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Original Research Article

To assess the prevalence of dry eye among patients attending Outpatient department of Ophthalmology at Ascoms Hospital, Jammu

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Abstract

Aim: Present study was done to assess the prevalence of dry eye among patients attending Outpatient department of Ophthalmology at Ascoms Hospital, Jammu, India

Method: This hospital based randomized prospective study was done on 100 eyes to assess the prevalence of dry eyes among the patients attending outpatient department of ophthalmology at Ascoms Hospital Jammu with complaints of dry eye symptoms like dryness, grittiness, burning, heaviness, watering, ocular fatigue, photophobia.

Schirmers test-1 (without anesthesia) <15mm at 5 minutes in at least one eye and tear film break up time<10 seconds.

Results: Mean age of study population was 55.16 years. Dryness was observed among 41.25% of patients followed by watering which was seen in 26.25% of patients.1 patient(1.25%) had filaments on cornea. 53.75% of patients had Schirmer test value between 10-5 and 15% patients had value less than 5. 62.5% of female population had TFBUT less than 10 seconds. The overall Prevalence of dry eye was 80% among study population. It was maximum in elderly population of >60 years with prevalence of 65%. The overall prevalence of dry eye among elderly male was 22.5% and among elderly female was 42.5%.

Conclusion: The overall Prevalence of dry eye in our study population was 80% It was maximum in elderly population of >60 years with prevalence of 65% and prevalence of 28.75% was seen among diabetic patients.

Keywords: Dry eye, Schirmer test, tear film break up time.

1. Introduction

Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance and tears film instability with potential damage to ocular surface. It is accompanied by increased osmolarity of tear film and inflammation of ocular surface [1].

Dry eye disease is one of the most frequently encountered ocular morbidities. About 25% of patients who visit ophthalmic clinics report symptoms of dry eye, making it one of the most common conditions seen by eye care practioners [2]. Historically the term "keratoconjuctivitissicca" can be attributed to the Swedish ophthalmologist Henrik SC Sjogren [3]. In 1950 Andre De Roeth introduced the term "dry eye"[4].

Tear film in dry eye patients is unstable and incapable of maintaining protective qualities that are necessary for its structures and function. Patients experience discomfort symptoms associated with dry eye which are burning, stinging, grittiness, foreign body sensation, watering, ocular fatigue and dryness[5] Dry eye disease is seen with increased prevalence in patients with autoimmune disease[6]; which affect approximately 8% of the population and of whom78% are women.

In a population based study, symptoms of dry eye occur in approximately 14% of elderly and the most important risk factors for dry eye was use of number of

classes of systemic medications such as antihistaminics, anticholinergics, diuretics and others.[7] Dry eye conditions are also aggravated in polluted conditions, dry weather, low ambient humidity as seen with air conditioners and indoor heaters.

Ehlears N[8] stated that the corneal epithelium in normal eyes is always covered by a liquid film which averages7micrometer in thickness, in between blinks, so called tear film. Precorneal tear film is perhaps the most accessible part of the eye, playing a major role in its structural and functional wellbeing. It is a complex liquid that forms a thin smooth and stable film over the exposed conjuctival and corneal surfaces and is responsible for major refractive power of eye. Any disturbance in tear film leads to visual disability and considerable discomfort to patient.

Holly FJ Lemp MA [9] stated that the tear film formation and stability are governed by surface chemical characteristics of the tear film system, proper functioning of lacrimal apparatus and hydrodynamic factors which include periodic and complete blinking to facilitate tear spread to cover the entire ocular surface and tear clearance into nasolacrimal drainage for adequate turn over.

New classification system formulated by national eye institute in 1995 which distinguishes two main causes of dry eyes(a) an aqueous tear deficiency (b) an evaporated dry eye[10] Worldwide there are approximately 3 million people suffering from dry eye syndrome. Prevalence increases with age, affecting approximately 10% of those aged between 30-60 years and increases up to 15% in adults over the age of 65 years. Mean age is 49.19years and 57% are above 50 years of age. Most epidemic studies have demonstrated a higher prevalence among women with M: F ratio of 1:1.22. It is more common in rural then urban population. So present hospital based randomized prospective study was done to assess the prevalence of dry eyes among patients attending Outpatient department of ophthalmology, at ASCOMS Hospital, Jammu.

2. Material and methods

This hospital based randomized prospective study was done on 100 eyes to assess the prevalence of dry eyes among the patients attending outpatient department of ophthalmology at Ascoms Hospital Jammu.

2.1 Inclusion criteria

1) Patients of any age and of either sex
2) Patients complaining of dry eye symptoms like dryness, grittiness, burning, heaviness, watering, ocular fatigue, and photophobia.
3) Schirmers test-1 (without anesthesia) <15mm at 5 minutes in at least one eye
4) Tear film break up time <10 seconds

2.2 Exclusion criteria:

1) Patients with ocular surface infections
2) Patients with extensive ocular surface pathologies
3) Patients who had undergone an ocular surgery within 2 months
4) Use of topical drugs
5) Patients suffering from any other systemic disorder.

2.3 Study Procedure

A detailed history pertaining to symptoms of dry eyes were recorded including age, sex, occupation, and place, associated diseases, drug history, lid disorders and any history of allergy.

Patients were subjected to general physical examination to rule out possibility of any associated diseases. A detailed examination of the eye and ocular adnexa was done by:

a) Diffuse examination with torch light; b) Examination under slit lamp which included examination of:

- Tear film
- Eyelids for evidence of posterior blepharitis
- Conjuctiva for keratoconjuctivitissicca syndrome, xerophthalmia
- Cornea for keratoconjuctivitis, epitheliopathy
- Sclera for scleromalacia as in vitamin A deficiency
- Anterior chamber
- Lens

All these patients were subjected to detailed clinical work up especially with regards to symptoms (dryness, grittiness, burning, redness, and photophobia) and signs (congestion, mucus debris, loss of corneal lusture)

Tear film studies –Schirmer-I test, Tear film break up time were conducted on these patients.

2.4 Schirmer-I Test

The purpose of this test is measurement of the total (reflex and basal) tear secretion. To minimize reflex tearing, the eyes should not be manipulated before starting this test. The material used was commercially available Whatman No.41 filter paper strip.

Procedure: This test was performed without the use of topical anaesthesia with the standardized strips. Patient was made to sit in a dimly lit room; the strip folded at notch was placed gently over the lower palpebral conjunctiva at the junction of medial two-third and lateral one third. Patient should keep his eyes open and look straight ahead and blink normally. The length of wetting was recorded after 5 minutes. Results were interpreted as the amount of wetting in millimeters at the end of five minutes.

Interpretation: Values <15mm after 5 minutes were taken as hyposecretion.

2.5 Tear film break-up time (TFBUT)

It is an invasive method of measuring tear film stability and is defined as the time interval between last

complete blink and appearance of first randomly distributed dry spot on tear film

Procedure: No anaesthesia was used. The test was performed by applying 1%flurescein strip moistened with a drop of sterile saline to the lower tarsal conjunctiva, taking care not to touch cornea. The patient was asked to blink once or twice and then stare straight ahead without blinking. Scanning of the tear film was done with a broad beam under slit lamp using cobalt blue filter. The time interval between the last blink and the appearance of first randomly distributed dry spot was noted with the help of stopwatch and that measured the TBUT.

Interpretation: Normal TBUT is between 15 to 30 seconds. Dry spots appearing in less than 10 seconds were considered abnormal.

2.6 Statistical analysis

A descriptive analysis was performed first, followed by univariate and multivariable logistic regression analysis. Data was expressed as percentage.

3. Results

Dry eye tests were performed on enrolled patients and following observations were made:

Table 1: Age and sex wise distribution of study population

Age group (years)	Total (n)	Male		Female	
		(n)	%	(n)	%
<40	10	5	50	5	50
40-59	38	14	36.8	24	63
>60	52	18	34	34	65

Mean age of study population was 55.16 years.

Table 2: Dry eye symptoms observed among study population

Dry eye symptoms	No of patients	
	(n)	%
Dryness	33	41.25
Grittiness	10	12.5
Burning	5	6.25
Redness	4	5
Photophobia	1	1.25
Watering	21	26.25
Ocular fatigue	6	7.25

Table 2 shows dry eye symptoms among study population. Dryness was observed among 41.25% of patients followed by watering which was seen in 26.25% of patients.1 patient (1.25%) had filaments on cornea.

Table 3: Schirmer Test

Schirmer test value	Total		Male		Female	
	(n)	%	(n)	%	(n)	%
>15	20	25	10	50	10	50
15-10	25	31.25	10	40	15	60
10-5	43	53.75	19	44.1	24	55.8
<5	12	15	3	25	9	75

Table 3 shows schirmer test done on study population. 53.75% of patients had schirmer test value between 10-5 and 15% patients had value less than 5.

Table 4: Tear Film Break up Time

TFBUT	Total (n)	Males		Female	
		(n)	%	(n)	%
>10 seconds	20	10	50	10	50
<10 seconds	80	30	37.5	50	62.5

Table 4 shows tear film break up time among study population.62.5% of female population had TFBUT less than 10 seconds.

The overall Prevalence of dry eye was 80% among study population. It was maximum in elderly population of >60 years with prevalence of 65%.The overall prevalence of dry eye among elderly male was 22.5% and among elderly female was 42.5%.

Table 5: Dry eyes among patients with systemic disease

Diabetic patients having dry eye		Hypertensive patients having dry eye	
N	%	N	%
23	28.75	12	15

In Table 5, 28.75percent of diabetic patients had dry eyes as compared to 15percent among hypertensive patients.

4. Discussion

Dry eye is a major clinical problem affecting quality of life [11] as it reduces the immunity of ocular surface, causes eye symptoms in children, leads to visual fluctuations during the day, and affects visual clarity in the daytime. Moreover, dry eye can reduce learning efficiency in children. Dry eye is widely believed to be a type of disease whose incidence increases with age [12].

The overall Prevalence of dry eyes was 80% in our study population. It was maximum in elderly population of >60 years with prevalence of 65%. Guillon *et al* [13] found that the tear film evaporation is significantly higher in subjects above the age of 45 years. An intact and efficient lipid layer in the tear film is required to prevent the evaporative loss of tear film. This lipid layer is thinner and less efficient in older subjects and particularly females. There is destabilization associated with significant changes in the tear lipid layer leading to less protection from evaporation in the older population.[14] These findings are consistent with the previous studies by Shaumberg,[15] Moss *et al* [16] emphasized an increased prevalence of dry eyes in the elderly, particularly women. An update from the international DEWS stated that the global prevalence of dry eye is about 17% while several other studies showed a higher prevalence of approximately 30% in people of Asian descent.[17] A retrospective study conducted at Miami and Broward Veterans Affairs eye clinics estimated a prevalence of 22% DED in females compared to 12% in males.[18] A study conducted in Korea reported a

prevalence of 33.2%.[19] The overall prevalence of dry eyes in our study population was 80% which is quite high as seen in similar other studies. It was maximum in elderly population of >60 years with prevalence of 65%. In present study, we found dry eye prevalence of 28.75% among diabetic patients. According to study conducted by Manaviat *et al* in Iran where 54.3% of the type 2 diabetic patients suffered from dry eye syndrome.[20] Possible reason for this may be the diabetic sensory or autonomic neuropathy or the occurrence of microvascular changes in the lacrimal gland.[21].

5. Conclusion

Dry eye is a very common condition with a high prevalence among the elderly. The overall Prevalence of dry eye in our study population was 80% It was maximum in elderly population of >60 years with prevalence of 65% and prevalence of 28.75% was seen among diabetic patients.

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