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ARTICLE

PREVALENCE AND CLINICAL CHARACTERISTICS OF DRY EYE DISEASE IN VERNAL KERATOCONJUNCTIVITIS

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ABSTRACT

OBJECTIVES: *The main objective of this study was to determine the proportion of dry eye disorder in Vernal Keratoconjuntivitis patients.*

MATERIALS AND METHODS: *This was a comparative cross sectional (analytical) study which included 95 patients. Samples size was collected by randomized control method. Tear film breakup time was measured by Schirmer test on slit lamp. Patients involved in the study were above 16 years to 22 years of age. Groupeds data of Schirmer test was analyzed using SPSS version 20.*

RESULTS: *The Schirmer test was performed to assess dry eye in patients with Vernal Keratoconjuntivitis. 95 patients were enrolled in study. Results of this study was analyzed by Fisher's exact test / Chi square. 43 out of 95 patients, 54(56.8%) were females and 41(43.1 %) were males.43/95 (45.2%) people were having age 16 to 18 years, 25(26.3) had age 19 to 21 years old and remaining 27(28.4%) had age 22 to 24 years. Out of 95 patients in right eye, the 18(18.9) had normal tear breakup time in right eye and 27(28.4%) had moderately deranged tear breakup time and remaining 50(52.6) had severely deranged tear breakup time. Out of 95 patients 18(18.9) had normal tear breakup time in left eye and 27(28.4%) had moderately deranged tear breakup time and remaining 50(52.6) had severely deranged breakup time. In this study p-value <0.001 showed significant result which showed significant association of dry eye disease with VKC.*

CONCLUSION: *It is concluded that there is association of dry eye with Vernal Keratoconjunctivitis patients.*

KEYWORDS: *Vernal keratoconjuctivits, ocular, tear film.*

INTRODUCTION

Vernal Keratoconjunctivitis (VKC) is included in the recent classification of ocular surface hypersensitivity disorders as both an IgE-and non-IgE mediated ocular allergic disease.[1,2] The ocular surface is consistently exposed to the external environment, hence at greater risk to be attacked by both pathogenic microorganisms. The ocular surface can be described as a group of tissues such as the cornea and conjunctiva. The ocular surface also includes the lacrimal gland, the lacrimal drainage system and the mucosal adnexa.[2,3] Itching, redness and foreign body sensation are the main symptoms of VKC. Due to palpebral thickening, lacrimation, photophobia, blepharospasm and pseudo-ptosis are highly specific symptoms of VKC. These symptoms, if not treated consistently, can persist for weeks. Seasonal exacerbation is common, but patients may have symptoms throughout the year particularly those living in subtropical or desert climate. More than 60% of patient have repeated recurrence around the year and this led to the widely accepted hypothesis that VKC is an immunologically mediated hypersensitivity reaction to environmental antigens.[4]

Dry eye disease (DED) is a major tear deficiency disorder which causes discomfort, visual disturbances, and tear film instability with potential damage to the ocular surface. The tear film and ocular surface form a complex and stable system that can lose its equilibrium through multiple disturbing factors.[5] DED is one of the most frequently established diagnoses in ophthalmology, and represents a growing public health concern, with consequences that remain widely underestimated. This pathology causes significant impact on visual function, which may affect quality of life and work productivity.[6]

Aetiologically dry eye can be classified as.[6]

1. Aqueous deficient
2. Evaporative

Aqueous-deficient dry eye has two major subgroups: Sjogren's and non-Sjogren's syndrome. Evaporative dry eye may be intrinsic (e.g., due to Meibomian gland dysfunction, eyelid problems, or low blink rate) or extrinsic (e.g., due to vitamin A deficiency, preservatives in topical medications, contact lens wear, or diseases of the ocular surface).[7]

Dry eye disease has significant socio-economic implications, such as increased health-care costs and a negative impact on vision-related quality-of-life issues, such as driving, television watching, reading, computer work and emotional wellbeing.[6]

DED is estimated to affect from 5% to more than 30% of the population, depending on the diagnostic criteria.[6] Despite the gain in knowledge of pathogenic factors of DES acquired in the past decades, there has been considerable discrepancy in the reported prevalence worldwide, mainly due to lack of consensus on appropriated diagnostic criteria and differences in the parameters and research methodology applied. Two large population based studies suggested that about 7.8% of American women and 4.7% of men aged 50 years and older had DED, 21.6% in men and women aged 48 to 91 years and 14.5% among those aged 21years.[9-,11] In a study conducted in Melbourne, Australia, DED was diagnosed in subjects over 40 years old as 10.8% by rose Bengal staining, 16.3% by Schirmer's test, 8.6% by tear breakup time, 7.4% with two or more signs, and 5.5% with severe symptoms of DED not attributed to hay fever.[10]

Dry eye disease is becoming serious ocular problem for almost every age group. This study will find prevalence and to investigate whether DED patients with a VKC differ in ocular symptoms and signs from those without VKC.[8] Conjunctivitis is defined as inflammation or redness of white portion of eye (known as conjunctiva) due to many infective causes.[11] Conjunctiva is thin, insubstantial layer that covers the white portion of eyeball and lines under eyelid.[2]

Vernal Keratoconjunctivitis is mainly frequent eye disorder that can result due to infection or allergic reaction because delicate layer of eyeball (conjunctiva) is extremely prone to micro-organisms and environmental substantial cause. Therefore severity of vernal Keratoconjunctivitis depends on duration of disease and involvement of disturbing cause.[12] Vernal Conjunctivitis happening can be unilateral or bilateral and easily transmitted disease from one individual to other usually close physical contact amongst children.[12]

Viral conjunctivitis etiologies include viral contagious means or acute infection of respiratory organism, arctic, or disorders like viral herpes which could be zoster or simplex form. Mainly ordinary symptoms of viral contamination which can be mild to severe and include watering, pain, redness, puffiness of eyelids, photophobia, and dilute yellowish ejection unilateral or combined.[13] On the other hand infectivity owing to adenovirus source pus type discharge accompanied by tenderness and swelling of ear lymph node with sensation of foreign body. Bacterial Vernal Keratoconjunctivitis typically arise in adults or children caused by various pathogens streptococcus, Haemophilus usually.[14] Symptoms may comprise roughness of eyelids after awaking, pale and inflammation of white segment of eye may persist moderate to rigorous.Others basis of conjunctivitis may comprise environmental hazards that can be dust element, burn, or sensitive reaction to pollen and grass particle present with symptom of irritated eyes. Subject who have on contact lens are at massive risk to develop allergic reaction due to unhygienic handling and supervision.[9]

Other fewer rare causes consist of direct contact to sun light or electronic devices used for purpose of welding and insufficient drainage of tear canal. Identification can be proceeding by intriguing culture of organism and gram staining to evaluate the agent responsible for which form of conjunctivitis.[15] Culture along with smear are scrutinized for accurate assessment to prevent from severe complications that may be sight threatening. Treatment depends on basis and sort generally warm compresses.[16] If treated attentively on time diagnosis of acute conjunctivitis is tremendous. Subsequent preventive actions can be implementing such as repeatedly hand cleaning, sunglasses to save from harmful rays contact, avoid compound irritants and clean discharge repetitively can minimize the symptoms of acute conjunctivitis with proper prescription management.[6,12]

METHODOLOGY

Ethical clearance to conduct this study regarding prevalence and clinical characteristics of dry eye

disease in Vernal Keratoconjunctivitis was obtained from College of Ophthalmology and Allied Vision Sciences, King Edward Medical University, Lahore. A comparative cross sectional study was utilized. The size of sample which obtained was 95. The demographic details were also noted which including patients with VKC and patients having 16 to 24 years age and cooperative patients. Uncooperative patients and patients with other ocular surface disorders and irregularities other than VKC were excluded. Ethical sanction and informed consent was also obtained. Information was gathered by self-made Performa in the form of hard copy. Data was captured by SPSS version 20 and Microsoft Excel 2010. Informed consent of every patient was taken before collecting the data.

RESULTS

Table-1: Gender-wise distribution

Gender		Frequency	Percent
	Female	54	56.8
	Male	41	43.1
	Total	95	100.0

Out of 95 patients 54(56.8%) were females and 41(43.1 %) were males.

43 (45.2%) people individuals were having age 16 to 18 years and 25(26.3) were 19 to 21 years old and remaining 27(28.4%) have had age from 22 to 24 year.

Table-2: Tear Film Break up Time

TBUT		RIGHT eye.		LEFT eye.	
		Frequency	Percent	Frequency	Percent
10 - 15 sec	Normal	18	18.9	18	18.9
5 - 10 sec	Moderate	27	28.4	27	28.4
<5 sec	Low	50	52.6	50	52.6
Total		**95**	**100**	**95**	**100**

Table 2 shows that out of 95 patients in right eye the 18(18.9) have normal tear break-up time in right eye and 27 (28.4%) have moderate tear breakup time and remaining 50(52.6) have low tear breakup time. Whereas, out of 95 patients in left eye the 18(18.9) have normal tear breakup time in left eye and 27(28.4%) have moderate tear breakup time and remaining 50(52.6) have low tear breakup time.

DISCUSSION

Almost 3 million residents get conjunctivitis annually in United States due to various causes of which the most common is allergic conjunctivitis including Vernal Keratoconjunctivitis. Characteristically patients with acute vernal Keratoconjunctivitis recovered within one or two week unfortunately if not treated properly permanent visual loss can occur along with considerable tenderness, lacrimation, photophobia and discomfort.[13]

The data on age wise distribution of cases are of the view that the younger age group (20-30 years) attracts more cases as compared to the older group (31-40 years). Percent distribution on basis of sexes showed that it was higher in males. This indication may be attributed to greater exposure and more prone to get chances of acute infectious conjunctivitis of young subjects to polluted, outdoor activities leading them to bacterial, viral and allergic infection give rise to conjunctivitis This study further finds out that age is confounder factor that could affect density of the conjunctiva superficial cells which decreases in number with advancing age.

According to study conducted in China to observe the tear film changes in subjects who had recovered from acute conjunctivitis which included the 73 eyes of patients who complained for ocular discomfort describes strong association between tear film changes after acute conjunctivitis. Results shows BUT was 13.75 s in healthy eyes while 8.74 s in recovered eyes at 30 days thus shows significant difference in tear breakup time which was found less as compared to normal healthy eyes.[17]

During the acute conjunctivitis pathological variation of conjunctiva membrane and excessive use of topical therapeutic drugs affect the tear film secretion which leads to dry eye syndrome. However, dry eye can be avoided during the treatment of acute conjunctivitis by use of artificial tears or gel. Study justifies that acute conjunctivitis is pathogenic factor that affects the tear film stability and decreases tear breakup time depending on severity and duration of disease[18].

To the best of our knowledge, this is the first study reporting standardized assessment of subclinical tear film dysfunction in quiet VKC. Similar information have

been indirectly reported in an in vivo confocal study by Leonardi et al who described nerves and epithelial changes in patients with different grades of VKC severity, including mild and paucisymptomatic cases. Our findings of ocular surface alterations in quiet VKC need to be considered in the daily management of these pediatric patients and imply that treating VKC patients to reach a reduction of symptoms and to avoid severe corneal complications may not be enough. Further investigations will be important to understand the very long-term effects of this chronic ocular surface disease.[19]

In summary, VKC is a severe form of ocular allergy, and in addition to typical inflammatory tarsal and/or limbal manifestations, it is associated with tear film dysfunction, affecting tear film stability, corneal nerves function, and epithelial cells integrity. These changes seem to persist even in the quiescent phases of the disease, determining a perennial, not yet fully understood, potential mechanism of damage of the ocular surface. A deeper understanding of these mechanisms might lead to hypothesize the need to add to current VKC management, mainly aimed to avoid corneal complications and to control symptoms, measures to prevent the very long-term consequences of protracted, nearly subclinical at alternate stages, ocular surface disease[20].

CONCLUSION

There is risk of dry eye in Vernal Keratoconjunctivitis patients. It is recommended that the tear breakup time and dryness level of the patients with VKC must be checked periodically.

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