ORIGINAL RESEARCH

Pattern of Red Eye Manifestations in a Tertiary Care Hospital in North India

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ABSTRACT

Background and Objectives: Red eye is common presentation to ophthalmology out-patient and emergency clinics. The spectrum of diseases range from conjunctivitis, keratitis, epicscleritis, scleritis, trauma, dry eye disease to orbital cellulitis, angle closure glaucoma and endophthalmitis. Detailed history and complete ocular examination are necessary for accurate diagnosis. This study was conceptualized to determine the most common causes of red eyes, in an effort to generate evidence, which would help us in managing the causes of red eye more effectively.

Material and Methods: A cross-sectional study was carried was out in 500 patients who presented to Ophthalmology out-patient clinics of GMC Jammu with red eye. Detailed history was taken from each patient and complete ocular examination was performed. The data was expressed as percentages and subsequently analyzed with the OpenEpi online software version 3. A p value <0.05 was considered as statistically significant. All p value used were two-tailed.

Results: The mean age in our study was 36.85±11.6 years with age range of 18-60 years. There were 57.8% males and 42.2% females. Most patients (58.8%) were from urban areas. The most common causes of red eye were conjunctivitis (35.4%), foreign bodies (26.8%) and conjunctival degenerations (14.4%). Most of the patients (85.2%) presented within 14 days of onset of red eye.

Conclusion: Red eye can be differential diagnosis of many ocular conditions. Accurate diagnosis is very important for appropriate management. Most common causes of red eye include conjunctivitis, foreign bodies and conjunctival degenerations.

Key Words: Conjunctivitis; Keratitis; Uveitis; Glaucoma.

Background and Objectives

Red eye is one of the most common presentation to ophthalmology out-patient and emergency clinics.[1,2]It results from dilation and engorgement of ocular blood vessels caused by a wide variety of conditions. The spectrum of diseases range from conjunctivitis, keratitis, epicscleritis, scleritis, trauma, dry eye disease to vision threatening conditions like orbital cellulitis, angle closure glaucoma and endophthalmitis.[3]Detailed history and complete ocular examination are necessary for accurate diagnosis.

Important questions to be asked while taking history include onset, duration, progression of redness; kind and amount of discharge; vision changes; presence of pain, photophobia; history of allergies or systemic diseases and any previous treatment taken.[4] Ocular examination includes

recording visual acuity and intra-ocular pressure; evaluation of ocular movements, examination of cornea for abrasion, keratitis; depth of anterior chamber; cells and flare in anterior chamber and pupillary reaction to light.[5] It is important to identify vision threatening conditions which require immediate attention.[6]

Since, red eye can be caused by a wide range of conditions, this study was conceptualized to determine the most common causes of red eyes, in an effort to generate evidence, which would help us in managing the causes of red eye more effectively.

Material and Methods

This cross-sectional study was carried was out in a tertiary care teaching hospital over a period of six months from October 2018 to April 2019 after obtaining appropriate clearance from Institutional Ethics Committee.

500 patients who presented to Ophthalmology out-patient clinics of GMC Jammu with red eye were included in the study. Patients who fulfilled the following criteria were included in the study and a written informed consent was taken from all the study participants after explaining the purpose of the study.

Inclusion criteria:
1. Patients >18 years of age and of either gender.
2. Patients presenting to out patient clinic with complaint of red eye.

Exclusion criteria :
1. Patients with one-blind eye
2. Patients with best corrected visual acuity of 6/12 or worse in any of the eye without a justifying cause.
3. Pregnant and lactating females
4. Children <18 years of age.

Detailed ocular history and systemic history was taken from each patient. Visual acuity was recorded with Snellen chart and IOP was recorded with non contact tonometer. A detailed slit lamp examination was performed evaluating lids, conjunctival surface, episclera, sclera, cornea, depth of anterior chamber, cells and flare in anterior chamber.

All the collected data was entered in Microsoft excel and was expressed as percentages.The data was subsequently analyzed with the help of OpenEpi online software version 3. A p value <0.05 was considered as statistically significant. All p value used were two-tailed.

Results

The socio-demographic profile of patients is presented in Table 1. There were 289 (57.8%) males and 211 (42.2%) females in the study. The age range in study was 18 to 59 years.

As evident from table 2, the most common manifestation of red eye was conjunctivitis (35.4%) and least common manifestation was endophthalmitis (0.4%). Other causes included trauma (26.8%), comjuntival degenerations (14.4%), keratitis (7.2%), scleritis and epscleritis (5.4%), uveitis (6%) and meibomian gland disease (0.8%).

There was a statistically significant relationship between diagnoses of foreign bodies, conjunctival degenerations, episcleritis, scleritis, glaucoma with gender (males). (p value 0.01, 0.04, 0.03 and 0.001 respectively).

Conjunctivitis and foreign bodies were more common in younger age group (p value: <0.001, 0.03). Whereas, conjunctival degenerations, glaucoma and endophthalmitis were more common in older age group. (p value : <0.001).

Most of patients (85.2%) had acute presentation of red eye as seen in table 3. Most cases of conjunctivitis, foreign bodies, keratitis, episcelritis and uveitis had acute presentations (<14 days).

Table 1: Socio-demographic profile of patients	
Mean Age (in years) ±SD	
Males	Females
36.5 ± 11.5	37.2 ± 11.7
Residence	
Rural	Urban
41.2%	58.8%

Table 2 : Distribution of Red eye manifestations in different age groups				
Manifestations	18-32 years	33-46 years	47-60 years	p-value
Conjunctivitis	102 (20.4%)	60 (12%)	42 (8.4%)	<0.001*
Foreign bodies	52 (10.4%)	72 (14.4%)	10 (2%)	0.03*
Keratitis	5 (1%)	12 (2.4%)	19 (3.8%)	0.10
Conjunctival degenerations	1 (0.2%)	19 (3.8%)	52 (10.4%)	<0.001*
Episcleritis and scleritis	3 (0.6%)	13 (2.6%)	11 (2.2%)	0.54
Uveitis	2 (0.4%)	15 (3%)	13 (2.6%)	0.57
Glaucoma	1 (0.2%)	2 (0.4%)	15 (3%)	<0.001*
Meibomian Gland disease	1 (0.2%)	2 (0.4%)	1 (0.2%)	0.47
Endophthalmitis	0	0	2 (0.4%)	<0.001*

*= Significant

Table 3: Distribution of symptoms based on duration of onset.		
Time	n	Percentage
<14 days	426	85.2%
2 weeks – 4 weeks	42	8.4%
>4 weeks	32	6.4%

Discussion

This study included 57.8% males and 42.2% females. This is similar to those reported by Farokhfar Aet al, 62.5% males and 37.5% females,[7] Monsudi KF et al, 54.3% males and 45.7% females,[8] Nagpal H et al, 65% males and 35% females.[9]Whereas in study by Cunha CAC et al, there were 57.4% females and 42.6% males.[10]In a study by Lawan A, male to female ratio was 2:1.[11]

The most common cause of red eye in our study was conjunctivitis (35.4%) which was statistically significant in relation to age (18-32 years). Similar findings were noted by Farokhfar A et al, 30.3% cases [7], Besharati col.s study, 35.8% cases [12] Cunha CAC et al, 32.6% cases,[10] and Kara Junior et al, 34% cases.[13]Pererira et al, noted 27.91% cases of conjunctivitis in their

study.[14]Lawan A noted 40% cases of allergic conjunctivitis and 17% cases of microbial conjunctivitis in their study.[11]

Other common causes included foreign bodies (26.4%) and conjunctival degeneartions (14.4%) in our study. Farokhfar A et al, noted 23.2% cases of foreign bodies and 7.2% cases of pterygium in their study.[7]and Nagpal H et al reported 22% cases of foreign body in their study[9] similar to our study. Whereas, Monsudi KF et al noted only 1.7% cases of foreign body[8] and Cunha CAC et al noted 12.4% cases of foreign bodies and 8.5% cases of conjunctival degenerations in their study..[10]Lawan A noted 11% cases of conjunctival degenerations in his study.[11]

Regarding other ocular manifestations, Farokhfar A et al noted 6% cases of keratitis, 5.5% cases of episcleritis, 2.5% cases of glaucoma and 2.1% cases of blepharitis[7] and Cunha CAC et al noted 0.8% cases of endophthalmitis and 3.9% cases of glaucoma[10] similar to our study. They noted 3.9% cases of keratitis and 1.5% cases of scleritis and episcleritis,[10] which is less than that noted in our study. Monsudi KF et al noted 7% cases of keratitis, 5.3% cases of uveitis and 1.2% cases of endophthalmitis,[8] similar to our study.

Farokhfar A et al reported statistically significant relationship between conjunctivitis, foreign bodies, glaucoma with age of the patient,[7] similar to our study. They also noted statistical significance of foreign bodies, viral conjunctivitis, pterygium, episcleritis, corneal abrasion and glaucoma to gender.[7]

Most cases (85.2%) had acute presentation in our study. Cunha CAC et al reported 87.6% cases with acute presentation (<14 days), 6.2% cases with presentation between 2weeks to 3 months and 6.2% cases with presentation with red eye >3 months,[10]similar to our study.

Conclusion

Red eye can be differential diagnosis of many ocular conditions. Accurate diagnosis is very important for appropriate management. Most common causes of red eye include conjunctivitis, foreign bodies and conjunctival degenerations and rarer diagnosis include endophthalmitis and meibomian gland disease.

Limitations:

1. Children <18 years were not included in the study
2. Seasonal variation and allergic conditions could not be studied as study duration was short.

Conflicts of Interest: None

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