Original Article

Epidemiology and symptoms of red eyes in patients from Northern Iran

Asadollah Farokhfar, Kiumars Nowroozpoor Dailami, Mohammad Ali Heidari Gorji[1], Naiereh Aghaie[1]

Department of Medicine, [1]Department of Nursing and Midwifery, Mazandaran University of Medical Sciences, Sari, Iran

Address for correspondence:
Prof. Mohammad Ali Heidari Gorji, Department of Nursing and Midwifery, Mazandaran University of Medical Sciences, Valiasr Street, Sari 0113, Iran. E-mail: gorjim29@yahoo.com

Abstract

Aim: We aimed to determine the epidemiology and symptoms of red eyes in patients from Northern Iran. **Materials and Methods:** A descriptive study was planned involving 840 patients referred to the eye clinic of Bu-Ali Sina hospital in Sari, Iran, with the chief complaint of eye redness. **Results:** Of 840 patients, 525 were men (62.5%) and 315 were women (37.5%). Most of the patients were over 39 years of age. 55.7 percentage of them lived in cities and 44% were from villages. The most common eye symptoms with eye redness were: Eye abrasion (57%), tears in eyes (49%) and swollen eye lid (30%). Red eyes without any symptoms in eyes were diagnosed as runny nose (4.2%) and headaches (3.4%). 11.9% and 19.6% of the patients had a previous history of red eye and had visited doctors for red eyes respectively. **Conclusions:** Red eyes are more common in men than women. Introducing dangerous causes of red eyes in the future can help to health care professional to on time diagnosis of red eyes related problems.

Key words: Conjunctivitis, outbreak-epidemic-symptoms, red eyes

INTRODUCTION

Eye redness is the result of inflamed blood vessels in eyes[1,2] and is one of the most common complaints with which patients are referred to eye clinics or emergency units.[3-5] Incidentally red eyes are not always the symptoms of an illness[7] nevertheless it can be deleterious often leading to serious visual problems.[6] Hence, red eyes should be diagnosed at an as early stage as possible,[3,8] based on ocular symptoms such as visual abnormalities, abnormalities in eye appearance, eye sensory abnormalities (pain)[2] photophobia and ciliary flash.[9,10] Since red eyes are one of the main reasons and symptoms of eye inflammation and one of the most common complaints in outpatients units, we analyzed the epidemiology and symptoms of red eyes in patients from our region (northern Iran). Specifically we determined the prevalence of red eyes and related factors in Bu-Ali Sina hospital in Sari, Iran. We believe our data will provide valuable inputs into taking effective steps for treating red eyes and prevent their associated serious effects.

Access this article online	
Quick Response Code:	Website: www.jnsbm.org
	DOI: 10.4103/0976-9668.160009

MATERIALS AND METHODS

Sampling

A descriptive study was planned involving 840 patients referred to the eye clinic of Bu-Ali Sina hospital in Sari, Iran from 2012 to 2013. The samples selected according the previous studies.[11,12] The study was approved by ethics committee of Mazandaran university of Medical Science and signed consent was obtained from all patients before the study. Complete history of the patients and examinations were recorded by the Oculists.

Tools

The equipment used to examine included flashlights to examine the pupils, snalen chart to test vision acuteness, Ophthalmoscope, fluorescence paper and slit lamps. All parts of both eyes were examined, and symptoms such as eye redness and color change of eyes and increase

of conjunctive vessels determined by slit lamps were documented. Eye movements and eyesight were also examined. Data collecting tools included information forms to get patients demographic information (such as age, sex, job and living place) and information on factors related to eye redness such as exact location of eye redness, duration of eye redness from the beginning to diagnosis of the factors, manner of onset and symptoms of red eyes. Ophthalmological clinical finding and the reasons leading to red eyes, medical background such as diabetes, hypertension, lipid abnormalities, thyroid abnormalities, red eye background, referring to oculists, taking drugs under supervision of oculists or on their own, first (interviews) and final (ophthalmological examination) diagnoses were recorded. The validity of the information forms contents was confirmed by Ophthalmological professors of Sari Medical College. The methods were described and explained to all patients. There were no clinical risks and also no limitation to the patients.

Statistics

The data were analyzed using descriptive statistical and analytical tests in SPSS (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY) software.

RESULTS

Of the 840 patients participating in the study, 525 were male (62.5%) and 315 were female (37.5%). 394 of them (46.9%) were over 39 years old, 331 (39.4%) between 15 and 39 and 115 (13.69%) were under 15 years of age. The most common Ophthalmological symptoms with eye redness were; eye irritation (484 patients 57%), tearful eye (414 patients, 49%), swelling of eyelid swelling or edema (259 patients 30%), feeling of external objects in their eyes (192 patients, 22%), pain in eyes (188 patients 22%) and itching sensation (180 patients, 21%) [Figure 1]. The ophthalmological symptoms of red eyes, feelings of external objects, pains, itches, and reduction of vision acuteness had a higher prevalence among the age group of over 39 years [Table 1].

Non ophthalmological symptoms of red eyes in the patients observed were 36 cases of runny noses (4.2%), 29 cases of headaches (3.4%), 9 cases had fever (1%), 6 cases had lymphadenopaty (0.7%), and 4 cases of vertigo (0.4%). Of these symptoms of red eyes, headache had meaningful statistical relation to age, and it had a higher prevalence in age group of over 39 years [Table 2].

In their medical history, 165 patients (19.6%) had the records of recent reference to oculists, 100 patients (11.9%) had red eyes in the past, 77 patients (9.1%) had records of hypertension, 62 patients (7.3%) had diabetes, 39 patients (4.6%) had lipid disorders, 19 patients (2.2%) had cold, 13 patients (1.5%) had thyroid disorders, 3 patients (0.3%) had allergies, 2 patients (0.2%) had migraine, and 21 patients (2.5%) had other diseases. In medical history and backgrounds, there was a meaningful statistical relation among red eyes records, diabetes, hypertension, lipid disorders and age with more prevalence in patients over 39 years of age. From the aspect of taking ophthalmological drugs, 188 patients (22.3%) had recent records of being on medication, of those drugs, 107 patients (12.7%) took Nephazoline, 85 patients (10.1%) took Cleramephnicle,

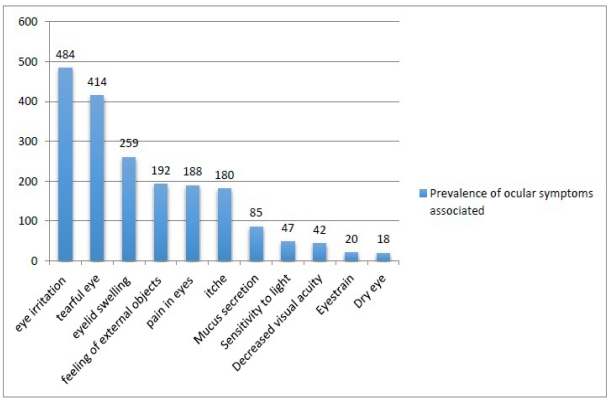

Figure 1: Prevalence of ocular symptoms associated red eye

Table 1: Ocular symptoms in patients referred to the separation of age groups

Ocular symptoms associated	0-15 years (%)	16-39 years (%)	Over 39 years (%)	*P*
Eyelid swelling	(31.336)	103 (31.1)	120 (30.5)	0.97
Feeling of external objects	20 (17.4)	133 (40.2)	139 (35.3)	<0.0001
Eye irritation	56 (48.7)	201 (60.7)	227 (57.6)	0.08
Pain in eyes	11 (9.6)	81 (24.5)	96 (24.4)	0.002
Itche in eyes	41 (35.77)	65 (1.6)	74 (18.88)	0.001
Tearful eye	57 (49.6)	172 (52)	185 (47)	0.4
Mucus secretion	19 (16.5)	34 (10.35)	32 (8.1)	0.31
Decreased visual acuity	2 (1.7)	11 (3.3)	29 (7.4)	0.01
Sensitivity to light	2 (1.7)	23 (6.9)	22 (5.6)	0.11
Dry eye	1 (0.9)	7 (2.1)	10 (2.5)	0.55
Eyestrain	0	8 (2.4)	12 (3)	0.17
Other signs	0	2 (0.6)	3 (0.8)	0.64

Table 2: Nonophthalmological symptoms of patients according to age group

Nonophthalmological symptoms	Under 15 years (%)	Over 39 years olds (%)	15-39 years (%)	*P*
Runny noses	4 (3.5)	17 (4.3)	15 (4.5)	0.89
Fever	0	5 (1.3)	4 (1.2)	0.48
Headaches	2 (1.7)	22 (5.6)	5 (1.5)	0.006
Vertigo	0	3 (0.8)	1 (0.93)	0.48
Lymphadenopathy	1 (0.9)	1 (0.3)	4 (1.2)	0.3
Other signs	0	(0.52)	2 (0.6)	0.71

67 patients (7.9%) took Bethamethazone, 16 (1.9%) took artificial tears, 7 patients (0.8%) took Ciprofloxacine, 5 patients (0.5%) took Cortone and 39 patients (4.6%) took other drugs.

DISCUSSION

In this research, the patients were divided into 3 age groups of 0-15-year-old, 16-39 years old and over 39 years. The group of over 39 years had the most distribution of frequency (394 patients, 46.9%), which is consistent with previous reports.[3,11,12] Red eyes is a common condition reported among the population from Middle East with an incidence rate of up to 40%,[13,14] which is significantly higher than data reported from European (6-15%)[14] or Nigerian (14.8%) population.[3]

Previously, prevalence of petrygium in patients over 50 was is reported to be 33.1% with higher prevalence in women (35.7%) than in men (29.7%).[15] During an hemorrhagic conjunctivitis epidemic in Nepal, 30.5% of the patients were between 20 and 29 years of age and higher prevalence was observed among men.[16] In the present study, 55.7% of the patients were from urban areas and 44% from rural regions, which is not consistent with other reports.[12] In the present study, the most prevalent Ophthalmological symptoms with red eyes were, eye irritation with frequency of 57%, tears in eye 49%, swollen eyelids 30%, which again is not consistent with previous reports,[11,12,17,18] and probably indicates a changing trend in the prevalence of red eyes. The nonophthalmological symptoms of red eyes were runny noses (4.2%) and headaches (3.4%). A runny nose was in most cases associated with feeling of external objects and allergic conjunctivitis and most headaches were associated with glaucoma. In the present study, 6 patients referred with fever (0.7%) while in previous reports (2011) 8% of the children had a fever.[12] The higher prevalence in people over 39 years of age observed in our study, may be because of more prevalence of migraine and hypertension in this group. From the aspect of medical history and background, incidence of diabetes, hypertension and lipid disorder were higher among patients with red eyes, with higher prevalence in over 39 years old. In the present study, Nephazoline drops were the commonly used prescription medication mainly in patients under 15 years of age. We conclude that red eyes that are common condition for patients are referred to emergency units is more prevalent in men than in women. Appropriate training for the exact diagnosis of high-risk symptoms of eye redness is necessary to reduce the serious vision problems in future.

REFERENCES

1. Wright JL, Wightman JM. Red and painful eye. In: Marx JA, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 7th ed., Ch. 32. Philadelphia, PA: Mosby Elsevier; 2009.
2. Yanoff M, Cameron D. Diseases of the visual system. In: Goldman L, Ausiello D, editors. Goldman's Cecil Medicine. 24th ed., Ch. 431. Philadelphia, PA: Saunders Elsevier; 2011.
3. Lawan A. Causes of red eye in Aminu Kano Teaching Hospital, Kano-Nigeria. Niger J Med 2009;18:184-5.
4. Seth D, Khan FI. Causes and management of red eye in pediatric ophthalmology. Curr Allergy Asthma Rep 2011;11:212-9.
5. Mahmood AR, Narang AT. Diagnosis and management of the acute red eye. Emerg Med Clin North Am 2008;26:35-55, vi.
6. Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. Am Fam Physician 2010;81:137-44.
7. Wirbelauer C. Management of the red eye for the primary care physician. Am J Med 2006;119:302-6.
8. Welch JF, Dickie AK. Red alert: Diagnosis and management of the acute red eye. J R Nav Med Serv 2014;100:42-6.
9. Huvelle H, Duchesne B, Rakic JM. How I treat...A red eye. Rev Med Liege 2013;68:609-12.
10. Besharati MR, Shoja MR. Prevalence and causes of red eye in patients admitted to hospital, shahid Rahnemoon in Yazd in summer and winter of 1383. J F Kashan 2007;10:36-41.
11. Qasemzadeh MJ, Javadian F, Shadravan MH, Mohebi S. Investigating the causes of red eye Children attending to Qom Kamkar hospital ophthalmology pediatric clinic in Winter 1390. J Med Sci Aust 2013;23:216-20.
12. Foster A. Red eye: The role of primary care. Community Eye Health 2005;18:69.
13. Petricek I, Prost M, Popova A. The differential diagnosis of red eye: A survey of medical practitioners from Eastern Europe and the Middle East. Ophthalmologica 2006;220:229-37.
14. Wu K, He M, Xu J, Li S. Pterygium in aged population in Doumen County, China. Yan Ke Xue Bao 2002;18:181-4.
15. Alonso-Echanove J, Sippy BD, Chin AE, Cairns L, Haley R, Epstein JS, *et al.* Nationwide outbreak of red eye syndrome associated with transfusion of leukocyte-reduced red blood cell units. Infect Control Hosp Epidemiol 2006;27:1146-52.
16. Vafidis G. When is red eye not just conjunctivitis? Practitioner 2002;246:469-71, 474.
17. Karki DB, Shrestha CD, Shrestha S. Acute haemorrhagic conjunctivitis: An epidemic in August/September 2003. Kathmandu Univ Med J (KUMJ) 2003;1:234-6.
18. Galor A, Jeng BH. Red eye for the internist: When to treat, when to refer. Cleve Clin J Med 2008;75:137-44.

How to cite this article: Farokhfar A, Dailami KN, Gorji MH, Aghaie N. Epidemiology and symptoms of red eyes in patients from Northern Iran. J Nat Sc Biol Med 2015;6:369-71.

Source of Support: Nil. **Conflict of Interest:** None declared.