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The Effect of Spring Catarrh on Tear Quantity

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Abstract

Background Spring catarrh is one of allergic conjunctivitis that spread at the residents of the warn and more bouts of spring catarrh in certain seasons, such as the beginning of spring and summer.

Aims: This study was conducted in Makkah Eye Complex Elryad-Khartoum; to know the effect of spring catarrh on the tear volume, in the period from February to April 2016.

Methods: Special data form was designed to collect the information. It included subject demographic data (Age, Gender), vision was taken by using (E chart), and schirmer's test paper to examine the amount of tears in spring catarrh subjects.

Results: A total of (150) subjects were included in the study; (100) of them were spring catarrh subjects 71% males and 29% females their age ranged between (6 – 15) with a mean of 10.01 ± 2.63 years; symptoms frequent and percentage were Itching 81% Itching + watering 11% and Itching + discharge 8%; vision in decimal 0.92 ± 0.14 was a mean in RE and 0.94 ± 0.11 in LE; the outer eye were red eye 83 (83%) and red eye + ptosis 17 (17%); tear quantity mean 21.95 ± 9.57. (50) Subjects were case control; 42% males and 58% females; their age mean was 12.58 ± 3.28 ranged between (8-17) years; vision in decimal with a mean of 1.10 ± 0.10; tear quantity mean 16.20 ± 4.71. The result showed 53% of spring catarrh subjects had dryness comparing with the normal subjects; paired sample t-test showed a significant difference between means P value 0.001.

Conclusion: Spring catarrh is one of dry eye the causes, while discharge, watering, Itching, were the most common symptoms.

Keywords: tears quantity, spring catarrh, vision

Introduction

Generally, the normally lacrimal secretion produce is well in excess of 1g and less than 15-30g. This value is differing according to test used in measuring the tear film. In infants the onset of lacrimation occurred during the first four week in majority of infant and most it occurred first with crying assorate with hunger and pain. There is no diurnal variation in basal tear production. An esthetic causes the reduced the rate of tear flow. With advantage age, basic tears secretion decrease gradually and the difference between the sexes is negligible except in early adult life when females have higher rate of secretion [1].

The tear film is, typically, considered to be a three-layered structure, comprising a mucoidal basal layer, an aqueous component and a superficial lipid layer. This classic description has been challenged in recent years with some modifications proposed by Nichols et al, and by the work of Pyral, who believes the tear film is significantly thicker and has more mucus than previously thought functionally, the three major components of the tear film work together to maintain the overall form their functions. The lipid and mucus layers have the most influence on the quality of the tear film, while the aqueous layer provides the quantity of tears needed. Both quality and quantity of tears are important to maintain the bulk hydration and surface hydration of a soft contact lens [1].

The tear film is formed and maintained by blinking. As the eye closes during a blink, the lipid layer is compressed between the lid margins.

The mucin, contaminated by lipid from the tear film breaking up, is moved to the upper and lower fornices from where it is excreted through the tear duct. It is replaced by a new layer, which is created by the lids pushing against the eye surface.

Since its introduction in 1903, [2,3] the Schirmer test has been widely used in clinical practice for assessing tear production. There has been extensive criticism of the effectiveness of this technique, which has been well documented in the literature. The invasive nature of this technique results in excessive reflex tearing, and hence a lack of sensitivity and repeatability limits the value of the test in clinical practice. Although it is becoming less popular in contact lens practice, there appears to be a reluctance to discard this test, which is partly due to the fact that it is still the simplest, fastest and least expensive diagnostic test available for assessing tear production. The authors believe the only value of this test is in confirming which patients have severe dry eye; keratoconjunctivitis sicca is indicated where there is less than 5mm of wetting. The technique involves hooking the 5mm folded end of an absorbent strip of paper over the margin of the lower lid. Although variations have been produced, the most commonly used is the Schirmer tear test strip, which comprises absorbent strips of paper of 35mm x 5mm .The length of the wetting from the bend is measured in millimeters after five minutes. A normal tear film should produce a wetting length of more than 15mm.[4]

Material and Methods

This is a cross-sectional Hospital based study would be at Sudan – Khartoum Al-Riyadh City – in Makkah Eye Complex Hospital; 100 (VKC) with 50 (Selected as Normal one). All Boys & Girls age between (6-15) who attended and Diagnosed with Vernal Catarrh across 2015, normal age between (8-16).

Study design

Cross-Sectional Hospital based Study.

Study area

Sudan – Khartoum Riyadh City – Makkah Eye Complex Hospital

Study population

All Boys & Girls age between (6-15) who attended and Diagnosed with Vernal Catarrh across 2015 with 50 normal one age between (8-16).

Sample size

100 (29 female and 71 male) with 50 (21 Male & 29 Female Selected as normal ones)

Methods

2.5.1 Subjects demographic data (Age, Gender)

2.5.2 Snellen's vision testing chart

The vision was tested by Snellen's test type (E test) and reported from patient's record.

Schirmer test paper

Generally, before placing strip paper under the lid, the patient was seated comfortably and told that test is to measure the amount of tears produced and is not pain full, but may be mildly irritating. Then instruct patient to look up slightly and bent portion of the strip gently placed under the lower lid to the nasal side of the middle of the lid to avoid touching the cornea, as this causes reflex tearing, giring in availed results. The patient may blink normally with the strip in place and May gently, but not forcibly, closes the eye during the test[5, 6]

The time of placed strip in the eye was noted and it is left in for 5 minutes. On removal, the length of millimeters at the paper strip from the notch that was moistened was measure by ruler and then record[7]

Data Collection

With Diagnosed Vernal Catarrh list as Referral Patients to select the target group and with Schirmer test which has been widely used in clinical practice for assessing tear production. The invasive nature of this technique results in excessive reflex tearing, and hence a lack of sensitivity and repeatability limits the value of the test in clinical practice. This test which I used is partly due to the fact that it is still the simplest, fastest and least

expensive diagnostic test available for assessing tear production and Quantity.

Ethical Considerations

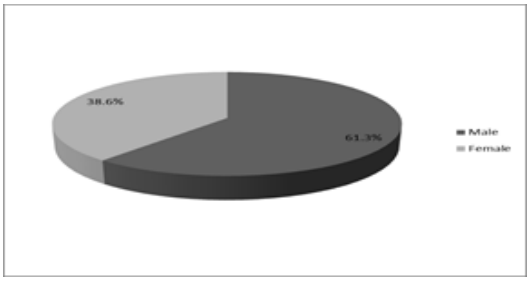
Every Boys and Girls who participated and involved in this Study were informed his parents as well as it is non-invasive test, any one refused excluded with respect.

Data analysis

Data analyzed with SPSS (version 16) Distributions of study Population were Conducted with demographic and clinical data for two groups and Tear Quantity of two groups, t test use to compare between normal and abnormal ,Pearson's correlation was use also to find the relation between Vernal catarrh tear quantity and Normal.

Results

A total of (150) subjects were included the study, they divided into two groups, group (A) were



have spring catarrh contains 100 subjects, and group (B) were contain 50 normal subjects.

Table (1) Shows the demographic and clinical data of the two study groups

Data	**Group A** **N =100**	**Group B** **N = 50**
Age Range (mean ± SD)	(6 - 15) 10.01 ± 2.63	(8 - 17) 12.58 ± 3.28
Gender	Male 71 (71%) Female 29 (29%)	Male 21 (42%) Female 29 (58%)
Symptoms	Itching 81 (81%) Itching+watering 11 (11%)	-
	Itching+discharge 8 (8%)	
Vision Range (mean ± SD)	**RE** **LE** (0.5 – 1.0) (0.5 – 1.0) 0.92 ± 0.14 0.94 ± 0.11	(1– 1.2) 1.10 ± 0.10
Outer eye	Red eye 83 (83%) Red eye+ptosis 17 (17%)	NAD
Tear Range (mean ± SD)	(5 - 35) 21.95 ± 9.57	(8 - 25) 16.20 ± 4.71

Group (A)

Mean age of this group was 10.01 ± 2.63, while symptoms frequent and percentage in Itching

(81) 81% Itching + watering (11) 11% and Itching + discharge (8) 8%. Vision in decimal 0.92 ± 0.14 was a mean in RE and 0.94 ± 0.11 in LE. The outer eye were red eye 83 (83%) and red eye + ptosis 17 (17%). Tear quantity mean 21.95 ± 9.57.

Group (B)

Mean age of this group was 12.58 ± 3.28. Vision in decimal with a mean of 1.10 ± 0.10. Tear quantity mean 16.20 ± 4.71.

Table (2) measurement of tear quantity between group A and B

Tear quantity	Group (A)	Group (B)
1-9	10 (10%)	4 (8%)
10-14	7 (7%)	14 (28%)
15-25	46 (46%)	32 (64%)
>25	37 (37%)	0 (0%)
Total	100 (100%)	50 (100%)
Mean & SD	21.95 ± 9.57	16.20 ± 4.17

(1-9 = Sever dryness) (10-14=Moderate dryness) (15-25 Normal) (> 25 watery)

A paired sample t-test was used to compare between spring catarrhs tear quantity and normal subjects. The test showed significant difference, df (49) t = -3.4, p = 0.001 (see figure 1).

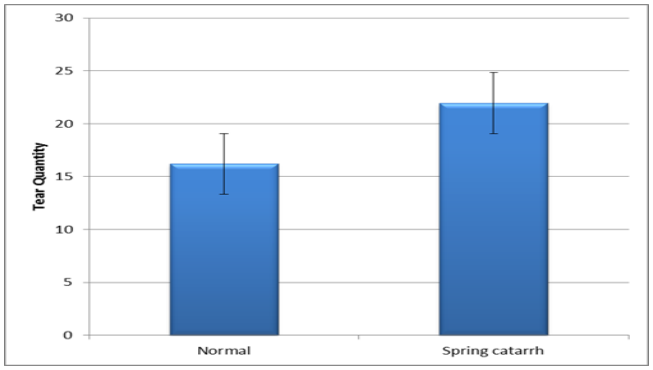


Figure (1) Mean of tear between group (A) and (B)

Discussion

Vernal Keratoconjunctivitis (VKC), also known as Spring Catarrh, it is serious allergic disease affecting the eyes of young children, especially boys. (Mantelli, 2007) In my own study range of ages were between 6-15 with mean 10.01 ± 2.63) with gender distribution 71% for male and 29% for female. It usually begins before the age of 10 years and often disappears at puberty. This agreed with Mantelli.

Children with VKC complain of itching of the eyes, in my own study Itching was 81% watering+ Itching was 11%and a stringy discharge+Itching was 8%. Their vision may be blurred and they may be excessively sensitive to light. (Kumar S 2009) and this is totally agreed with my own , therefore the range of vision was blurred (mean ± SD:0.92±0.14) Vs 1.10±0.10 for normal one. One characteristic symptom is that they may have great difficulty in opening their eyes on awaking, and this and the very distracting effect of the condition may cause them to miss school.

VKC produces inflammation of the eye surface. On the underside of the upper eyelids, bumps shaped like tiny cobblestones appear. Substances released from this tissue can cause damage to the cornea (the clear window of the eye). Sometimes a whitish deposit may accumulate on the cornea. According to Kumar Red eye refer to Inflammation, in my own study: Inflammation Indicator was red eye was 83% redeye + ptosis were 17% and this is agreed with Kumar. keratoconjunctivitis sicca is indicated where there is less than 5mm of wetting. The technique involves hooking the 5mm folded end of an absorbent strip of paper over the margin of the lower lid. Although variations have been produced, the most commonly used is the Schirmer tear test strip, which comprises absorbent strips of paper of 35mm x 5mm.

The length of the wetting from the bend is measured in millimeters after five minutes. A normal tear film should produce a wetting length of more than 15mm (Begley C et al 2000) The tear film (mean ± SD) was 21.95±9.57 and 16.20±4.71 abnormal and normal respectively.

This is referring to significant difference between Spring Catarrh tear quantity and normal one (P-value: 0.001). A study done by Alaa 2012 agrees with our study whom mention that 43.3% of spring catarrh patient have increase in the amount of tear, 48.3% of spring catarrh patient have normal tears, 6.7% of spring catarrh patient have dryness in the eye, 1.7% of spring catarrh patient have severs dryness in the eye .

Conclusion

The study showed that vernal catarrh is more common among Children specially among boys than the girls , when we used tear assessment test (Schirmer test) as simple non – invasive test, therefore we should focus on school ages for medical care in Sudan.

Overall, the use of tear quantity assessment is important way to monitor eye vision capability.

The Schirmer tear test strip: A normal tear film should produce a wetting length of more than 15mm, making this test a simple quick accurate test for investigate the Spring Catarrh effects on tear quantity. This area needs further studies with other tests.

Recommendations

Treating dry eyes is necessary because it is a factor that causes eye infections and enables allergies to harm the eye in all ages. Parents should work as far as possible by removing their allergic children from places and environmental factors that increase their effects.

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