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Original Article

Dry Eye Disease in Younger Age

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Abstract

Background: To evaluate the personal and environmental risk factors attributable to dry eye disease (DED) among younger age group of Islamabad.

Methods: In this cross-sectional study, 360 individuals aged 18-40 years of either sex were screened randomly. All patients visiting outpatient department with various symptoms and later diagnosed to have abnormal tests and symptoms of dry eye were included in this study. Patients having any eye disease, systemic disease and those using antiallergic or steroid drugs were excluded. Patient demographics and dry eye questionnaire (DEQ) was administered by a trained interviewer. Dry eye tests like tear film breakup time (TBUT), corneal fluorescein staining (CFS), Schirmers test (ST) and slit-lamp examination for presence of conjunctival injection, punctate epithelial erosions (PEE), lid margins plugging and telengiectasias were used to diagnose dry eye.

Results:There were 55.6% males and (44.4% females. Majority were urban (72.8%). Major constituents were students (23.3%), teachers (17.2%), office workers (27.8%), housewives (13.9%) and labourers (17.8%). In this study, 81(22.5%) subjects, 42(11.7%)male, 39(10.8%) female were symptomatic defined as presence of one or more dry-eye symptoms often or all the time. Two hundred and two (56.1%) subjects had low TBUT, 140(38.9%) had low ST and 180(50%) patients had abnormal plugging or telengiectasias of lid margins. Common symptoms were burning 59.2%, eye strain 55.5%, watering 51.8% and fatigue 49.3%.Dry eye symptoms were related to computer use 20(24.7%), blepharitis 19(23.4%), refractive errors 7(8.6%), contact lens use 3(3.7%), refractive surgery 1(1.2%), eye make-up use 10(12.3%), use of antiallergic medications 10(12.3%) and smoking 11(13.5%).

Conclusion : Various environmental effects at work are related to eye and physical symptoms which affect quality of life. Those students who are using computers and other screens develop dry eye symptoms. Dry eye is a common condition presenting to Ophthalmologists. It is underdiagnosed and variably treated with antiallergic /decongestants drops on empirical basis.

Key Words: Dry Eye, Tear film breakup time, Corneal fluorescein staining,Schirmers test (ST), Punctate epithelial erosions (PEE)

Introduction

Dry eye is a multifactorial condition of tear film and ocular surface. It results in visual disturbance, tear film instability and damage to the ocular surface. It is associated with increased osmolarity of the tear film and inflammation of the ocular surface.[1] De Roth in 1950, named the term "Dry Eye".[2] In 1955 it was used as a problem of low tear production.[3] In 2006 Delphi panel proposed Dysfunctional Tear Syndrome (DTS) with the remarks that inflammation plays a role in the disease.[4] The other names are keratoconjunctivitis sicca, any eye with some degree of dryness, xerophthalmia- dry eye due to vitamin A deficiency and xerosis, extreme ocular dryness and keratinization due to severe conjunctival cicatrisation.[5]

In Pakistan one study carried out in a tertiary care hospital showed DE prevalence as 16%.[6] A study conducted on elderly Korean population found that female sex, age, and hormonal influence were risk factors for DED.[7] The Salisbury Eye Study in US shows the prevalence of DED to be 14.6%.[8] About 3.2 million women and about one million men are involved in United States.[9]

The precorneal tear film is responsible for tear film stability, corneal transparency and the image quality onto the retina.[10] Blinking relieves the DE symptoms. Blinking moistures the eye surface during cold and dry weather.[11] A slow blinking rate increases DE symptoms while working at a computer, watching a movie or living in a dry weather.[12] Other risk factors include blepharitis, refractive errors, smoking, exposure to environment and use of various drugs. [13,15]

Patients and Methods

In this cross-sectional study, out of total 400 individuals, 360 willing subjects (response rate 90%)

aged18-40 years were selected randomly from ophthalmology out-patient department of Federal Government Services Hospital Islamabad during Jan ,2012 to Dec ,2012. Patients with any systemic or eye disease or those using medications were excluded. Patient demographics including age, sex, education, occupation, smoking, make-up use and working environment were also recorded. The self assessment dry eye questionnaire concerning symptoms is administerd by a trained interviewer. All subjects underwent a complete ophthalmic examination in a fixed room sized 16x14 sqft. without fan or cooler and controlled lights. Eye examination was conducted on the same day under same physical conditions by an Ophthalmologist. Dry eye questionnaire (DEQ), tear film breakup time (TBUT), corneal fluorescein staining(CFS) for presence of conjunctival injection, punctate epithelial erosions (PEE), Schirmers test(ST) and slit lamp examination for Meibomian gland dysfunction (MGD)like plugging and telangiectasias of the lid margins were recorded. DE was diagnosed with the presence of DE symptoms, tear abnormality Schirmer test ≤ 5 mm, Tear breakup time ≤ 10 seconds and corneoconjunctival staining score of ≥1 points and any lid abnormality.

Results

Of total 360 study subjects aged 18-40 years, there were 200(55.6%) males and 160(44.4%) females comprising 192 (53.3%) of aged 18-30 years and 168(46.7%) of 30-40 years age group. Urban subjects were 262(72.8%) and rural 98(27.2%). Students 84 (23.3%), teachers 62(17.2%), office workers 100(27.8%), housewives 50(13.9%) and 64(17.8%) were labourers . Majority (77.5%) subjects were asymptomatic, defined as no symptoms of dry eye at all or felt only rarely or sometimes.

Table-1: Baseline Characters and Diagnostic Tests

Sex	Male: 200(55.6%)
	Females : 160(44.4%)
Residence	Urban : 262(72.8%)
	Rural : 98(27.2%)
Ophthalmological Tests	Low tear film breakup time (TBUT): (56.1%)
	Low Schirmers test (ST) : 39%
	CFS corneal fluorescein staining: 48%

In this study 81(22.5%) individuals, 42(51.8%) males and 39(48.2%) females, were symptomatic defined as reporting one or more dry-eye symptoms often or all the time. 202(56.1%) subjects had low TFBUT, 140(38.9%) patients had low ST and 180(50%) patients had abnormal meibomian glands appearances (Table 1)

The common complaints were burning 59.2%, eye strain 55.5%, watering 51.8% and fatigue (49.3%) (Table 2). Most females were using computers less than 3 hrs (41%) than males in this study.Dry eye symptoms were related to computer use 20(24.7%), blepharitis 19(23.4%), refractive errors 7(8.6%), contact lens use 3(3.7%), refractive surgery 1(1.2%), eye make-up use 10(12.3%), use of antiallergic medications 10(12.3%) and smoking 11(13.5%)(Table 3).

Table-2: Dry Eye- Symptoms

Ocular complaints	Mae	Female	Present
Burning	26	22	48(59.2)
Eye strain	22	23	45(55.5)
Eye fatigue	20	22	42(51.8%)
Watering	20	20	40(49.3%)

Table-3: Factors affecting dry eye

Factor	Male	Female	Present
Computer use	12	8	20(24.6%)
Blepharitis	11	8	19(23.4%)
Smokers	11	-	11(13.5%)
AnTIalergics	4	6	10(12.3%)
Eye make up	-	10	10(12.3%)
Refraction	6	5	11 (13.5%)

Discussion

The 2007 International Dry Eye Workshop (DEWS) reports the global prevalence of DE to be between 5% to over 35% at various ages (21yr to >65 yr).[1] Clinically, DE causes a drop in visual acuity and contrast sensitivity leading to decreased vision related activities like reading and driving.[16] Signs and symptoms include ocular dryness, grittiness, burning and foreign body sensation, redness and blurred vision that clears on blinking.[17]In this study DE is present in 81 (22.5%) of young population. It is similar with one study showing that 18.7% of subjects younger than 20 years have dry eye symptoms compared to 30.1% of adults.[18]Among younger age group (18-40years), computer users of longer duration, both office workers and students, were having dry eye symptoms more than other.[19] This study showed that the subjects using computers for longer time had more ocular complaints.

Benitez and Lemp(2012) study suggest that blepharitis is present in 37 percent to 47 percent of all patients who undergo clinical examination[20]. This study shows

the similar results. It is an important health problem. In America prevalence is about 15 percent of the population, representing nearly 48 million Americans.[21] The Schirmer and tear film breakup time tests are commonly used in the diagnosis of dry eye.[22] The basal ST evaluates the basic tear secretion and the TBUT test reflects tear stability. In this study 56.1% patients had low TBUT and 39% had low ST values and 50% had abnormal Meibomian gland appearances.

The current study reveals 12% of subjects having refractive errors and using contact lens, myopia being the most common. It may be due to increased rubbing of eye.[23] This study is consistent with other study.[24] Guillon et al also showed that dry eye disease was frequent in contact lens wearers than in non wearers. [25] Other Studies have shown that contact lens wearers experience dry eye symptoms more than non-contact lens users.[26]

Smoking is one of the risk factors causing dry eye.[27] Large epidemiological studies indicate that female sex and older age increase the risk for dry eye.[28] Women are reported to be more prone to DE, 12% of male and 22% of female patients had a diagnosis of DE but some published studies based on regional population in China did not find any prevalence difference between males and females. [29,30] In current study male to female ratio was almost equal (42males vs 39females) and was not consistent with other study.[2]

In our study the female subjects used computers for lesser time periods than the males however females had more visual problems than the males[29]. Other studies estimate that the prevalence of CVS ranges from 75 to 90 % among computer users. Most of the studies have been among a limited number of computer workers and usually conducted within a single institution/organization.[31]

Conclusion

1. Dry eye disease (DED) is a frequently diagnosed eye problem. Twenty-five percent of patients visiting eye clinics have symptoms of dry eye, making it a growing public health problem.
2. Various environmental variations at work are related to eye and physical symptoms which affect quality of life. . Those students who are using computers and other screens develop dry eye symptoms.
3. Visual health related public awareness programmes should be started indicating risks of prolonged use of computers, cosmetics and smoking.

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