

## CLINICAL PROFILE OF PATIENTS WITH VERNAL KERATOCONJUNCTIVITIS

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## ABSTRACT

**Background:** Vernal keratoconjunctivitis (VKC) is a chronic, bilateral, recurrent ocular inflammatory condition found in individuals predisposed by their atopic background and associated with secondary keratopathy. **Methods:** 90 patients with VKC selected at random, who attended the Department of ophthalmology, Barmer Medical College, Barmer (Rajasthan) were the subjects of this study. **Results:** Major symptoms seen in this study group are itching, watering and photophobia. Congestion was present in 78 patients of VKC and 12 patients had no congestion at presentation. Perilimbal pigmentation was seen in 70 patients out of 90 studied subjects of vernal keratoconjunctivitis. In this study 40 patients had perilimbal conjunctival hypertrophy and 50 patients did not have conjunctival hypertrophy. 12 patients had clinical sign of Horner Trantas dots in this study indicating severity of vernal keratoconjunctivitis. **Conclusion:** VKC was common in males, during hot climate. Limbal type of VKC was more commonly present.

**KEYWORDS:** Eye, Clinical profile, Vernal keratoconjunctivitis.

## INTRODUCTION

Allergic diseases of the eyes are very common. This altered reactive state of the eye usually results from local response to an antigen. Since the conjunctiva is most often affected, ocular allergy and allergic conjunctivitis are often considered to be synonymous. Allergic conjunctivitis may manifest itself as a seasonal allergic conjunctivitis, perennial allergic conjunctivitis, atopic keratoconjunctivitis, vernal keratoconjunctivitis, giant papillary conjunctivitis and contact allergies of the conjunctiva.<sup>[1]</sup>

Vernal keratoconjunctivitis (VKC) is a chronic, bilateral, recurrent ocular inflammatory condition found in individuals predisposed by their atopic background and associated with secondary keratopathy.<sup>[2]</sup> The disease shows marked seasonal influence, probably secondary to vernal allergens, but perennial forms exist as well. The allergens usually implicated in the development of VKC are pollens, primula flower, house dust mite and its feces. Contact with pet animals like horse and cats have also been reported.<sup>[3,4]</sup>

Understanding and treating vernal keratoconjunctivitis has been a challenge for ophthalmologists, since the pathogenesis is unclear and anti-allergic therapy is often unsuccessful. It is considered that vernal keratoconjunctivitis is an IgE and Th-2 mediated allergic reaction with additional, not well defined, perhaps non-specific hypersensitivity responses. The pathogenesis

includes several factors, including environmental allergens, climatic and genetic predisposition.<sup>[2]</sup>

The objective of this study will be to assess the—Clinical profile and Ocular surface involvement in patients with Vernal keratoconjunctivitis visiting the Department of Ophthalmology, DRPGMC, Kangra at Tanda. This will be of real value in the light of fact that no such work has been conducted in this part of the state.

## MATERIAL AND METHODS

90 patients with VKC selected at random, who attended the Department of Ophthalmology, Barmer Medical College, Barmer (Rajasthan) were the subjects of this study.

The relevant details of history and clinical examination of the patients were recorded on a specifically designed Proforma. The history was obtained with Special attention to

1. Occurrence of symptoms seasonal or perennial
2. Personal and or family history of allergy
3. Aggravating and relieving factors
4. Post treatment

The type and severity of VKC and its association with corneal involvement was noted. The severity was graded as follows;

1. Mild; few symptoms, seasonal, small papillae, no corneal involvement.

2. Moderate; troublesome symptoms, almost perennial, with moderate sized papillae and on corneal involvement.
3. Severe; severe symptoms, perennial with large fleshy papillae and corneal involvement.

Ocular examination included testing of Visual Acuity, Ophthalmoscopy, Retinoscopy, Biomicroscopy, and recording of IOP with Applanation Tonometry and in selected cases Keratometry.

Clinical observation and evaluation of clinical signs and symptoms were performed before and after drug therapy at visit, weekly interval for 2 weeks and at the end of 3 months. Each of the visits was designated as visit 0 (first visit 0).

#### Inclusion criteria

Patients with symptoms and signs suggestive of VKC.

**Table 1: Distribution of symptoms.**

Symptoms	No of patients	Percentage
Itching	89	98.8
Foreign body sensation	45	50.0
Photophobia	73	81.1
Watering eye	84	93.3
Previous history of mucus production	45	50.0
Burning sensation	21	23.3
Constant blinking	35	38.9

89 studied subjects (98.8%) had itching as the primary symptom, 45 patients (50%) complained of foreign body sensation, 73 patients (81.1%) had photophobia, 84 patients (93.3%) had watering and 45 (50%) out of 90 had either positive history of mucus production or presence of mucus on slit lamp examination. Burning sensation was present in 21 patients (23.3%) out of 90 and 35 patients (38.9%) complained of constant blinking. Therefore the major symptoms seen in this study group are itching, watering and photophobia.

67 patients presented in the Eye OPD in summer months (April-September) mainly, supporting the fact that VKC

#### Exclusion criteria

- Allergic conjunctivitis due to Atopy.
- Contact lens induced conjunctivitis.

#### RESULTS

The Mean age of onset of vernal keratoconjunctivitis in patients enrolled was 7.11 SD  $\pm$  4.54 and age range was from 8 months to 23 years. Age at onset of vernal keratoconjunctivitis (VKC) amongst the studied subjects was found to be most common in the age group of 0-5 years accounting for 37 patients (41.1%) followed closely by age group of 6-10 years with 34 subjects (37.78%).

Out of the total 90 enrolled subjects, 67 were males and 23 were females.

is associated with hot and dry weather. Presence of 16 cases having symptoms throughout the year also highlighted the existence of perennial form of disease. 7 patients presented in the months of October-March.

Associated systemic atopic conditions were present in 13 patients (14.44%) out of 90 patients. 13 diagnosed cases of allergic disorders included 8 cases of allergic rhinitis, 2 cases of atopic dermatitis and 1 case each of asthma, angioedema and food allergy. Positive history of allergy (personal or family) was present in 68 patients (75.6%) out of 90 studied cases.

**Table 2: Blood investigation.**

Blood investigation	No of patients	Percentage
lymphocyte count more than 40%	40	44.44
Eosinophil counts more than or equal to 6% of the total leucocyte count	41	45.55

In our study 40 patients had lymphocyte count more than 40% and 50 patients had counts less or equal to 40%. 41 patients had eosinophil counts more than or equal to 6%

of the total leucocyte count and 49 patients had values less than 6%.

**Table 3: Sign present.**

Sign	No of patients	Percentage
Congestion	78	86.67
Perilimbal pigmentation	70	77.78
Perilimbal conjunctival hypertrophy	40	44.44
Horner Trantas dots	12	13.33

Palpebral papillary hypertrophy	38	42.22
Giant papillary (>3mm) hypertrophy	19	21.11

Congestion was present in 78 patients of VKC and 12 patients had no congestion at presentation. Perilimbal pigmentation was seen in 70 patients out of 90 studied subjects of vernal keratoconjunctivitis. In this study 40 patients had perilimbal conjunctival hypertrophy and 50 patients did not have conjunctival hypertrophy. 12 patients had clinical sign of Horner Trantas dots in this study indicating severity of vernal keratoconjunctivitis. In this study, on everting the upper eyelid, it was found that 38 cases had palpebral papillary hypertrophy. 19

patients in this study were diagnosed as having Giant papillary (>3mm) hypertrophy which was diagnosed on Slit lamp Biomicroscopy after everting the upper eyelids.

#### Eye examination

In accordance with 2007 report of DEWS, the cut off values for Schirmer's test-I were taken as  $\leq 10$  in 5mins and our study found that 7 Right eyes and 6 Left eyes had values less than or equal to 10 mm in 5 minutes.

**Table 4: Eye examination.**

Eye examination	No of eye	Percentage
Fluorescein staining present	96	53.33
Rose Bengal staining present	2	1.11
Tear Film Breakup Time $\leq 10$ seconds	73	40.55

Fluorescein staining was present in 96 out of 180 eyes observed. In this study Fluorescein staining patterns of the cornea were studied and it was observed that 18 eyes had diffuse staining pattern, 74 eyes showed staining in interpalpebral region, 4 eyes took stain in upper quadrant of the cornea and none showed staining in the lower quadrant. Total 96 eyes (53%) out of 180 eyes stained positive with Fluorescein stain indicating corneal epithelial defects and unstable tear film in affected eyes. Rose Bengal staining was present in two eyes of one patient only. In this study TBUT was found to be  $\leq 10$  seconds in 40 Right eyes and 33 Left eyes of the total 180 eyes observed.

**Table 5: Type of VKC.**

Type of VKC	No of patients	Percentage
Limbal form	52	57.78
Palpebral form	20	22.22
Mixed form	18	20.00

Observations of study concluded that there were 52 cases of limbal form, 20 cases of palpebral form and 18 cases of mixed form.

#### DISCUSSION

Vernal Keratoconjunctivitis is an ocular allergic disease affecting mainly boys in the first decade of life. Diagnosis is based on typical clinical signs and symptoms, including intense itching, photophobia, sticky mucus discharge, giant papillae on the upper tarsal conjunctiva and limbal conjunctival hypertrophy, superficial keratopathy and corneal shield ulcers. The disease is traditionally considered to be a type 1 hypersensitivity reaction. A personal history of atopy, increased levels of serum and tear IgE and response to anti-allergic therapy are common features of VKC.

Despite significant advances made in the field of immunology the exact etiopathogenesis of the disease still remains elusive. In this Prospective observational study we evaluated 90 diagnosed cases of VKC at DRPGMC Kangra with the aim to understand the clinical profile and ocular surface involvement in patients with vernal keratoconjunctivitis in the temperate sub Himalayan region of North India.

In this study the Mean age at onset of the disease was  $7.11 \text{ SD} \pm 4.54$  years which is in consonance with other studies done in different parts of the world. The youngest patient in whom the disease was seen was 8 months old and oldest patient was 23 years of age. As reported in other studies, the disease begins early at 2-4 years of life and is related to geographical area and weather conditions prevailing in the area.

1. Mean age at onset present study  $7.1 \pm 4.5$  years
2. Bonini et al <sup>2</sup>  $7.1 \pm 4.7$  years
3. Leonardi et al <sup>5</sup>  $7.0 \pm 5.0$  years
4. Al-Akily et al <sup>4</sup>  $7.0 \pm 5.0$  years

The male to female ratio in this study was 3:1, which confirms the global pattern of male preponderance of VKC. In a study done by Sacchetti et al <sup>6</sup> to evaluate a possible role of sex hormones in VKC, serum levels of sex hormones in children and adolescents with VKC were assessed. Their work found that serum levels of estrone were significantly increased in all groups of patients with VKC when compared to healthy controls.

In this study 74% of the subjects presented in the Eye OPD in the hot and dry months of April-September, 8% presented from October-March and 18% of the cases were perennial. In the studies of Bonini et al <sup>2</sup>, Saboo et al, <sup>5</sup> and Al-Akily et al <sup>4</sup> the percentage of perennial form of VKC was more. In present study less percentage of perennial cases could be due to predominance of limbal form of disease in our series and the temperate climate of

the region. Studies of Saboo *et al.*,<sup>[7]</sup> and Al-Akily,<sup>[4]</sup> were conducted in areas closer to the equator where the season is hot and dry for most part of the year and therefore the perennial form was more prevalent.

In this study history of allergy (personal or family) was present in 75.56% of the subjects and 15.56% subjects were diagnosed cases of allergic disorders (i.e. allergic rhinitis, asthma, atopic dermatitis, angioedema and food allergy). In present study patients were found to be allergic to house dust, silica dust, pollen of pine tree, woolen wear and particular food. Leonardi *et al.*<sup>[7]</sup> in 2006 studied the effect of specific allergens like graminaceae, dermatophagoides, alternaria, parietariae, compositae, birch and cat dander and found positive co-relation between allergic manifestations and VKC.

In our study major symptoms seen in this study group are itching, watering and photophobia. Ujwala S Saboo and co-workers also found almost similar results itching (88%), redness (86%) and watering (65%).<sup>[8]</sup>

In our study congestion was present in 78 patients of VKC and 12 patients had no congestion at presentation. Perilimbal pigmentation was seen in 70 patients out of 90 studied subjects of vernal keratoconjunctivitis. In this study 40 patients had perilimbal conjunctival hypertrophy and 50 patients did not have conjunctival hypertrophy. 12 patients had clinical sign of Horner Trantas dots in this study indicating severity of vernal keratoconjunctivitis. In this study, on everting the upper eyelid, it was found that 38 cases had palpebral papillary hypertrophy. 19 patients in this study were diagnosed as having Giant papillary (>3mm) hypertrophy which was diagnosed on Slit lamp Biomicroscopy after everting the upper eyelids. Ujwala S Saboo and co-workers found perilimbal conjunctival pigmentation in 52/468 (11%) of the patients.<sup>[8]</sup>

Ujwala S Saboo and co-workers found palpebral papillae in 85% of patients and limbal thickening in 73% of patients with VKC.<sup>[8]</sup>

This study shows that VKC in the temperate Sub Himalayan region of North India is predominantly of limbal form (57.8%) followed by palpebral form (22%). This is in contradiction to other studies which mention Limbal form to be more common in tropical regions of the world. A study from southern part of India done by Saboo *et al.*<sup>[5]</sup> found mixed form to be predominant in their studied group.

## CONCLUSIONS

VKC was common in males, during hot climate. Limbal type of VKC was more commonly present.

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