1.5 to 82 years (mean 28.3 SD 24.4). About 60% of admitted patients were due to trauma while the other 40% were not due to trauma. Corneo-scleral lacerations comprised the highest percentage of all admissions followed by corneal infiltrates then acute glaucoma conditions. Of traumatic globe injuries, 80% were open while remaining were closed globe injuries. Open globe injuries were: 84% lacerations (of whom one fifth with intraocular foreign bodies), 12% rupture globes, and 4% globe perforation. Children (under 12 years old) constitutes about half of all admissions and nearly 80% of these patients were admitted for traumatic eye conditions, odds 3.91 (CI 1.3-11.9),  $p=0.02$ .

**Conclusion:** Non-trauma causes comprise a considerable sector of patients needing admissions of whom corneal infiltrates was the leading cause. The factors behind the high rates of ocular trauma in children need to be investigated.

**Key Words:** Trauma – Medical eye emergencies – Egypt – Lacerations – Open globe injuries.

**Correspondence to:** Dr. Ola Zakaria Elsheikha,  
[E-Mail: olaelsheikha@gmail.com](mailto:olaelsheikha@gmail.com)

## Introduction

**OCULAR** emergencies are a worldwide cause of visual impairment [1]. The emergency eye service of Cairo University Hospitals is a tertiary referral center for eye emergencies in Egypt. Few studies have reported the patterns of eye trauma for patients admitted through this service and even fewer, if any, reported the patterns of medical eye emergencies among these patients.

Researchers pointed out that pattern of casualties on weekends differ from weekdays with higher utilization and less severity of presenting patients during the weekends [2]. However; little, if any, is reported regarding weekend eye emergencies. As over-congestion and a lack of sophisticated urban planning continue to plague the streets of ever-growing Cairo, many patients refrain to present to casualties during weekdays. Instead, they keep presenting by their acute eye conditions to tertiary referral centers in Cairo during weekends where the traffic conditions are smoother and their relatives are off-work to transport them to hospitals. In this study, we analyzed patients admitted through this service including trauma and medical eye emergencies during the weekends.

## Patients and Methods

All patients admitted to emergency eye service of Cairo University Hospitals every weekend from September 2021 to December 2021 have been included in this prospective observational study. Patients were examined and managed by the treating ophthalmologist who did not participate in analysis of the results to avoid performance bias. An electronic medical template had been specially developed for recording patients' data. This study was approved regarding ethics by the Ophthalmology Department, Cairo University, and was done under the supervision of the same body. Written consents were taken from enrolled patients and

Tenets of Helsinki Declaration have been respected. The primary outcome measures include: Demographic data, presenting visual acuity (whether it was possible to measure it or not), patient's diagnosis, ocular imaging investigations and management whether there was a surgical intervention or not.

Data were statistically represented in terms of range, mean, standard deviation (SD) and percentages. Whenever required, comparisons were done using analysis of variance for parametric data. A probability value ( $p$ -value) less than 0.05 was considered significant. For comparing nonparametric data, chi square test was performed. All statistical calculations were done using computer programs Microsoft Excel version 7 (Microsoft Corporation, NY) and SPSS (Statistical package for the social science) and statistical programs (SPSS Inc., Chicago, IL).

### Results

Five hundred and sixty three patients have presented to the casualty eye service over 288 casualty hours of whom sixty three were admitted to the hospital for their emergency eye condition. This was equivalent to a mean of five admissions per day over the weekend or one admission for every nine presenting patients. The age of the admitted patients ranged from 1.5 to 82 years (mean 28.3 SD 24.4). About 60% (38 patients) were due to traumatic eye conditions (mean age 31.2 years SD 20.1) while the other 40% (25 patients) were not due to trauma (mean age 39.1 years SD 26.8). The difference of age between trauma patients and non-trauma ones was statisti-

cally significant ( $p=0.004$ ). Most of admissions were males whether in the trauma group, 73.7%, or the non-trauma ones, 72% ( $p=0.367$ ). Left eyes showed double the chance to present with traumatic eye condition. However right/left difference between trauma and non-trauma patients was insignificant,  $p=0.380$ .

Corneo-scleral lacerations comprised the highest percentage of all admissions followed by corneal infiltrates then acute glaucoma conditions. Diagnoses of patients are shown in Fig. (1). Of traumatic globe injuries, 80% were open while remaining were closed globe injuries. Open globe injuries were lacerations (84%, of whom one fifth were carrying intraocular foreign bodies), rupture globes (12%) and globe perforation (4%). Patterns of visual acuities are shown in Fig. (2). It was more impossible to measure the visual acuity in trauma patients compare to non-trauma ones,  $p=0.026$ . There was a statistically significant correlation between visual acuity and patients' diagnoses,  $p=0.003$ . Plain X-rays and CT scans were the more frequent with trauma cases whereas B-scan ultrasounds were with medical eye emergencies,  $p<0.001$  Fig. (3). Twenty four (63.2%) of trauma patients received surgical interventions compared to four patients (16%) with non-traumatic eye emergencies, ( $p<0.001$ ).

Children (under 12 years old) constituted about half of all admissions and nearly 80% of these patients were admitted for traumatic eye conditions, odds 3.91 (CI 1.3-11.9),  $p=0.02$ . It was not possible to measure visual acuity clinically in about 90% of children, whether on admission or during their hospital stay ( $p<0.001$ ).

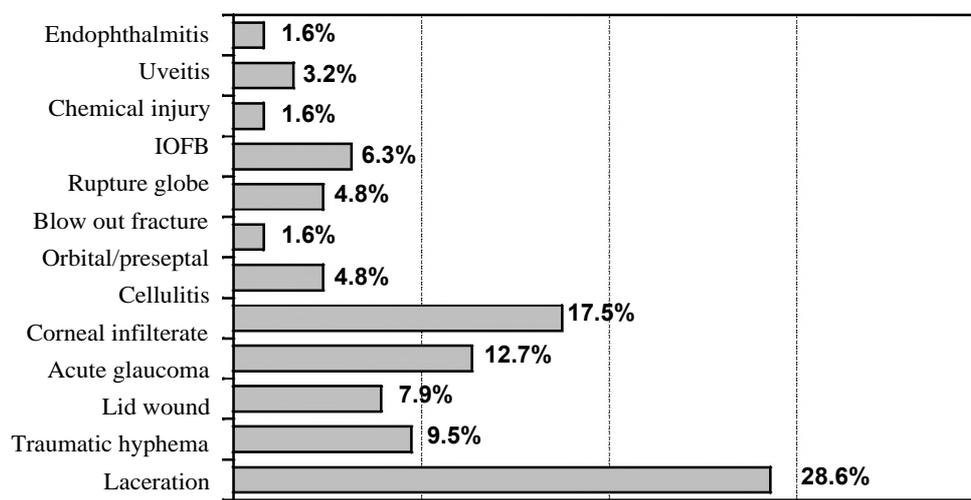
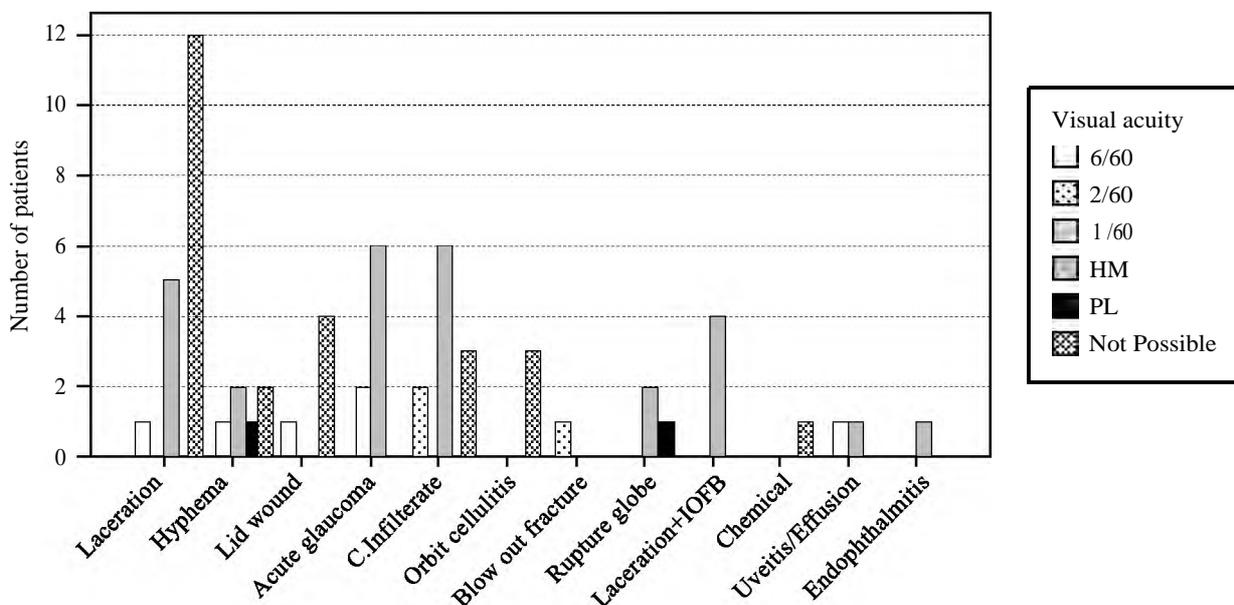
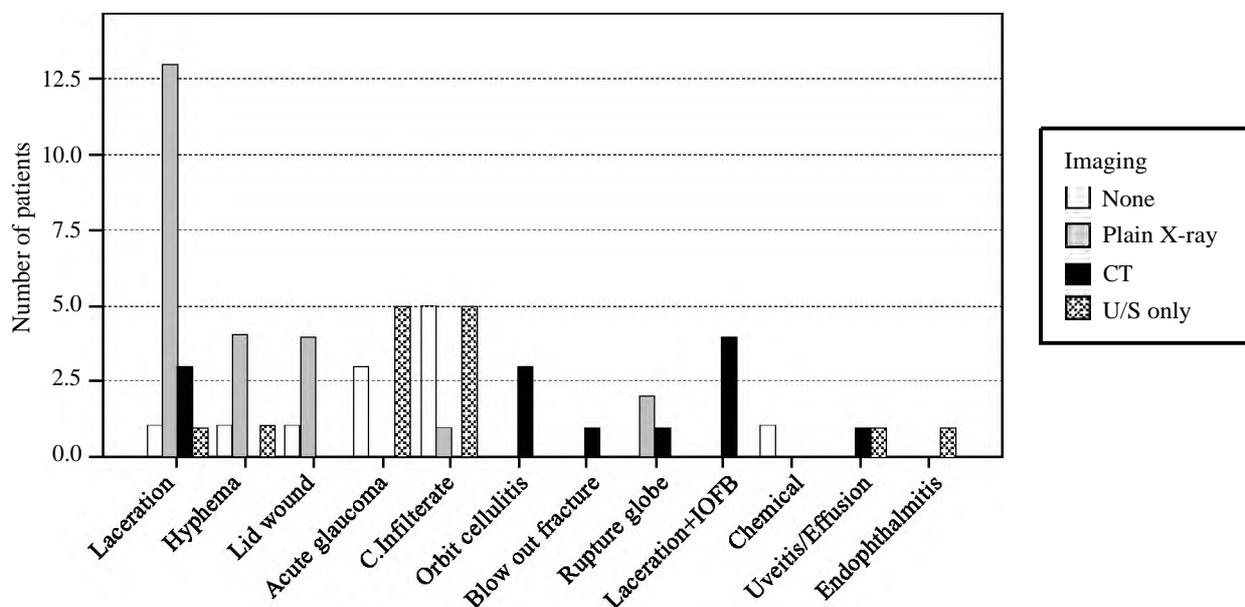


Fig. (1): Patterns of diagnoses of patients admitted through the emergency eye services during the weekend.



Diagnoses of patients admitted through the emergency eye services  
 Fig. (2): Patterns of visual acuity of patients admitted during the weekend.



Diagnoses of patients admitted through the emergency eye  
 Fig. (3): Patterns of imaging investigation performed to eye.

**Discussion**

Advances in the study of eye emergencies have been facilitated by the accumulation of the related epidemiological data [3]. In 2008, an Egyptian study was conducted on 153 eyes of 147 patients (80% males) sustaining serious ocular injury requiring hospitalization. There were 80.4% open globe injuries while closed globe injuries were 19.6%. Of the open globe injuries, intraocular foreign bodies were present in 24%. They added that 77% were having vision worse than 1/60.

However, they did not comment on the status of non-traumatic eye emergencies [4]. Wong and his colleagues highlight the importance of corneal infiltrates as ocular morbidity requiring admissions [5]. Their daily rates of admission for these cases were much lower compared to those found in the current study. This can be explained by the weekend effect among Egyptian patients were patients prefer to present during the weekend.

An analysis for eye injuries conducted during Palestinian Intifada revealed about one quarter of

the patients with lost perception of light [6]. In 2012, a recent Egyptian study highlighted the importance of the prognostic value of the presenting visual acuity in the setting of mass eye casualty [7]. The importance of the presenting visual acuity is reassured in the current study. However, poor presenting visual acuity in the current study report was similar to the previous Egyptian ones [4,7] but at higher rates compared to regional ones [6].

About a quarter of a million children present with serious ocular trauma every year. Researchers pointed out that injuries occur disproportionately common in childhood [8]. A regional Egyptian study described that nearly 90% of injuries in children occurred below twelve years of age. However, they did not report on non-traumatic eye emergencies among these patients. They highlighted that the socioeconomic status, family negligence, and lack of supervision as important factors of pediatric eye injuries in Egypt. However they reported children eye trauma to be representing at 3.7% when compared to all eye emergencies [9]. This lower rate compared to the one found in the current study, could be explained by the fact that Cairo university hospitals as the main tertiary referral center all over Egypt, in addition to the weekend effect, were parents tend to present with their affected children during weekends.

In conclusion, this study showed that non-trauma cases comprise a considerable sector of patients needing admissions of whom corneal infiltrates was the leading cause. The factors behind the high rates of ocular trauma in children need to

be investigated. The patterns of ocular emergencies during the weekend need to be considered when planning the delivery of emergency ocular services during the weekends.

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## أنماط طوارئ العيون للمصريين خلال عطلة نهاية الأسبوع

خلفية الدراسة: حالات طوارئ العيون هي سبب عالمي لضعف البصر. خدمة طوارئ العيون في مستشفيات جامعة القاهرة هي مركز إحالة من الدرجة الثالثة لحالات طوارئ العيون في مصر. نمط الإصابات في عطلات نهاية الأسبوع يختلف عن باقي أيام الأسبوع.

الهدف من الدراسة: في هذه الدراسة قمنا بتحليل المرضى المترددين في طوارئ العيون في مستشفيات جامعة القاهرة في خلال عطلات نهاية الأسبوع.

المرضى والطرق: في دراسة قائمة على الملاحظة، قمنا بتسجيل جميع المرضى الذين تم قبولهم من خلال خدمة طوارئ العيون خلال نفس الفترة الزمنية كل عطلة نهاية أسبوع لمدة 3 أشهر.

نتائج الدراسة: تم عرض 563 مريضاً على خدمات الطوارئ، تم إدخال 63 منهم إلى المستشفى لحالة عيونهم الطارئة. تراوحت أعمار المرضى المقبولين من 1.5 إلى 82 سنة (متوسط 24.4 ± 28.3 SD). حوالي 60٪ من المرضى الذين تم قبولهم كانوا بسبب الإصابة بينما الـ 40٪ الباقية لم يكونوا بسبب إصابة. الأطفال أقل من 12 عاماً يشكلون حوالي نصف حالات الإدخال.

الاستنتاج: تشمل الأسباب غير المصاحبة للصدمة قطعاً كبيراً من المرضى الذين يحتاجون إلى قبول والذين كانت التهابات القرنية السبب الرئيسي لهم. يجب التحقيق في العوامل الكامنة وراء المعدلات المرتفعة لصدمة العين عند الأطفال.