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Screening for Dry Eye Disease in Out-Patients Presenting at a Tertiary Care Hospital-A Clinical Study.

KEYWORDS: Tear Meniscus Height, Schirmer's I test, tear film, tear film breakup time, Dry eye disease.

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ABSTRACT **Objective:** Study the prevalence of dry eye among patients seeking attention for ophthalmic problems,

Materials & Methods: This is a prospective study conducted at Govt. Regional Eye Hospital between 1st March 2015 to 15th April 2015.This study was conducted based on Tear film status which was evaluated by using Tear Meniscus Height, Schirmer's I Test and Tear film breakup time.

Results: A total of 150 patients were enrolled in this study. Outof which, 22(14.66%) subjects were found to be suffering from Dry Eye disease (DED) .Incidence of DED was found to be high in 41-50 years age group (25%). 12.12% in Males and 16.67% in Females. The most common symptoms isItching (45.45%), followed by burning sensation (40.9%), Foreign Body Sensation (36.36%), and Redness (31.8%)

Conclusion: Out of 150 patients 22(14.66%) subjects were found to have dry eye. Probable contributing factors include:

- Increased Urban pollution levels
- Lower levels of nutrition, literacy & awareness of treatment of simple conditions which when neglected may lead to DED.

This study sensitizes the ophthalmologist sitting in the busy OPD to always keep a high index of suspicion of the possibility of DED

Introduction

Dry eye is a fairly common condition in the population. Tear film status evaluation is not done routinely because the gravity of the situation is underestimated by ophthalmologists .Our aim was to shed light on this dark area and to place things in true perspective.

Our aim was to study the prevalence of dry eye among patients seeking attention for ophthalmic problems, the early detection of cases and their treatment and to suggest recommendations for initiating correct counter measures.

Materials and Methods

We randomly selected 150 patients from the outpatient clinic of Government regional Eye Hospital/AMC, Vizag . The study lasted for 1.5 months .Patients aged between 20 years and 60 years were included in this study.Patients-below 20 years and those with active ocular infections, lid abnormalities, dacryocystitis and corneal ulcers were excluded from the study.

A detailed history regarding smoking, place of residence and occupation was taken. Complaints pertaining to dry eye were noted, the visual acuity of all patients was recorded with snell's chart. A thorough anterior segment examination was done with slit lamp bomicroscope and posterior segment examination was done with 78D and indirect ophthalmoscope

Three tests for evaluating tear film status were performed: Tear Meniscus evaluation,Schirmer's test I and Tear film break up time (TBUT) .

Schirmer's test I uses paper strips inserted into the eye for several minutes to measure the production of tears. The exact procedure may vary somewhat. Both eyes are tested at the same time. Most often, this test consists of placing a small strip of filter paper inside the lower eyelid (inferior fornix). The eyes are closed for 5 minutes. The paper is then removed and the amount of moisture is measured. Sometimes a topical anesthetic is placed into the eye before the filter paper to prevent tearing due to the irritation from the paper. The use of the anaesthetic ensures that only basal tear secretion is being measured.

This technique measures basic tear function.

A young person normally moistens 15 mm of each paper strip. Because hypolacrimation occurs with aging, 33% of normal elderly persons may wet only 10 mm in 5 minutes. Persons with Sjogrens syndrome moisten less than 5 mm in 5 minutes.

A tear breakup time (TBUT) test measures the time it takes for tears to break up in the eye.

This measures the interval between the individual's last complete blink and the break-up of his or her tear film

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1. This simple test involves the use of a slit-lamp, set on a bright light setting with a cobalt blue filter:
2. Instil fluorescein into the lower fornix. Ask the patient to blink several times and then stop.
3. Measure the time between the last blink and the first appearance of a dark spot on the cornea (formation of a dry area) on the otherwise continuously stained tear film.

A tear break-up time of less than 10 seconds suggests a dry eye.

For tear meniscus evaluation we compare the tear prism height with the illuminated slit width by setting the slit horizontally in alignment with the lower lid margin, altering the slit width until it appears to match the height of the tear prism. Observation of the meniscus profile is also extremely helpful. A regular tear meniscus is typically observed in a healthy eye while a meniscus with a scalloped edge is often associated with a dry eye.

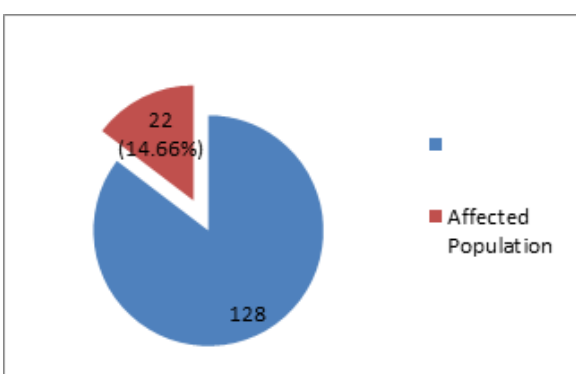
A tear meniscus height of < 1 mm/convex was considered negative and > 1 mm/concave positive for dry eye . In the Schirmer'stest, an extent of wetting < 5 mm on the Whatman's filter paper No.41 was taken as positive for dry eye .

A TBUT of<10 seconds was taken as positive for dry eye.

If two or all of the above performed tests was positive in a given patient, the patient was deemed to be suffering from dry eye.

RESULTS

Out of the 150 subjects of which 66 were males and 84 were females, 22(14.66%) were found to show positive screening tests for DED. Among the symptoms pertaining to dry eye, itching (45.46 %) was the commonest symptom, followed by burning (40.90 %).



Symptoms	Total No	%
Foreign Body	8	36.36
Discharge	3	13.63
Burning	9	40.90
Itching	10	45.45
Episodes of Blurred Vision	3	13.63
Redness of eye	7	31.81

Tear film findings :

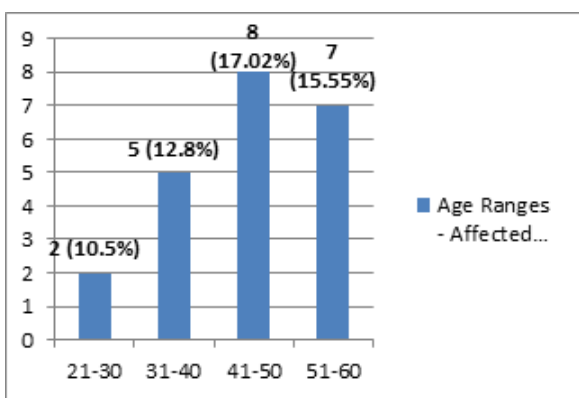
A tear meniscus height of < 1mm was found in 20% patients. Overall 30.66 % patients had a TBUT value of < 10 seconds while 29.33% had a Shirmer's test I value of < 5 mm.

Test	Affected No	%
Tear Breakup time < 10 seconds	46	30.66
Tear Meniscus Height < 1mm	30	20
Schirmers I Test (<15 mm)	44	29.33

A progressive increase in incidence of dry eye was found with increasing age group with highest incidence between 40 years – 50 years age group, more so amongst women

Age Groups	Total Samples	Affected Samples	% Affected	Total Men	Affected Men	% Affected Men	Total Women	Affected Women	% Affected Women
21-30	19	2	10.53	7	1	14.28	12	1	8.33
31-40	39	5	12.82	17	2	11.76	22	3	13.63
41-50	47	8	17.02	23	2	8.69	24	6	25
51-60	45	7	15.56	19	3	15.79	26	4	15.38

Among the 22 people (14.66%) population affected with dry eye, 16.67 % females were affected and 12.12 % males were affected.



Discussion :

Past studies suggest that dry eye prevalence ranges from 10.8% to 57.1%. The vast disparity in dry eye prevalence stems mainly from the different dry eye diagnostic criteria employed and different cut-off values for objective dry eye tests.

In our study, dry eye prevalence increased progressively with age, which is consistent with findings in other dry eye studies, and the age group 31-60 years showed a relative peak. Hikichi and colleagues too found this peak but did not explain it. In our opinion, this peak reflects a dry eye state induced by environmental exposure, to which this age group, being the most active occupationally, is exceptionally prone. This phenomenon may be more common in tropical countries where sunlight and wind exposure is immense. More research is required in tropical climates before a final conclusion can be drawn.

Most studies report a higher prevalence of dry eye in females than males. Our study was no exception; 16.6% females in the present study had dry eye compared to 12.12% males. Our study consistent with Anshu Sahai's study from Jaipur where females (22.8)are more involved than males(14.9%).In our study women are more involved in the age group of 40-50 years. Amongst women in this age group, menopause causes estrogen deficiency and a

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consequent change in the local hormonal milieu of the lacrimal gland. It is thought to decrease tear production and occurrence of dry eye in females.Smoking, air pollution and drugs have been suggested as risk factors in various studies. Smoking predisposes the eye to tear film instability by its direct irritant action on the eyes and represents a modifiable risk factor in dry eye causation. A drug too may disrupt one or more components of the tear film causing it to become unstable.

Conclusions and Recommendations:
Out of 150 cases studied 22 patients (14. 66 %) were found to have dry eye. Dry eye incidence increases with age. The incidence among females was higher than males. The main factors responsible for dry eye may be:

- Hot weather conditions
- Increased urban pollution levels
- Lower levels of nutrition, literacy and awareness of treatment of simple conditions which when neglected may lead to the dry eye complex.

Limitation of our study
The present study is limited by a small sample size and lack of follow up of cases. However, a routine screening of patients for this condition by the ophthalmologist so as to unmask hidden cases is warranted so as to prescribe rationally.A discussion of the sensitivity, specificity, predictive value of the various dry eye questionnaire responses and the objective tests employed is beyond the scope of this article.

This study also helps to sensitize the ophthalmologist sitting in the busy OPD to always keep a high index of suspicion of the possibility of underlying dry eye.

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