

# A clinical study on Etiopathogenesis, Course and Presentation of Vernal Keratoconjunctivitis

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**Aim:** Is to study etiopathogenesis and clinical profile of vernal keratoconjunctivitis (VKC) among patients going to the Eye Department at Abukir hospital from March/2020 to August/2020.

**Methods:** A retrospective study analyzing patient records at Department of Ophthalmology, Abukir Hospital, Alexandria, Egypt. Dissecting 100 patients with VKC recognized by detailed history, characteristic symptomatology, and clinical profile. We measured total serum IgE and the mean blood eosinophil count for VKC patients during active phase of the disease.

**Results:** Out of 100 patients, 62 (62%) were males and 38(38%) were females. The highest frequency of VKC is in the 11-15 age group. Maximum cases (57%) had palpebral form secondly mixed form (29%) and bulbar form (14%).

Corneal complications occurred in 17 patients. The minor complications seen in 15 patients consisted of superficial punctate keratopathy (SPK). The major complications mainly pseudogerontoxon was seen in 2 patients. 30 % of VKC patients showed increased levels of total serum IgE, the mean blood eosinophil count and 70 % showed normal levels.

**Conclusions:** VKC is a type of allergic conjunctivitis with symptoms varying from itching to corneal pannus and blindness. The sheet anchor for treatment of these patients would be early identification and continuous follow-up with limited judicious use of steroids.

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## Introduction

VKC is a well-known ocular allergy syndrome that affects children and young adults and is characterized by severe itching and photophobia, as well as chronicity indicated by ocular discomfort and lacrimation. <sup>(1,2)</sup> Spring catarrh is a chronic ocular allergy that primarily affects children and teenagers living in the tropics and is influenced by the seasons. VKC is more common in males than in girls in the first decade of life, around the age of seven. <sup>(3)</sup>

Exogenous as well as endogenous irritants have been linked to the etiopathogenesis of VKC. Basically, as different investigations have shown, an immunological mechanism is linked to its development. <sup>(4)</sup> Knowing the clinical profile of the condition in the local population will aid in the development of preventative measures and, in the case of a chronic illness, will be critical to good disease management. The present study was conducted to describe clinical profile of VKC from Abukir hospital, Alexandria, Egypt.

## Patients & Methods

A total of 100 VKC patients were clinically diagnosed based on their history, characteristic symptoms, and clinical profile over 6 months.

Each patient's file was assimilated into a thorough questionnaire documenting age, gender, residence, location change, age at disease onset, seasonal patterns, co-existing allergic or atopic diseases, and family history of VKC or related allergic or atopic conditions. Thorough slit-lamp testing has been completed.

Per week for the first month, biweekly for the second month, and monthly thereafter, patients were advised to revisit.

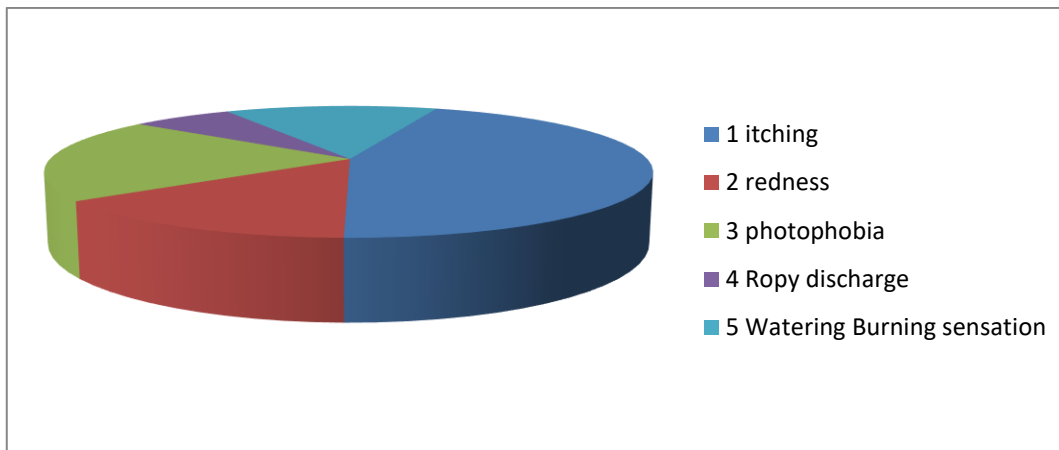
We measured total serum IgE and the mean blood eosinophil count for VKC patients during active phase of the disease.

## Results

This retrospective study involved 100 patients, 62 (62%) were males and 38 (38%) were females. Age and sex distribution of VKC cases; showed the highest frequency of VKC is in the 11-15 age group.

76 (76%) cases presented with itching, while photophobia in 35 cases (35%) and redness was noted in 25 (25%) cases, watering and burning sensation in 23 cases (23 %) and ropy discharge in 11 cases (11%).

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The disease pattern shows a palpebral form in 57cases (57 %), bulbar form in 14 cases (14 %), and mixed form in 29 cases (29 %).

**Table (1): Disease Pattern**

Disease Pattern	Number of Cases	(%)
Palpebral		57%
Bulbar		14%
Mixed		29%

In the cases examined, 75 cases (75 %) had papillae on the upper palpebral conjunctiva, 35 cases (35 %) had SPKs and limbal papillae, 21 cases (21 %) had Horner Tanta’s spots, and 19 cases (19 %) had conjunctival congestion.

Corneal complications occurred in 17 (17%) patients, 15 had mild complications (SPKs) and 2 had major complications (pseudogerontoxon).

Patients with VKC also may have a history of allergies or atopic diseases such as allergic rhinitis, asthma, or hay fever, but in our study, only 30 (30%) patients had coexisting allergic disorders, in the form of atopy, allergic rhinitis, skin allergy, etc.

30% of patients have a perennial type of VKC from the start of the disease, and 70% have recurrences in the spring.

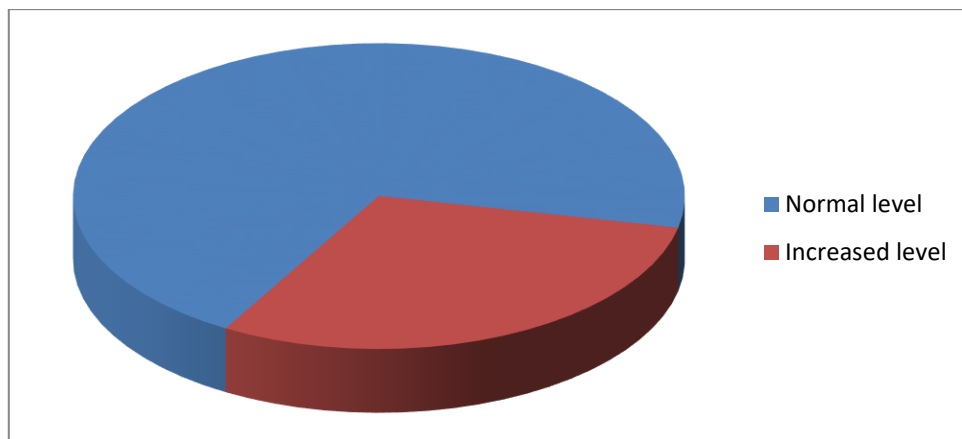
30 % of VKC patients showed increased levels of total serum IgE, the mean blood eosinophil count and 70 percent showed normal levels.

**Total serum IgE and the mean blood eosinophil count in studied cases.**

It was found that 24% of VKC patients with high levels of total serum IgE and elevated mean blood eosinophil count were presented with itching, while photophobia in 11 cases (11%) and redness was noted in 9 cases (9%), watering and burning sensation in 5 cases (5 %) and ropy discharge in 4 cases (4%).

It was found that 21% of VKC patients with high levels of total serum IgE and elevated mean blood eosinophil count were palpebral VKC, while 9% were limbal VKC.

In the cases of high levels of total serum IgE and elevated mean blood eosinophil count, 21 cases (21 %) had papillae on the upper palpebral conjunctiva, 9 cases (9 %) had conjunctival congestion, 8 cases (8 %) had SPKs and limbal papillae and 5 cases (5 %) had spots of Horner Tranta. only 19 patients (19%) with high levels of total serum IgE and elevated mean blood eosinophil count had coexisting asthma, while 11 patients (11%) had allergic rhinitis.



**Table (2):** Association between high level of Total serum IgE, elevated mean blood eosinophil count and signs of VKC.

Cases with High total serum IgE, elevated mean blood eosinophil count and presented with ocular sign (one or more)	Number of Cases (%)
Papillae on the upper palpebral conjunctiva	21%
Conjunctival congestion	9%
SPKs and Limbal papillae	8%
Horner Tranta's spots	5%

## Discussion

VKC is an allergy-associated recurrent inflammatory disease mostly seen in prepubescent males. VKC has a predictable seasonal pattern, with beginning in the spring, exacerbation in the summer, and remission in the autumn-winter months. Despite the typical seasonal tendency, exacerbation of perennial forms has been documented in the spring-summer period.<sup>(5)</sup>

In the present study, the male: female proportion was 2.75:1, which goes in agreement with multiple studies reporting a male-female ratio of 4:1 to 2:1<sup>(6,7)</sup>, in contrast to a study by Nigeria's Ukponmwan<sup>(8)</sup>, which reported a higher proportion of females affected compared to males (1:1.3). This could be attributed to the higher tendency to outdoor activities among male children, compared to females.

In our study, major symptoms seen in this study group are itching (76%), photophobia (35%), redness (25%), and watering (23%). Ujwala S Saboo and co-workers also found the following results itching (88%), redness (86%), and watering (65%).<sup>(9)</sup>

The proportion of different VKC types varies widely in different studies. In this study, the disease pattern shows a palpebral form in 57 cases (57%), bulbar form in 14 cases (14%), and mixed form in 29 cases (29%). This finding is supported by other studies done in Mali (65.22%)<sup>(10)</sup> and Nigeria (47.1%)<sup>(11)</sup> had palpebral type VKC in a leading position. Other studies including Italy (53.8%)<sup>(12)</sup>, Rwanda (98.4%)<sup>(13)</sup>, and Butajira, Ethiopia (58.5%)<sup>(14)</sup> reported that limbal type was the most common type of VKC. On the other hand, studies were done in Ethiopia 35 (81.4%)<sup>(15)</sup>, Egypt (69.80%)<sup>(16)</sup> and India 102 (40.80%)<sup>(17)</sup> reported that mixed type was the most common type.

In this study, 75 cases (75%) had papillae on the upper palpebral conjunctiva, 35 cases (35%) had SPKs and limbal papillae, 21 cases (21%) had spots of Horner Tranta indicating the severity of vernal keratoconjunctivitis and 19 cases (19%) had conjunctival congestion. Ujwala S Saboo and co-workers found palpebral papillae in 85% of patients and limbal thickening in 73% of patients with VKC.<sup>(9)</sup>

In this study, 30% of patients have a perennial type of VKC from the start of the disease, and 70% have recurrences in the spring. In the studies of Bonini et al<sup>(18)</sup>, Saboo et al<sup>(19)</sup>, and Al-Akily et al the percentage of the perennial form of VKC was more. Studies of Saboo et al<sup>(20)</sup> and Al-Akily<sup>(21)</sup> were conducted in areas closer to the equator where the season is hot and dry for the most part of the year and therefore the perennial form was more prevalent.

The immune pathogenesis of VKC is multifactorial and has more environmental factors. It has historically been thought of as a type I IgE-mediated hypersensitivity reaction, although it is recognized that the involvement is also cell-mediated.

Many indications, symptoms, and histology studies imply that IgE-mediated inflammation is a key factor in the development of VKC. About 30% of VKC patients are allergic, and their ocular symptoms worsen when they are exposed to allergens. Other research in Ethiopia<sup>(14)</sup>, Nigeria<sup>(22)</sup>, England<sup>(23)</sup>, and Italy<sup>(24)</sup> have found similar results. On the other hand, In studies of Lambiase et al.<sup>(25)</sup> and Bonini et al.<sup>(26)</sup>, 41.6 percent of patients in different series reported related systemic allergies.

This could be because patients with systemic allergic diseases such as asthma, bronchitis, eczema, and hay fever have similar immunopathology to VKC<sup>(27)</sup>, which is caused by IgE molecules adhering to the surfaces of mast cells, which then release inflammation mediators such as prostaglandins in the conjunctiva, resulting in VKC.<sup>(28,29)</sup>

Our study has some limitations. The study included a relatively small sample size because the study is retrospective, and we could not find more patients in hospital records. So further research in a larger group of patients is needed to validate the findings of this study.

## Conclusion

VKC is a type of allergic conjunctivitis with symptoms varying from itching to corneal pannus and blindness. The sheet anchor for treatment of these patients would be early identification and continuous follow-up with limited judicious use of steroids.

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