

Correlation of Dry Eye Symptoms With Schirmer's and TBUT

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Abstract- AIM: To correlate dry eye symptoms due to various causes by using Schirmer's test and TBUT

OBJECTIVE : Purpose of the study is to correlate the dry eye symptoms based on severity of the aqueous deficiency and tear film instability using schirmer's test and TBUT.

METHODOLOGY: Clinical based survey of 150 patients who attended ophthalmology OPD during period between January 2019 to March 2019 were subjected to the study by using schirmer's test and slit lamp examination using fluorescent staining in TBUT.

CONCLUSION: There is a positive correlation of the various symptoms of dry eye with Schirmer's test and TBUT in which Schirmer's test is more sensitive and used as a diagnostic test for dry eye

CORRELATION OF DRY EYE SYMPTOMS WITH SCHIRMER'S AND TBUT

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I. INTRODUCTION

Dry eye is defined as:(National Eye Institute (NEI)/Industry Dry Eye Workshop, 1995) Dry eye is a disorder of the tear film due to tear deficiency or excessive evaporation, which causes damage to the interpalpebral ocular surface and is associated with symptoms of ocular discomfort. The definitions was updated as "Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface."

A normal tear film is required to have a comfortable and optimal vision. Tear film consist of three main layers. The innermost layer, the middle layer, the superficial layer. The innermost layer is the thinnest layer which is made up of mucus. The mucus layer helps the overlaying watery layer to spread evenly.

The middle layer is the thickest layer which is watery in nature which keeps the conjunctiva moist and comfortable. The superficial layer is made lipids which helps to reduce the evaporation of the watery layer beneath.[1]

Dry eye leads to irritation in the eye. Patients with mild case of dry eyes most likely do not experience any complication other than irritative symptoms.

Severe dryness on the other hand can lead to increase in risk of infection in the eye, thinning , scaring of the cornea which can lead to perforation of cornea which can also lead to defective vision in patients. Dry eye is among the common ocular disorder, especially among the elderly.Its prevalence varies widely among epidemiological studies depending on how the disease is defined and diagnosed, and which population is surveyed. It is estimated to be 7.4%–33.7%.

Dry eyes is seen in allergies, decrease in hormones associated with aging, pregnancy, blepharitis, sjogren's syndrome, lupus,eye surgery, infrequent blinking, contact lens users, diabetes, post refractive surgeries like LASIK or PRK, inflammatory eye conditions, vitamin A deficiency.

There are various methods to assess dry eye which include Tear break up test(TBUT), Schirmer's s test, MMP-9, Tear osmolarity, Tear film interferometry,Sjö test.

II. METHODS AND METHODOLOGY

The study is a prospective clinical based survey where 150 patients attending the Out patient department between the months of January 2019 to March 2019 where subjected. Written consents was obtained from the patients willing to participate in the study after explaining the procedure. The

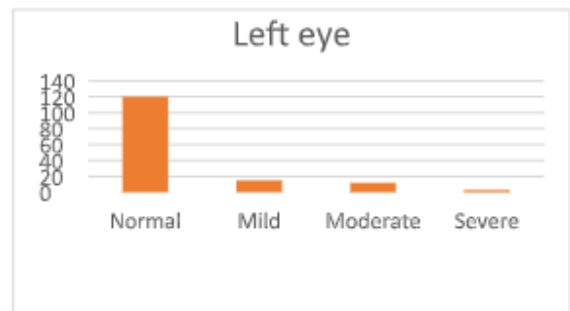
subjects included patients attending the out patient department in ophthalmology department of Saveetha medical college, Thandalam. The subjects excluded were patients unwilling to participate in the study, in-patients(admitted patients), post operative care patients and pregnant women, patients presenting with ocular infection, patients using medication that might influence the tear film test, patients allergic to fluorescent stain. The study was done by performing Schirmer’s test and Tear breakup test (TBUT) on the patient to determine if the patient has dry eyes syndrome. Schirmer’s test is useful in diagnosing patients with severe aqueous deficiency but is relatively insensitive for patients with mild dry eye. TBUT is relatively specific in screening patients for tear film instability. TBUT is done by using 2µl of 2% sodium fluorescein solution onto the inferior palpebral conjunctiva after gentle depression of the lower eyelid [3].The subject was asked to blink slowly for 3 times and then the eye was examined using slit lamp using a cobalt filter. The tear film is observed using the slit lamp,if the tear film breaks is >10secs the tear film was considered as normal, whereas 5-10secs was considered as marginal and <5secs was consider as low. Schirmer’s test was then performed by placing the Schirmer’s filter paper between the lower fornix and the lower eyelid. The values was observed after 5mins and noted. <5mm on the Schirmer’s filter paper was taken to indicate severe dryness.[2]

III. DATA ANALYSIS

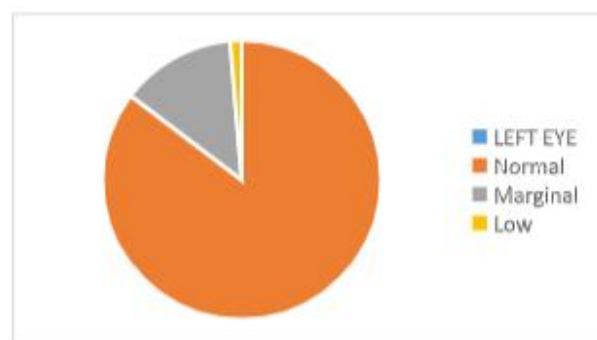
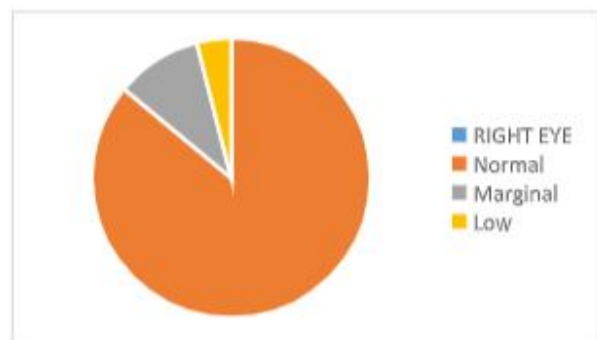
A total of 150 subjects were taken under the study. The correlation between Schirmer’s test and TBUT was done by using Pearson’s correlation. The Pearson’s correlation coefficient is used to measure the strength of a linear association between two variables, where the value $r = 1$ means a perfect positive correlation and the value $r = -1$ means a perfect negative correlation. The probability of $P < 0.05$ was taken significant.

IV. RESULT

The tests were performed on all 150 subjects out of which Schirmer’s test was normal in 105 patients in the right eye and 120 patients in the left eye. Mild dryness was seen in 30 patients in the right eye and 15 patients in the left eye. Moderate dryness was observed in 14 patients in the right eye and 12 patients in the left eye. However severe dry eye was only observed in 1 patient in the the right eye and 3 patients in the left eye among the 150 patients using Schirmer’s test.



TBUT showed 129 patients with normal tear film stability in the right eye and 128 patients in the left eye. Marginal stability of the tear film was seen in 15 patients in the right eye and 20 in the left eye. Low stability of the tear film was observed in 6 patients in the right eye and 2 patients in the left eye.



The correlation factor coefficient between Schirmer's test and TBUT is +0.427. A positive moderate coefficient is seen between the tests performances.

Schirmer's test in the diagnosis of dry eyes by GU Kallarackal, EA Anasazi, N Amos, JC Martin, C Lane, JP Camilleri. (2002)

V. DISCUSSION

Dry eye is among the commonest ocular disease seen in patients. The main observed symptom in dry eyes is irritation. The study was performed observed a positive moderate correlation between Schirmer's test and TBUT used in the diagnosis of dry eye with its symptoms. A study on correlation of lipid layer measurements with fluorescent tear film break up time and Schirmer's test by MA Isreb (2003) observed a positive correlation coefficient of high degree between Schirmer's test and FTBUT which was done with a sample size of 35 people [4]. A lower level of correlation coefficient was seen in the study done in Saveetha Medical college, Thandalam using a sample size of 150 patients. A comparative study to assess the clinical use of fluorescein meniscus time (FMT) with Tear breakup time (TBUT) and Schirmer's test in the diagnosis of dry eyes observed that Schirmer's test is more sensitive than that of TBUT. Our study arrived at a similar conclusion that Schirmer's test is more sensitive. 30% in the right eye and 20% of the cases in the left eye showed dryness in eye. Whereas in TBUT 14% of the cases in right eye and 14.66% cases in the left eye showed indication of dry eye. Thereby, Schirmer's test is more sensitive test and can be used as diagnostics test for dry eyes.

VI. CONCLUSION

There is a positive correlation of the symptoms of dry eye with Schirmer's test and TBUT. The sensitivity of Schirmer's is more higher than that of TBUT. Schirmer's test is used a diagnostic test for dry eye.

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