One month outcome of ocular related emergencies in a tertiary hospital in Central Saudi Arabia

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ABSTRACT

الأهداف: استقصاء عدد ونوعية وخصائص المرضى الوافدين والمحولين إلى وحدة طوارئ العيون، وبحث ما نتج عن فحصهم ومتابعتهم، وتقدير عبء الحالات الجادة الوافدة إلى المستشفى ونسبتها من مجمل الحالات باستخدام تقنيات علم الوبائيات لاستخدام هذا التقدير لاحقاً في التخطيط المستقبلي.

الطريقة: أُجريت هذه الدراسة الإسترجاعية للحالات المسجلة والتي وفدت إلى مستشفى الملك عبد العزيز الجامعي، الرياض، المملكة العربية السعودية خلال فترة شهر واحد وهو يوليو 2010م. لقد تم تجميع ومراجعة البيانات وتدقيقها، ثم تخزينها على قاعدة بيانات صممت خصيصاً لهذا الغرض باستخدام برنامج مايكروسوفت أوفيس 2007م. لقد تمت معالجة وتنقيح البيانات وتأهيلها للتحليل، وقد شملت البيانات بعض الخصائص الديموغرافية والطبية منها: العمر، والجنس، والنوع، ومصدر التحويل، والتشخيص الرئيسي، والتدخل الطبي، وخطة الإخلاء.

النتائج: لقد تم إدراج 1,412 مراجع في هذه الدراسة بمتوسط 47 مراجع يومياً لوحدة طوارئ العيون. وكان مجموع عدد الذكور 863 ذكر (61%)، ومتوسط العمر 28.2 عاماً. أشارت نتائج الدراسة إلى أن أعلى نسبة تشخيص قد تمثلت في إصابات العين 382 (27%)، تلتها كلا من: التهابات الملتحمة 211 (14.9%)، والجفون والجهاز الدمعي 133 (9.4%)، وشبكية العين 51 (3.6%)، والزراق 30 (2.1%)، وأعصاب العين 22 (1.6%)، والتهاب القرنية 20 (1.4%)، والقزحية 10 (0.7%)، وظاهر الصلبة 5 (0.35%). كما كانت الغالبية العظمى من المرضى (77.5%) من المترددين على المستشفى بدون تحويلات من طبيب الأسرة. كما قدرت نسبة الحالات غير الحرجة أو الطارئة بنسبة 50.4% (712) من إجمالي المراجعين. كما تم توصيف تلك الغالبية على أنها حالات جفاف القرنية، وحساسية العين، والتهاب الجفون، أو تحوصلات الغدد الدمعية.

خاتمة: خلصت الدراسة إلى أن الغالبية العظمى من المترددين على وحدة الطوارئ ليسوا في الواقع حالات حرجة أو طارئة، وبالتالي فإنه يمكن التعامل معهم من قبل مساعدي طب العيون المتمرسين والمدربين شريطة أن يتم ذلك تحت إشراف ومتابعة استشاريو طب العيون.

Objectives: To investigate the number and characteristics of patients attending the Accident/Emergency (A/E) Department of a tertiary care hospital in Riyadh, and to determine their route of referral, and pattern of ocular emergency cases.

Methods: A retrospective study was carried out using the records and history of all patients attending the A/E at King Abdulaziz University Hospital (KAUH) in Riyadh, Kingdom of Saudi Arabia in July 2010. Data collected included time of arrival, age, gender, source of referral, principal diagnosis, attending doctor, action taken, and discharge plan.

Results: A total of 1,412 patients were recruited in our study with an average daily attendance of 47 patients. A total of 863 (61%) patients were male, and their mean age was 28.2 years. The most frequent diagnosis in patients was trauma (382, 27%), followed by conjunctivitis (211, 14.9%), lids and lacrimal system (133, 9.4%), retina problems (51, 3.6%), glaucoma (30, 2.1%), neuro-ophthalmology (22, 1.6%), keratitis (20, 1.4%), uveitis (10, 0.7%), and episcleritis (5, 0.35%). Most cases (77.5%) seen were self-referrals. Additionally, 712 (50.4%) of cases were considered as non-emergency, which are visiting the A/E for dry eye, chalazion, blepharitis, and allergy.

Conclusion: Most cases seen at our ophthalmic A/E had non-urgent conditions that could be managed satisfactorily by trained ophthalmic assistants under supervision of an ophthalmologist.

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Acute ocular conditions are common, constituting significant proportion of the work of general practitioner and hospital's accident and emergency (A/E) departments.[1,2] King AbdulAziz University Hospital (KAUH) in Riyadh, Kingdom of Saudi Arabia (KSA), is a tertiary referral Eye and Ear, Nose, and Throat hospital where it serves Riyadh city and its urban and suburban peripherals with an estimated population of approximately 6 million inhabitants. The ophthalmology A/E Department of KAUH provides a 24-hour, 7 days-a-week dedicated eye emergency care to patients whose regular ophthalmic provider is not readily available. The ophthalmology A/E unit provides care for many different types of urgent and emergent eye problems on a walk-in basis with no required referral from primary, or secondary health facilities. Patients are seen in the order of their arrival, and according to the level of severity. Ophthalmology A/E unit is staffed with 2 ophthalmic residents, senior registrar (an ophthalmologist who completed the training program), 3 nurses, and other support staff. The unit has access to the services of consultants in various specialties such as retina, cornea, glaucoma, oculoplastics, and neuro-ophthalmology. The unit has access to services, such as the laboratory and operating rooms for urgent surgical repairs. Working policies and procedures include registration at the receptions desk, and referral to the resident who preliminarily examines the patient within the context of a well-established localized guideline. Four pathways are possible according to the preliminary examination of the resident in duty: (a) admission to the hospital after discussion with the attending physician; (b) referral to the formal outpatient clinic; (c) return for re-examination to the A/E department, or (d) discharge from the hospital with, or without treatment. If the resident is unable to properly diagnose and/or take a decision, he/she may contact the senior registrar, or the consultant on call to seek his/her advice. In case of serious emergencies, the consultant is asked to attend physically and take over the case. Our objectives are: 1) to investigate the number and characteristics of patients attending the A/E Department of KAUH, Riyadh, 2) determine their route of referral, and 3) pattern of ocular emergency cases. In order to achieve these objectives, we carried out a detailed retrospective study to determine the pattern of the most frequent diagnosis, demographic characteristics of the cases seen at our ophthalmology A/E, and compare these findings with those of regional and international figures.

Methods. A retrospective study was carried out to determine the nature of the diagnoses, modes of referral, and disposal of all new cases, which presented to the ophthalmic A/E Department of KAUH for the month of July 2010. All available medical files for patients who presented to the ophthalmology A/E unit had been retrieved and reviewed after obtaining institutional board review (IRB) approval normally required for retrospective studies. A specific data form was developed for collection of information. Patients who had outpatient files were also tracked through the medical records. This study includes all patients who attended the emergency room (ER) for the month of July 2010, and excluded records containing insufficient data. The collected data included age, gender, source of referral, principal diagnosis, and subsequent action in addition to discharge plan, which implied all possible pathways (discharge from ER, treatment, admitted, or requested for follow up.

Collected data were entered into a specifically designed database using Microsoft Access 2007. Data were analyzed using Statistical Package for Social Science version 17 (IBM Inc, Chicago, IL, USA) and Medcalc version 8 by Medcalc limited.

Results. The files of 1412 patients, who attended our Ophthalmology A/E in July 2010 were reviewed, and data were extracted. The average daily attendance during the month of July 2010 was 47 patients. A total of 863 (61%) patients were male, and the mean patient age was 28.2 years with an age range of one day to 90 years. **Table 1** details the characteristics of those patients and their conditions. **Table 1** also includes information related to age, gender, source of referrals, diagnosis, action taken, and the staff rank, which looked after the case. Trauma types are listed in **Table 2**. The most frequent diagnosis was trauma in 382 (27%) of patients followed by conjunctivitis in 211 (14.9%), lids and lacrimal system in 133 (9.4%), retina problems in 51 (3.6%), glaucoma in 30 (2.1%), neuro-ophthalmology in 22 (1.6%), keratitis in 20 (1.4%), uveitis 10 (0.7%), and 5 (0.4%) patients with episcleritis (**Table 3**). Most cases (77.5%) seen were self referrals. Additionally, 712 (50.4.%) of cases were considered as non-emergency, which are visiting the A/E for dry eye, chalazion, blepharitis, and allergy (**Table 3**). A total of 860 (77.5%) patients attended as self referrals without General Practitioner (GP) letters as the A/E Department is open to the general public. **Table 4** lists the breakdown of non-emergency cases. Residents in duty manage most cases (n=1139; 80.7%), while 273 (19.3%) cases required calling the senior registrar, of which 37 (2.6%) cases required the decision of the consultant on call. Most of the cases (n=1,088; 77.1%) were adequately managed either in the A/E, or after referral to specific sub-specialties, further investigations, or inpatient admission. Out of those who were managed, 765 (54.2%) were managed on the spot in the A/E room and discharged, 588 (41.7%) were managed in the A/E but required to meticulous follow up visits, and 58 (4.1%)

Table 1 - Characteristic data of patients attending the Ophthalmology Accident/Emergency Department at King Abdulaziz University Hospital, Riyadh, Kingdom of Saudi Arabia.

Characteristics	n	(%)
Gender (n=1,412)		
Male	863	(61.1)
Female	549	(38.9)
Age group (n=1,110)		
0-5	201	(18.1)
6-15	205	(18.4)
16-39	339	(30.5)
>40	364	(33.0)
Source of referral (n=1,110)		
Self	860	(77.5)
General Practitioner	200	(18.0)
Hospital	50	(4.5)
Time of arrival (n=950)		
Morning	755	(79.4)
Afternoon	115	(12.2)
Evening	80	(8.4)
Diagnosis characterized as (n=1,410)		
Injury	358	(25.3)
Inflammation	341	(24.1)
Others	711	(50.4)
Diagnosis grouped as (n=1,412)		
Serious	296	(20.9)
Non-serious	1116	(79.0)
Action taken (n=1,412)		
Discharged	765	(54.2)
Ask to return	319	(22.6)
Referred to out-patient	58	(4.1)
Admitted	25	(1.7)
Others	245	(17.3)
Grade of staff seeing the patient (n=1,412)		
Resident on-duty	1102	(78.0)
Senior registrar	273	(19.3)
Consultant	37	(2.6)

Table 2 - List of trauma cases attending the Ophthalmology Accident/Emergency Department at King Abdulaziz University Hospital, Riyadh, Kingdom of Saudi Arabia (N=1412).

Type of trauma	n	(%)
Corneal abrasion	277	(72.5)
Blunt trauma	24	(6.3)
Hyphema	16	(4.2)
Traumatic uveitis	4	(1.0)
Traumatic cataract	2	(0.5)
Traumatic subluxated lens	1	(0.3)
Traumatic IOL dislocation	1	(0.3)
Corneal foreign body	18	(4.7)
Penetrating eye injury	11	(2.9)
Eyelid injury	10	(2.6)
Conjunctival injury	8	(2.1)
Chemical injury	7	(1.8)
Thermal injury	3	(0.8)
Total	**382**	

were managed after referral to subspecialty clinics. The rest of the cases (n=14; 1%) were either in need for sophisticated investigations, long term management (n=59; 4.2%), or did not show up after referral.

Discussion. This small scale study is unique in certain ways: 1) the study was conducted at the second largest ophthalmic A/E unit in Riyadh; and 2) the comprehensiveness of the ophthalmic A/E, which made this study as true representative of ocular emergencies seen in the Central region and maybe the whole kingdom.

Table 3 - Breakdown of common conditions attending the Ophthalmology Accident/Emergency Department at King Abdulaziz University Hospital, Riyadh, Kingdom of Saudi Arabia.

Diagnosis	n	(%)	95% confidence interval	Number of specific diagnosis	(%)
Conjunctiva	211	(14.9)	39.35-48.20		
Viral conjunctivitis				140	(66.4)
Allergic				39	(18.5)
Bacterial				23	(10.9)
Vernal keratoconjunctivitis				9	(4.3)
Lids and lacrimal system	133	(9.4)	23.60-31.58		
Meibomianitis				52	(39.1)
Chalazion				50	(37.6)
Misdirected lashes				9	(6.8)
Stye				7	(5.3)
Preseptal cellulites				7	(5.3)
Nasolacrimal duct obstruction				5	(3.8)
Dacryocystitis				3	(2.3)
Retina	51	(3.6)	7.83-13.33		
Proliferative diabetic retinopathy				16	(31.4)
Vitreous hemorrhage				14	(27.5)
Vein occlusion				9	(17.6)
Retinal detachment				7	(13.7)
Retina break				2	(3.9)
Retinopathy of prematurity				3	(5.9)
Glaucoma	30	(2.1)	4.07-8.38		
Angle closure glaucoma				12	(40.0)
Open angle glaucoma				12	(40.0)
Glaucoma suspect				4	(13.3)
Angle recession				2	(6.7)
Neuro-ophthalmology	22	(1.6)	2.70-6.43		
Optic neuritis				9	(40.9)
Optic disk edema				5	(22.7)
Optic atrophy				3	(13.6)
Nerve palsy				3	(13.6)
Herpes zoster ophthalmicus				1	(4.5)
Migraine				1	(4.5)
Cornea	20	(1.4)	2.37-5.93		
Keratitis				20	(100.0)
Uveitis	10	(0.7)	0.80-3.35		
Vogt-Koyanagi-Harada disease				6	(60.0)
Behcet				3	(30.0)
Herpetic				1	(10.0)
Sclera	5	(0.4)	0.13-1.94		
Episcleritis				5	(100.0)

Table 4 - Breakdown of non-emergency cases attending the Ophthalmology Accident/Emergency Department at King Abdulaziz University Hospital, Riyadh, Kingdom of Saudi Arabia.

Diagnosis of non-emergency cases (n=609)	n	(%)
Non emergency room cases (n=332)		
Refill medication	70	(21.1)
Dryness	59	(17.8)
Superficial punctate keratitis	38	(11.4)
Non traumatic subconjunctival hemorrhage	36	(10.8)
Conjunctival hyperemia	33	(9.9)
Cataract	33	(9.9)
Mild non-proliferative diabetic retinopathy	27	(8.1)
Refractive error	11	(3.3)
Pterygium	9	(2.7)
Discomfort	6	(1.8)
Ambylopia	6	(1.8)
Conjunctival cyst	2	(0.6)
Squint	1	(0.3)
Keratoconus	1	(0.3)
Follow up cases (n=277)		
Corneal abrasion	126	(45.0)
Glaucoma	20	(7.2)
Diabetic retinopathy	17	(6.1)
Keratitis	13	(4.6)
Chalazion	13	(4.6)
Uveitis	12	(4.3)
Nasolacrimal duct obstruction	12	(4.3)
Chemical burn	12	(4.3)
Optic neuritis	11	(3.9)
Episcleritis	8	(2.8)
Vogt-Koyanagi-Harada Disease	7	(2.5)
Subconjunctival hemorrhage	6	(2.4)
Pterygium	5	(2.3)
Retinal detachment	5	(2.3)
Intravitreous Avastin	3	(1.0)
Behcet's disease	3	(1.0)
Ptosis	3	(1.0)
Branch retinal vein occlusion	1	(0.3)

The month of July 2010 was chosen as a typical month for our study for no particular reason. The first thing that was noted when the records were reviewed is the relatively high number of patients (n=1412) seen in one month. On the other hand, this may not be surprising, and may reflect the growing population in Riyadh area, and the limited number of specialized ophthalmic A/E units in the capital. Compared to other similar studies from various parts of the world, the number of patients (n=1412) seen here is higher than that previously reported at least by 5 times.[3-7]

In our study, corneal abrasion seen in 277 (19.6%) of our patients was the most common eye condition presenting to ophthalmic A/E. Vernon[8] reported similar finding of corneal epithelial defect in (21.9%) of their patients. Bhopal et al reported higher rate of corneal abrasion (44%) among Newcastle residents.[1] The second common presentation was viral conjunctivitis in 174 (12.3%) of patients. This was lower than the rates reported from Taiwan[9] who had 19% of viral conjunctivitis in their series, and 43% of conjunctivitis in the study of Vernon[8]. In our study, trauma constituted 27% of cases presented, and this was lower than the rates of 45%[8] and 43%[9] previously reported. Blunt trauma in our study was seen in 24 patients (6%) exceeding the penetrating trauma seen in 11 patients (2%). Similarly, Akinsola et al[10] in a study from Nigeria where blunt trauma was 2 times more common than penetrating trauma. In contrast, open globe injuries were more common than closed globe injuries in 2 studies from Egypt.[11,12] In the current study, most of the eye injuries (74%) happened to the working age group (20-45) years, and it was mainly due to occupation related risks. The use of safety glasses or goggles during activities that can lead to eye trauma needs to be more widely implied and emphasized as previously suggested.[13] Our basic aim is to provide immediate, maximum attention, and care to our attendance of acute cases.

We found that 339 (30.5%) patients could have been seen in the general clinic as they were considered as non-urgent cases. Similar results were noticed by other studies that 12%[14] and 20%[15] of their eye emergency patients had conditions, which could have been managed with an eye outpatient clinic. Most of the cases (78%) were self-referred. Previous studies have also found that 80-90% of patients who attended the ophthalmic A/E were self-referral.[1,2,8,16,17] The few referrals from general practitioners and optometrists agree with previous findings,[8,16,18] which reflect their little contribution to acute eye conditions. In our study, 54% of patients were discharged from A/E at the first visit, whereas a similar 56%[19] and lower rate (39.6%)[14] were previously reported.

In our study, the rate of non-emergency cases was high (53.1%). This high number put an extra load on an already busy ophthalmic A/E like in KAUH. It is recommended that giving a better training to ophthalmic assistants to recognize serious ophthalmic problems, and give them the power to transfer these cases immediately to doctors. As for non-serious conditions, like acute and chronic lid inflammations, stye, chalazion, and blepharitis, corneal foreign bodies, corneal abrasion, and conjunctivitis can be managed safely by ophthalmic assistants or nurse practitioner as recommended previously.[13] The findings in our study highlights the need for more national research on common ocular emergencies seen in KSA.

Data were collected by reviewing charts of all patients who visited the A/E for one month. Clearly, extrapolations to estimate annual cases must be cautious, for the pattern may differ in other months. This study is limited by its retrospective design due to variation of amount of information obtained from each file. However, this study showed that many patients visiting the hospital for acute ophthalmological conditions

are non-serious, and could be evaluated by trained ophthalmic nurses or assistants.

In conclusion, knowing the pattern of patients attending the ophthalmology A/E is very important in developing better policies, and effective intervention programs to control and prevent these conditions. It will also allow better allocation of resources toward serious cases, which are the true emergency cases. A policy and effective training programs need to be developed allowing ophthalmic assistants and nurses to differentiate between emergency and non-emergency cases.

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Related topics

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