ORIGINAL ARTICLE

Common Causes of Red Eye Presenting at an Ophthalmic Clinic

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ABSTRACT

Background: *Redness of the eye is a common ophthalmic symptom. The problem causing redness could arise from within or outside the globe. These range from cases of simple inflammation following itching and minor trauma for example, to severe cases like orbital cellulitis and tumours. Patients may not even be aware of the redness.*

The aim of this study is to highlight the common causes of red eye as seen in an outpatient department in an ophthalmic set up. This should be of immense help to the general medical practitioners to whom the patients often first present.

Methods: *All patients presenting for the first time to Ladoke Akintola University of Technology Teaching Hospital over a four month period were screened. 117 had red eyes and were recruited. 125 eyes were found to be red. The characteristics of the redness were then studied to determine the cause.*

Results: *There was a male preponderance, M: F of 2:1. Persons 45years and below, were most commonly involved 88(66.67%).The most frequent cause of red eye was trauma, in 48(41.03%)patients, followed by allergic conjunctivitis in 29(24.77%).The main causes of redness differed in different age groups and occupation.*

There was no case of angle closure glaucoma seen as a cause of redness.

Conclusion: *There are diverse causes of redness of the eye. Persons who are not eye specialists to whom patients with red eyes present first should be conversant with the causes, to know what action to take, especially when to refer to the eye specialist.*

KEYWORDS: *Red eye; Common causes; Eye clinic.*

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INTRODUCTION

The red eye is a common presenting symptom for a large number of ophthalmic conditions. Most often it is accompanied by some other symptoms like pain, irritation, swelling or some other problem worrisome to the patient.

The redness seen basically is caused by engorged blood vessels of the conjunctiva, episclera, sclera or extravasated blood.

The problem causing redness of the eye could originate from outside the globe like orbital cellulitis, trauma and blepharitis. It could originate from the coats of the eye ball for example, uveitis, scleritis, keratitis, conjunctivitis or from within the globe like angle closure glaucoma

The condition could be associated with pain, as in trauma and acute angle closure glaucoma, or painless e.g. inflamed pterygium and uncomplicated infective conjunctivitis.

Diagnosis of the cause of red eye is based like any clinical case on the history and clinical findings on examination. The location of the redness is very important. In some cases, laboratory investigations become inevitable especially in infective conditions.

Redness of the eye is a symptom of many conditions seen in clinical practice, however some causes are more common than others.

Treatment of these problems is outside the scope of this write up.

The aim of this report is to assess the common causes of redness of the eye in patients seen in the ophthalmic clinic especially as it would be of help to the general practitioner to whom the patients might first present.

PATIENTS AND METHODS

All the patients presenting for the first time to the out patient clinic of Ladoke Akintola University of Technology Teaching Hospital for a period of four months were screened. Those with red eye(s) were identified and included in this study. A total of 117 consecutive patients were recruited as they presented. There were 125 eyes found to be red.

The history of the presenting complaint was obtained. For those with trauma, information on the nature of the object causing the injury was obtained as well. The patients were then examined for the location and severity of the redness and other associated ocular findings, and possible causes of the redness.

The instruments used for examining the eyes included pen torch, the direct ophthalmoscope, and the slit lamp. The Perkins handheld applanation tonometer was used for measuring the intraocular pressure where necessary.

The results obtained were analysed by simple analysis.

RESULTS

One hundred and twenty five (125) red eyes of 117

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patients were seen. The male to female ratio was 2:1. Seventy-eight males and 39 females were seen. The age distribution of the patients is shown in table I. The youngest was a 3 and 1/2 month old male baby with bacterial conjunctivitis while the oldest was a 90 year old male farmer with stick injury that resulted in a painful blind eye. The mean age was 32.41 years (±21.51).

Occupation

Table II shows occupation of the patients. Traders and school children were the most frequently seen.

Causes of red eye

The causes of redness of eyes in order of frequency are contained in Table III. The commonest cause was trauma, while the least was orbital cellulitis. The different types of trauma are illustrated in Table IV.

The causes associated with pain as a symptom were trauma, painful blind eye, ocular surface foreign body, corneal ulcer or abscess, uveitis, orbital cellulitis, conjunctival mass and some cases of allergic conjunctivitis.

Eye involved.

Thirty-three persons had bilateral involvement from ocular allergy, pterygium, refractive error and trauma from gun powder explosion (Table V).

Causes in children aged 0-15 years

Of the 30 children aged 0-15years who were either schooling or at pre-school age, 22(73.33 %) had allergic conjunctivitis. One of the children had a vernal ulcer in addition. Fewer (13.33%) of the children had infective corneal ulcer. Others had bacterial conjunctivitis, traumatic uveitis or corneal laceration. One person had chemical keratoconjunctivitis from a chemical dye.

Causes in adults aged 16 to 60years.

This was traumatic in about 50%, with different complications like corneal laceration or ulceration, uveitis, foreign body lodged in the cornea, limbus or conjunctiva, and hyphaema with secondary rise in intraocular pressure. Less frequent causes were ocular allergy, inflamed pterygia, non traumatic uveitis, infective keratitis, orbital cellulitis, painful blind eye, infective conjunctivitis, panophthalmitis and endophthalmitis.

Causes in those aged over 60years

In this age group 6 (50.0 %) were farmers and the causes of red eye in order of frequency were chronic ocular inflammation in 6 out of the 12.
Four (66.67%) out of these 6 had painful blind eye and the other two, ruptured globes.

Causes associated with raised intraocular pressure.

Twelve (10.33%) of the patients had recorded rise in intraocular pressure. Seven (58.33%) of these had traumatic hyphaema with secondary ocular hypertension. Four (33.33%) had complicated cataract and the remaining person constituting 8.33% with bilateral inflamed pterygia who incidentally had chronic open angle glaucoma glaucoma.

Causes in traders.

The age range of these traders was 29 to 78years. Trauma with corneal abrasion or laceration was seen in 8(30.77%) of them. This was followed by ocular allergy, inflamed pterygia and ocular foreign body. Other less frequent causes were dead loaloa, trauma with secondary hyphaema and raised intraocular pressure, herpes zoster ophthalmicus, trauma with anterior uveitis and one pseudophakic patient with lens induced inflammation.

Causes in farmers

Chronic inflammation with blindness was the commonest cause (60%). Other less frequent causes were trauma, inflamed pterygia, corneal abscess and ulceration.

Causes associated with pain

Pain was present in 70% of the patients, especially those with trauma.

Location of redness

This was generalised or localised depending on the cause. Problems causing localised redness were pterygia, and ocular foreign bodies. In those with uveitis or limbitis as in vernal keratoconjunctivitis, there was perilimbal hyperaemia in addition to the generalised redness.

Table I. Age distribution of subjects.

Age(years)	Frequency (%)
0-15	30(25.64)
16-30	28(23.93)
31-45	30(25 .64)
46-60	17(14.53)
>60	12(10.26)
Total no of persons	117(100)

Table II. Occupational distribution of study Subjects.

Occupation	Frequency (%)
Schooling	37(32.48)
Trading	26(22.22)
Farming	14(11.97)
Pre-school	11(9.40)
Civil service	6(5.13)
Teaching	3(2.56)
Religious leader	4(3.42)
Others	15(12.82)
Total	117(100)

Table III. Cause of red eye among study subjects

Cause	Frequency (%)
Trauma	48 (38.4)
Allergic conjunctivitis	29 (23.2)
Keratitis	12 (9.6)
Inflamed pterygia	11 (8.8)
Uveitis	7 (5.6)
Inflamed blind eye	7 (5.6)
Infective conjunctivitis	3 (2.4)
Orbital cellulitis	2 (1.6)
Others	6 (4.8)
Total no of eyes	12 5 (100)

Table IV. Types of trauma seen among study subjects

Type of trauma	Frequency (%)
Blunt trauma	21(43.76)
Perforating injury	10(20.83)
Retained foreign body	10(20.83)
Corneal abrasion	5(10.42)
Chemical burns	1(2.09)
Surgery(ECCE+IOL)	1(2.09)
Total	48(100)

Table V. Causes of bilateral eye involvement

Causes	Frequency (%)
Ocular allergy	25(75.76)
Pterygium	6(18.18)
Refractive error	1(3.03)
Chemical trauma	1(3.03)
Total	33(100)

DISCUSSION

There are numerous causes of 'a red eye' and these have been classified broadly by Hung Cheng et al [1] into disease involving the ocular surface, intermediate coat, inner eye or globe and the lids and orbit. They also classified red eyes into painful and nonpainful causes.

Knowledge of the common causes of red eyes in our environment is important as these often present first to the general practitioner [2] who may have or want to institute some management before the patient gets to the eye specialist if need be. Greenberg and Pollard [3] believed that primary care physicians could diagnose most cases of red eyes in children if due attention is paid to the structures involved. This will aid in determining the cases that need referral.

The common causes of red eyes listed in most of the texts are painful [4, 5]. Sanford-Smith [4] listed conjunctivitis, corneal ulcer, iritis and angle closure glaucoma as the common causes of red eye, irritable or painful eyes. The major causes listed by Janice Gault [5] were conjunctivitis, scleritis, episcleritis, corneal disease, trauma, anterior uveitis and acute glaucoma.

Attention was paid mainly to painful causes by the authors probably because of the threat of sight loss and the associated morbidity that might result if not handled appropriately. Most importantly, they gave the different characteristics to be able to distinguish one cause from the other.

This study looked at all the causes of redness in patients presenting for the first time to the eye clinic, whether associated with pain or not.

There were various causes as was also listed by some of the authors [1].The commonest cause in this study was trauma, (Tables III and IV). Blunt trauma was the commonest and resulted from fist injury, road traffic accident, stick or some unusual objects like fluorescent lantern. In addition to the resulting hyperaemia, some had hyphaema with secondary ocular hypertension, traumatic iritis and rupture of the globe with or without uveal prolapse. In these instances, the redness was usually intense and diffuse.

The perforating injuries were caused by sharp objects like broken pieces of bottle, leaves, pieces of wood or stick, knife, cutlass and hand fan.

Foreign body lodged in the conjunctival fornix, limbus or cornea was also common. Most of the patients were not aware of the time the foreign body got into the eye. Some occurred when dust particles blew into the eyes, others while beating metals. These patients had intense discomfort and redness localised to the area adjacent to the foreign body.

Traumatic abrasion was another result of trauma especially from sharp objects. In one patient however, the

abrasion was caused by explosion of gun powder from a local dane gun.

The only chemical injury seen was secondary to a chemical dye. This was a very interesting case where the lids were glued together and a ligneous-like membrane was seen coating the cornea and conjunctiva on separation of the lids. The cornea showed areas of superficial punctate keratitis after the membrane was peeled off.

In those with ocular allergy, there was usually a history of itching and rubbing of the eyes. In addition to hyperaemia, the conjunctiva is almost always hyper pigmented in long standing cases. The hyperaemia is often mild to moderate, and diffuse. Some cases of severe vernal keratoconjunctivitis show some minute swellings around the limbus called papillae.

In cases of inflamed pterygia, the redness is localised to the area of the pterygium which is often nasal.

The general nature of occupation of the people served by the clinic is probably responsible for trauma being the commonest cause. Most, of them are self employed except those who are in school. Most of them too are in the active age group i.e. 45-years and below. Civil servants were few.

The male preponderance seen is not surprising as males are often more active than females and also are more involved in more tasking jobs like farming, and fight more readily compared to the females.

In children aged 15-years and below, allergic conjunctivitis was quite common. This might be explained by the fact that ocular allergy is quite common in the younger age group. In this group too, the redness was bilateral and mild. This also constituted the commonest cause of bilateral involvement. Almost all the children had hyperpigmented conjunctiva. Bilateral involvement was also seen in cases of pterygium. The condition is often bilateral though it may be asymmetrical.

Most of those in the 60-years and above age group had chronic inflammation with blindness, and were mainly farmers. They could have had injuries while farming which were not properly treated.

In this study, not even a single case of congestive glaucoma was seen. Sound epidemiological data on the type and prevalence of glaucoma across Africa is lacking [6], but it has been documented that the prevalence of primary angle-closure glaucoma is high in the Eskimos, up to figures between 2.6 and 5.0% in the 40 and above age group and least in the Caucasians, 0.09% of those 40 years and above [7]. It is possible that the prevalence in this part of the African continent is low.

One of the set backs of this study is absence of laboratory investigations like histology for definitive diagnosis of lessions like pterygium and culture in infective cases. The clinical features on examination however usually give a high index of suspicion.

Display of clear photographs of the various causes could have been of great help too.

The ability to diagnose the cause of a red eye is very important especially for the general practitioner to whom most of the patients present first. Accurate diagnosis allows for appropriate primary care treatment and also aids in knowing what cases to refer to the ophthalmologist. Therefore knowledge of the common causes and the associated clinical features is a good guide to accurate diagnosis and better management.

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