Original Article

Clinical Presentation of Vernal Keratoconjunctivitis (VKC): A Hospital Based Study

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ABSTRACT

OBJECTIVE: To determine the various clinical manifestations of Vernal Keratoconjunctivitis (VKC) in Civil Hospital Karachi.
DESIGN: Descriptive.
METHOD: This is a hospital based study that was conducted at the Eye Department of Civil Hospital Karachi among the patients attending hospital out patients. Patients presenting with signs and symptoms of VKC were clinically evaluated.
RESULTS: A total of 400 patients was examined. Two-hundred seventy-eight patients (69.5%) came in the first decade of life. Three-hundred and sixty-eight patients (92%) were males. One-hundred and twenty-eight patients (32%) had family history of atopy. Study showed that palpebral VKC was the most common clinical form present in 216 patients (54%), followed by mixed VKC in 104 patients (26%) and limbal VKC in 80 patients (20%).
The symptoms and signs of the disease were present all around the year in 86% of patients with an increase in the summer.
CONCLUSION: VKC is an allergic disorder affecting the children, more common in males than females. The onset of disease is usually after the age of 5 years. It resolves around puberty, rarely after the age of 30 years. Out of the three types, Palpebral VKC was the most common form.

KEY WORDS: Allergic conjunctivitis, Vernal Keratoconjunctivitis, Spring catarrh.

INTRODUCTION

Vernal Keratoconjunctivitis (VKC) is a bilateral, recurrent, IgE mediated allergic condition of conjunctiva and cornea [1]. The word Vernal is derived from the Greek word meaning "occurring in spring"[2]. It was originally called Spring catarrh. This is a poor name because it is most common in climates where there is no spring and might occur throughout the year [3]. In 1846 Art focused attention to these cases and in 1876 Camuest published his first paper about the disease [4]. However, Duke Elder suggested that most symptoms appear in summer rather than in the spring [5]. In 1963, Allen, Smith and Frick suggested an important hereditary predisposition [2]. Hussain cited that in Pakistan it was reported by Alim Uddin in 1955 and the main symptom of the disease is itching, which is associated with thick, ropy discharge [6]. VKC more commonly occurs in boys until puberty, thereafter both sexes are equally affected [6]. About three quarters of the patients have associated atopy and two-third have a close family history of atopy. Atopic patients often develop asthma and eczema in infancy [7]. The onset of VKC is usually after the age of 5 years and condition eventually resolve around puberty, only rarely persisting beyond the age of 25 years [8]. The condition is more common in warm and dry climates [8]. There is strong association of certain atopic diseases such as asthma, rhinitis, eczema, urticaria [3]. Besides these, other associated diseases are keratoconus [9], intestinal worm infestation, dry eye [6] and terrian marginal degeneration [10]. There are three clinical types of VKC:

Palpebral type; it involves the tarsal conjunctiva of the upper lid and shows papillary hyperplasia (giant papillae) of the upper tarsal conjunctiva, which appears as large, grayish, pink, vegetating mass [11]. Papillae are caused by blood vessels and inflammatory cells growing in the subconjunctival tissues. Papillae are especially found in conjunctival lining the upper tarsal plate, where the conjunctiva is firmly adherent to the underlying tissues. The papillae make the conjunctival surface appear rough and velvety rather than smooth and glistening [3]. In severe cases very large papillae which are called “Cobblestone” may develop[12-14]. In giant papillae, the extracellular matrix is characterized by over production of collegen [15]. Limbal type; It is associated with the formation of limbal nodule which appears as chalk white small, semi transparent elevations [11] known as Horner-Trantas dots. They are raised superficial infiltrates, straddling the limbus and composed largely of eosinophils and degenerated cellular debris [2].

Mixed type; It has mixed features. In this type clinical features of both palpebral and limbal VKC are combined [16]. VKC shows both Type 1 and Type4 hyper-

sensitivity reactions [17, 18]. The symptoms and signs of VKC often persist throughout the year. The severity of the symptoms often does not match severity of the signs. Some patients may have large papillae in their upper eyelids but very few symptoms. Other patients may have severe itching but much less obvious changes in conjunctiva [3]. Itching is the principal symptom; other symptoms include sticky mucoid discharge [3], photophobia and foreign body sensation. Associated corneal changes associated with are punctate epitheliopathy, macroerosions[8], ulcerations[19], plaque, subepithelial scarring and psuedogerontoxon[8]. Diagnosis of VKC is based on typical clinical features including.

- Intense itching
- Photophobia
- Sticky mucus discharge
- Giant papillae on upper tarsal conjunctiva or limbus
- Superficial keratopathy and corneal shield ulcer [7].

PURPOSE OF STUDY: The purpose of this study was to determine the various clinical patterns in the patients with VKC presenting at Ophthalmic Outpatient Department of Civil Hospital, Karachi.

MATERIALS AND METHODS: This is a hospital based descriptive study that was conducted at the Department of Ophthalmolgy, Civil Hospital Karachi in order to determine various clinical pattern of VKC.

INCLUSION CRITERIA: All those patients presenting at Eye OPD of Civil Hospital Karachi with typical clinical features of VKC.

STUDY DESIGN: Descriptive.

SAMPLE SIZE: Sample size of 400 patients was selected from the patients who presented with signs and symptoms of VKC.

SAMPLE TECHNIQUE: Non probability convenient.

DATA ANALYSIS: Data were analyzed by SPSS and presented with the help of percentage and proportion. No statistical test was required, as this was a descriptive study.

DIAGNOSTIC CRITERIA:

Diagnosis of VKC was based on typical symptoms like itching, watering, photophobia. Severity of the symptoms was evaluated as follows

a) ITCHING: Mild; Patient complained of itching in eyes sometimes. Moderate; Patient complained of rubbing the eyes sometime. Severe; Patient rubbed the eyes most of the time.

b) PHOTOPHOBIA: Mild; in bright sunlight patient felt difficulty in opening the eyes, moderate; in every bright light patient tried to close the eyes and severe; Patient did not open the eyes even in the light of a torch.

c) STICKY MUCOID DISCHARGE: Mild; Patient complained of watering and mucus discharge sometimes. Moderate; Thick mucoid discharge sometimes. Severe: Patient complained of thick ropy discharge most of the times.

d) FOREIGN BODY SENSATION:

CLINICAL EVALUATION:

Complete ocular examination was done which included: Visual acuity and Slit lamp examination for signs of VKC, especially upper tarsal conjunctiva for papillae, limbus for Tranta's dots and thickening of conjunctiva, cornea with flourecein for shield ulcer when indicated. Papillae on tarsal conjunctiva or at the corneoscleral limbus were evaluated and graded as follows:

0: No papillary reaction. $^{1+}$: Few papillae < 0.2mm widespread over the tarsal conjunctiva or around the limbus. $^{2+}$: Papillae of 0.3 to 1 mm over the tarsal conjunctiva or at the limbus. $^{3+}$: Papillae of 1 to 3 mm all over the tarsal conjunctiva or for 360 degree around the limbus. $^{4+}$: Papillae > 3 mm in the tarsal conjunctiva or a gelatinous appearance at the limbus covering the peripheral cornea. The presence of a corneal epitheliopathy or corneal ulcer or plaques was also recorded.

RESULT

VKC is a chronic disease. Patients came from different areas of Karachi to the Ophthalmic Outpatient Department of Civil hospital, Karachi. Out of 400 patients examined 368 (92%) were males and 32 (8%) were females. Most of the patients 278 (69.5%) presented in the first decade of life. Total number of patients were divided into three groups according to age. In age group I, age of 5-10 years, there were 278 (69.5%) patients, in age group II, aged 11-20 years, there were 98 (24.5%) patients and in group III, aged 21-30 years, there were 24 (6%) patients **(Table I)**. A total of 344 (86%) patients claimed to have several relapses of the diseases all around the year, 54 (13.5%) patients in summer and only 2 (0.5%) patients in spring **(Table II)**. All (100%) patients presented with itching and sticky mucous discharge. Some (25%) patients presented with foreign body sensation and 64 (16%) presented with photophobia (Table III). All the patients (100%) showed papillae, which were mostly located on the upper tarsal conjunctiva, followed by limbus. Some (94%) patients were present with conjunctival hyperemia. Giant cobblestones like papillae were observed in 86 (21.5%) patients. Horner-Trantas dots were present in 66 (16.5%) patients. Superficial punctate keratopathy like superficial punctate keratitis was found in 60 (15%) patients. Twelve (3%) patients were presented with psuedoptosis **(Table III)**. The disease was bilateral in 398 (99.5%) patients. Two hundred sixteen (54%) patients showed palpebral VKC, 80 (20%) patients showed limbal VKC and 104

(26%) patients showed mixed VKC **(Table IV)**. Some (26%) patients presented with eczema. Asthma was present in 96 (25%) patients. Rhinitis was present in 100 (25%) patients. Only 2 (0.5%) patients were presented with keratoconus **(Table V)**. Out of 400 patients one hundred and twenty eight patients (32%) had family history of atopy

TABLE I:

AGE AND SEX DISTRIBUTION (n=400)

Age Groups	Frequency	Percentage
5-10 years	278	69.5
11-20 years	98	24.5
21-30 years	24	6
Sex		
Males	368	92
Females	32	8

TABLE II:

SEASONAL OCCURRENCE OF VKC

Clinical Presentation	No. of Patients	Percentage
Perinnial	344	86
Only in summer	54	13.5
Only in spiring	02	0.5

TABLE III:

SYMPTOMS AND SIGNS (n=400)

	Frequency	Percentage
Symptoms		
Itching	400	100
Sticky mucus discharge	400	100
F.B. Sensation	100	25
Photophobia	64	16
Signs		
Papillae	400	100
Conjunctival hyperemia	376	94
Cobble stone	86	21.5
Trantas dots	66	16.5
Superficial punctuate Keratitis	60	15

TABLE IV:

CLINICAL TYPES OF VKC (n=400)

Type	No. of Patients	Percentage (%)
Palpebral	216	54
LIMBAL	80	20
MIXED	104	26

TABLE V:

ASSOCIATED DISEASES WITH VKC

Associated Diseases	No. of Patients	Percentage
Rhinitis	100	25
Eczema	104	26
Asthma	96	24
Keratoconus	2	0.5

DISCUSSION

This was a descriptive study in which clinical data were collected in order to determine the different clinical types of VKC in patients who came to the Ophthalmic Outpatient Department at Civil Hospital Karachi. The data of study showed that most of the patients 278 (69.5%) presented with VKC in their first decade of life i.e. from 5-10 years of age and disease most commonly affected the boys i.e. 368 (92%). This is comparable to an earlier study in Pakistan [1] in which 88% of the patients presenting in their early years were male. A foreign study [20] also showed similar male preponderance (90%) in this disease. There are three clinical forms of the disease. The most common clinical form seen in our study was palpebral type observed in 216 patients (54%) followed by mixed 104 patients (26%) and limbal 80 patients (20%). These results are similar to those of Pakistani studies, where the palpebral form was 56% [21]. The difference was observed in other two types of the disease in which there was limbal type only 4% and mixed type was 40% [21]. The first interesting finding around the nomenclature of the disease “vernal” which does not appear to appropriately describe the course of the disease is a significant number of percentage of patients, 344 (86%) patients had experienced perennial nature of the disease. The aggravated in summer in 54 (13.5%) patients. This observation is in agreement with Bonini et al [7] and in contradiction with Khan [22]. The patients presented with typical signs and symptoms like Itching, photophobia, sticky mucus discharge and foreign body sensation, which render the diagnosis of VKC

fairly straightforward. In our study, these were the most frequently reported sustained symptoms observed. Patients also complained of conjunctival redness after exposure to nonspecific stimuli. This finding supports previous reports [23] suggesting the presence of conjunctival reaction when sun, dust, wind and other general climatic factors or nonspecific stimuli come in contact with the conjunctival mucosa. Variable data is available regarding the clinical signs of the disease. Papillae were observed in almost all cases of VKC most commonly on upper tarsal conjunctiva. Conjunctival hypereamia was present in 376 (94%), cobblestone in 86 (21.5%), Horner-Trantas dots in 66 (16.5%), superficial punctate keratopathy was found to be the most common corneal complication of VKC. Associated diseases like asthma (25%), eczema (24%), rhinitis (26%) and keratoconus (0.5%) were observed. These data are comparable with the study done in Italy [7] and in Pakistan [1].

In summary several clinical findings observed from this study such as typical male pattern and its presentation in early life which diminished after puberty. It was observed that it is not a seasonal disease and palpebral was the most common form.

CONCLUSION

All three forms of VKC were observed and palpebral was the most common occurring clinical type. Disease was influenced by certain factors such as age, sex, and family history of atopy. The signs and symptoms were according to the duration and severity of the disease and persisted throughout the year. It was more common in warm and dry climate.

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