

## The study of clinical profile of vernal keratoconjunctivitis in rural population

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### Abstract:

**Aim:** To study the clinical profile of vernal keratoconjunctivitis in rural population

**Method:** A prospective hospital-based study was carried out in 100 VKC patients over a period of 2 years. All patients suffering from VKC irrespective of age and gender were included while patients suffering from ocular infections and ocular trauma were excluded from the study. Ocular complaints, duration of symptoms and previous treatment taken was noted. Family history and history of atopic diseases was noted. The ocular examination for clinical signs was done with help of slit lamp biomicroscope and patients were categorized according to the signs into palpebral, bulbar and mixed type. Statistical analysis software SYSTAT version 12 (By Cranes software's, Bangalore) was used to analyze the data.

**Results:** Mean age was 15.4, SD  $\pm$  8.11 years. Out of 100 cases with VKC, 68 % were male and 32 % were females, with M: F ratio 2.2:1 showing male predominance. Palpebral pattern of disease was the commonest (54%). Itching was the commonest symptom (96%), followed by redness, pain (88%) and ropy discharge (70%). Papillary hypertrophy (64%), limbal hypertrophy (31%) and Horner Trantas dots (29%) were common signs observed. History of atopy was observed in 35% of cases.

**Conclusion:** Palpebral pattern of disease was the commonest. Itching was the commonest symptom followed by pain, redness and ropy discharge. Papillary hypertrophy, limbal hypertrophy and Horner Trantas dots were significantly common signs. This study highlights the importance of slit lamp examination in children having VKC.

**Keywords:** VKC, signs, symptoms, atopy

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Date of Submission: 20-12-2020

Date of Acceptance: 03-01-2021

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### I. Introduction

Allergic disease as a clinical entity is well known from ancient times. Fifteen percent of world's population suffers from allergic disease. It is estimated that 10 percent to 20 percent of population of India suffers from one or the other allergic disease, of these more than one third have ocular allergic manifestations.<sup>[1]</sup> The eye is frequent target of inflammation in both local and systemic allergies like allergic rhinitis, atopic dermatitis, and asthma.<sup>[2]</sup> Allergic conjunctivitis includes the diverse group of diseases; the largest group being associated with exogenous allergens. The four classic forms of allergic conjunctivitis are seasonal allergic conjunctivitis, vernal keratoconjunctivitis, giant papillary conjunctivitis and atopic keratoconjunctivitis. Vernal Keratoconjunctivitis (VKC) was first described by Arlt in 1846 as conjunctivitis lymphatica.<sup>[3,4]</sup> It is characterized by chronic, bilateral, recurrent, interstitial, self-limiting allergic inflammation of conjunctiva having a periodic seasonal incidence.<sup>[3,4,5]</sup> It is believed to be diseases of childhood; mean age of presentation is 12 years and generally resolves after puberty, usually around 4–10 years after onset. The disease is more common among males, with the male to female ratio varying from 4:1 to 2:1. It is characterized by itching, redness, discomfort, stringy discharge, photophobia, burning and stinging, giant papillae on the upper tarsal conjunctiva, superficial keratopathy, and corneal shield ulcers, keratoconus leading on to permanent corneal damage.<sup>[6]</sup> The seasonal character of the disease is most striking feature, it starts in May and June and recedes in autumn i.e. the inflammation often goes into remission in cooler months. The immunopathogenesis of VKC is multifactorial involving a Th2 mediated mechanism with an overexpression of cytokines, growth factors; eosinophils and eosinophilic proteins.<sup>[4]</sup> Patients with VKC have a family history of atopic diseases in 49% of cases. These patients may also have a medical history of other atopic conditions including asthma (26.7%), rhinitis (20%), and eczema (9.7%) and showing no evidence of infection.<sup>[7]</sup> VKC is of more concern due to its vision threatening complications like, keratoconus, corneal scarring, refractive errors, shield ulcers and

treatment related complications like steroid induced glaucoma. [6,8] This study will reveal most frequently observed clinical type and signs of vernal keratoconjunctivitis seen in rural population.

**II. Material and Methods**

A prospective hospital-based cross-sectional study was carried out and 100 patients were selected having any forms/ types of vernal keratoconjunctivitis upto 50 years of age.

**Study Design:** A prospective cross-sectional study

**Study Location:** Tertiary care teaching hospital

**Sample size:** 100

**Inclusion criteria:**

1. Patients having any forms/ types of vernal keratoconjunctivitis upto 50yrs of age, irrespective of gender.
2. Patients willing to participate in study.

**Exclusion criteria:**

1. Patients with ocular trauma.
2. Patients with ocular infection.

**Procedure methodology:**

Pre-designed study proforma was used to collect data and history was obtained with special attention to characteristic symptoms, duration of occurrence of symptoms and previous treatment taken was noted. Family history and history of atopic disease was also noted. Slit biomicroscopic examination was performed to evaluate corneal and conjunctival involvement. The palpebral form included patients with characteristic signs of cobble stone papillae of >1mm on upper tarsal conjunctiva with no limbal infiltration, while the limbal form consisted of papillae of <1mm on upper tarsal conjunctiva with limbal infiltration, and mixed form had features of both palpebral and limbal types of VKC. Anterior segment photographs were taken for pictorial documentation.

**Statistical analysis:**

Statistical analysis software SYSTAT version 12 (By Cranes software’s, Bangalore) was used to analyze the data.

**III. Result**

Out of 100 patients with VKC, majority of cases presented in the age group of 10- 15 years followed by age group less than 10 years, with mean age 15.4 years, SD ± 8.11 years.

Age in years	Clinical pattern of VKC			
	Palpebral	Bulbar	Mixed	Total cases
	No. (%)	No. (%)	No. (%)	No. (%)
<10	16(29.63%)	5(29.41%)	9(31.03%)	<b>30(30%)</b>
<b>10-15</b>	17(31.48%)	6(35.29%)	10(34.48%)	<b>33(33%)</b>
<b>15-20</b>	9(16.67%)	2(11.76%)	3(10.34%)	<b>14(14%)</b>
<b>20-25</b>	6(11.11%)	3(17.65%)	4(13.79%)	<b>13(13%)</b>
<b>25-30</b>	4(7.41%)	0	1(3.45%)	<b>5(5%)</b>
<b>30-35</b>	2(3.70%)	0	1(3.45%)	<b>3(3%)</b>
<b>35-40</b>	0	0	1(3.45%)	<b>1(1%)</b>
<b>40-45</b>	0	1(5.88%)	0	<b>1(1%)</b>
<b>Total</b>	<b>54(54%)</b>	<b>17(17%)</b>	<b>29(29%)</b>	<b>100</b>
<b>Mean ± SD</b>	<b>15.30 Years ± 7.23years</b>	<b>15.65years ± 7.46years</b>	<b>15.46years ± 8.22years</b>	<b>15.40years ± 8.11years</b>

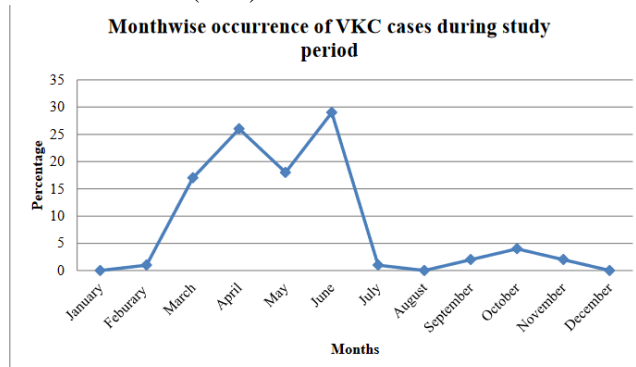
**Table 1:** Age distribution of VKC cases

Out of 100 cases with VKC, 68 % were male and 32 % were females, with M: F ratio 2.2:1.

Gender	Age < 25 years	Age >25 years	Total cases
Male	63	5	68
Female	27	5	32
<b>Total</b>	<b>90</b>	<b>10</b>	<b>100</b>

**Table 2:** Age and Gender in VKC cases

Out of 100 maximum numbers of cases 73 (73%) were seen from the month of March to June.



**Figure 1:** Month wise occurrence of VKC cases

Out of 100 cases, 96 % of cases presented with itching, followed by redness and pain/discomfort (88%), ropy discharge and foreign body sensation (70%), diminution of vision (53%), heaviness of lids in (47%), blurring of vision (45%), blepharospasm (35%), burning in (25%) and lacrimation (14%).

Symptoms	Clinical pattern of VKC			
	Palpebral	Bulbar	Mixed	Total
	No. (%)	No. (%)	No. (%)	No. (%)
<b>Itching</b>	52(96.29%)	16(94.11%)	28(96.55%)	<b>96(96%)</b>
<b>Burning</b>	14(25.92%)	4(23.52%)	7(24.13%)	<b>25(25%)</b>
<b>Foreign body sensation</b>	38(70.37%)	12(70.58%)	20(68.96%)	<b>70(70%)</b>
<b>Pain/discomfort</b>	47(87.03%)	15(88.23%)	26(89.65%)	<b>88(88%)</b>
<b>Redness</b>	48(88.88%)	15(88.23%)	25(86.20%)	<b>88(88%)</b>
<b>Ropy discharge</b>	38(70.37%)	12(70.58%)	20(68.96%)	<b>70(70%)</b>
<b>Lacrimation</b>	8(14.81%)	2(11.76%)	4(13.79%)	<b>14(14%)</b>
<b>Photophobia</b>	14(25.92%)	4(23.52%)	7(24.13%)	<b>25(25%)</b>
<b>Blepharospasm</b>	19(35.18%)	6(35.29%)	10(34.48%)	<b>35(35%)</b>
<b>Heaviness of eye lid</b>	26(48.15%)	8(47.06%)	13(44.82%)	<b>47(47%)</b>
<b>Blurring of vision</b>	25(46.29%)	8(47.06%)	12(41.38%)	<b>45(45%)</b>
<b>Diminution of vision</b>	29(53.70%)	9(52.94%)	15(51.72%)	<b>53(53%)</b>

**Table 3:** Distribution of symptoms in VKC cases

Tarsal papillary hypertrophy (64%) was the commonest sign seen, followed by limbal papillary hypertrophy (31%), Horner Trantas dots (29%), Cobble stone appearance (18%), Marked conjunctival hyperemia (14%) and Cauliflower like growth (2%).

Signs	Clinical pattern of VKC			
	Palpebral	Bulbar	Mixed	Total
	No. (%)	No. (%)	No. (%)	No. (%)
<b>Marked conjunctival hyperaemia</b>	4(7.41%)	6(35.29%)	4(13.79%)	<b>14(14%)</b>
<b>Tarsal papillary hypertrophy</b>	44(81.48%)	0	20(68.96%)	<b>64(64%)</b>
<b>Cobblestone appearance</b>	12(22.22%)	0	16(55.17%)	<b>18(18%)</b>
<b>Cauliflower like growth</b>	2(3.70%)	0	0	<b>2(2%)</b>
<b>Horner trantas dots</b>	0	16(94.11%)	13(44.82%)	<b>29(29%)</b>
<b>Conjunctival limbal hypertrophy</b>	0	12(70.58%)	19(65.51%)	<b>31(31%)</b>

**Table 4:** Distribution of signs in VKC cases

History of atopy was presenting 35% of cases, out of which 40.7% cases showed palpebral pattern of VKC.

History of Atopy	Clinical pattern of VKC			
	Palpebral	Bulbar	Mixed	Total
	No. (%)	No. (%)	No. (%)	No. (%)
<b>Yes</b>	22(40.74%)	4(23.53%)	9(31.03%)	<b>35(35%)</b>
<b>No</b>	32(59.26%)	13(76.47%)	20(68.97%)	<b>65(65%)</b>
<b>Total</b>	<b>54(54%)</b>	<b>17(17%)</b>	<b>29(29%)</b>	<b>100</b>

**Table 5:** Atopy and VKC

#### IV. Discussion

Vernal Keratoconjunctivitis (VKC) also known as “spring catarrh” is a chronic type of allergic conjunctivitis. Because of the chronic nature of the condition, it shows certain characteristics clinical features and consequently certain complication.

In our study as shown in Table No. 1 we found that 63% of patients were below 15 Years at the time of presentation and the mean age was 15.4 years, with SD ± 8.11. Hence it is more common in children and young adults. In our study, male predominance was noted with 68% males as compared to 32% females. M: F ratio was 2.2: 1. Similar observations were made by the most authors except Chenge et al<sup>[8]</sup> and Ukponmwam et al<sup>[9]</sup> in their studies.

In our study the maximum VKC cases (73%) suffered between March to June with least number of cases seen in January-February and between July-December. UjwalaSaboo<sup>[10]</sup> et al found highest number of cases in month of May and Bonini et al reported 77.4% cases in spring season.

In our study, palpebral form was the commonest clinical pattern observed in 54% of cases, followed by mixed form in 29% and bulbar form in 17% of cases. Chenge B et al in their study on 139 patients of VKC in African population, found palpebral form as commonest clinical pattern of VKC in 58% of cases followed by mixed form in 39% and bulbar form in 3% of cases<sup>[8]</sup>. Rajappa et al in their clinical study of vernal keratoconjunctivitis in 70 patients found palpebral form (49%) as the most common clinical pattern of disease.<sup>[11]</sup> These observations were similar to that of our study.

In our study, itching (96%) was the most common symptom followed by, pain/discomfort (88%), redness (88%), foreign body sensation (70%), ropy discharge (70%) and less commonly observed symptoms were blepharospasm (35%), diminution of vision (53%), heaviness of lids in (47%), blurring of vision (45%), photophobia (25%), burning (25%) and lacrimation (14%). Ujwala S Saboo et al in their retrospective study of 468 patients, reported itching (88%) as most common symptom, followed by redness (86%) and watering (65%).<sup>[11]</sup> Lambaise A et al<sup>[12]</sup> in their study on 156 Italian and Chenge B et al<sup>[8]</sup> in their study on 139 congo patients found itching as a most common symptom, followed by redness and watering.

In this study we observed tarsal papillary hypertrophy (64%) as commonest sign, followed by conjunctival limbal hypertrophy (31%), Horner-Trantas dots (29%), cobblestone appearance (18%), marked

conjunctival hyperaemia (14%) and Cauliflower like growth (2%). Everaerts MC et al and Ukponmwan CU et al also observed papillary hypertrophy and severe limbitis with Horner Trantas dots as major signs.<sup>[13,9]</sup>

In our study history of atopy was observed in 35% of cases. Out of 35% of atopic cases, allergic rhinitis was seen in 18 cases (52%), asthma in 6 cases (17%) and allergic dermatitis in 11 cases (31%). Bonini et al in his study of 195 cases found that the most frequent atopic conditions associated with VKC were asthma (64.2%), rhinitis (49.4%) and allergic dermatitis (23.5%).<sup>[14]</sup>

## V. Conclusion

Palpebral pattern of disease was the commonest. Itching was the commonest symptom followed by pain, redness and ropy discharge. Papillary hypertrophy, limbal hypertrophy and Horner Trantas dots were significantly common signs. This study highlights the importance of slit lamp examination in children having VKC.

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Dr. Surekha Bangal, et. al. "The study of clinical profile of vernal keratoconjunctivitis in rural population." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(01), 2021, pp. 14-18.