

Research Article

Prevalence of Vernal Kerato-Conjunctivitis at a Tertiary Health Care Centre in Eastern Region of Uttar Pradesh

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ABSTRACT

Purpose: To study the prevalence of vernal keratoconjunctivitis at a tertiary health care centre and its seasonal variation in Eastern region of Uttar Pradesh

Methods: It is a tertiary care centre based cross sectional study where 100 cases of vernal keratoconjunctivitis in age group 5-18 years were selected from the patients presenting to the ophthalmology OPD within a duration of 6 month. Detailed clinical history was taken and ophthalmological examination performed like visual acuity testing, anterior segment examination with slit lamp biomicroscope, fundus examination with indirect ophthalmoscope. The statistical analysis done using SPSS (26.0 version Statistical Package for Social Sciences) statistical analysis software. Point estimate and 95% confidence interval calculated with p-value less than 0.05 will be considered as significant.

Results: Among 980 patients presented to ophthalmology OPD with chief complaint of red eye, VKC was found in 100 patients i.e. 10.2%

Conclusion: Our study showed slightly higher prevalence of vernal keratoconjunctivitis as compared to other tropical countries. However the clinical features are similar to the typical pattern of VKC seen in other parts of the country

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a chronic bilateral allergic inflammatory disease of the conjunctiva and cornea that affects children and young adults. (1) Its prevalence show great geographical variation. It is common in hot and dry climate and in the regions having high atmospheric pollution such as West Africa and Indian sub continent (2). This disease is more common in male population. The patients usually have a family history of atopic disorders such as asthma, rhinitis, eczema. It is usually seasonal but can occur perennially also. The pathogenesis involves a variety of factors, such as environmental allergens, climate, and genetic predisposition (3). The most common symptoms are itching, photophobia, redness, burning, watering and ropy discharge. The most common signs are conjunctival hyperaemia, superficial keratitis, giant papillae at limbus or upper tarsal conjunctiva and corneal shield ulcer (4-5). Repeated recurrences throughout the year has been reported in more than 60% of patients. Earlier presentation of symptoms had been reported in males in comparison of females. However the male: female ratio decreased with age (5).

Vernal keratoconjunctivitis is characterized by infiltration of the conjunctiva by a variety of inflammatory cell types, especially eosinophils.

Although VKC has previously been thought of as an IgE-mediated disease, (6) several other immunologic pathways have also been implicated. Patients with VKC have been shown to have an increased number of activated CD4+ T-lymphocytes, predominantly Th2, indicating that there is a hypersensitivity reaction to an unknown pathogen. (7)

MATERIAL AND METHODS

This is a cross sectional study, conducted in department of Ophthalmology, at Uma Nath Singh Autonomous State Medical College, Jaunpur, a tertiary health care centre in Eastern region of Uttar Pradesh, India after taking approval from the institutional ethical committee. The study was conducted in adherence to the doctrines of Declaration of Helsinki. An informed written consent taken from each patient for their participation in the study. Cases were selected from the patients presenting in ophthalmology OPD within a duration of 6 months i.e. from March 2025 to August 2025. The considered age group was 5 years to 18 years. The diagnosis of VKC was made on the basis of history and typical signs and symptoms.

Minimum sample size has been calculated as 100 (n), by using Charan Biswas Formula and considering the non response rate as 20 %

However, the sample size taken for this study is 980

Formula

$$\text{Sample Size} = Z^2 \times (p) \times (1 - p) / C^2$$

Where, Z= 1.65 for 95 percent confidence level

p (prevalence) = 0.086

C (margin of error) = 0.05

The data obtained includes age, gender, education, socioeconomic status, age of onset and presenting symptoms. Detailed clinical history was taken and ophthalmological examination performed like visual acuity testing, anterior segment examination with slit lamp biomicroscope, fundus examination with indirect ophthalmoscope and following signs and symptoms were noted

Symptoms	Signs
Redness	Conjunctival hyperemia
Itching	Bulbar conjunctival pigmentation
Watering	Papillae (Tarsal + Limbal)
Ropy discharge	Tranta's spots
	Keratitis
	Pseudoxerontoxon

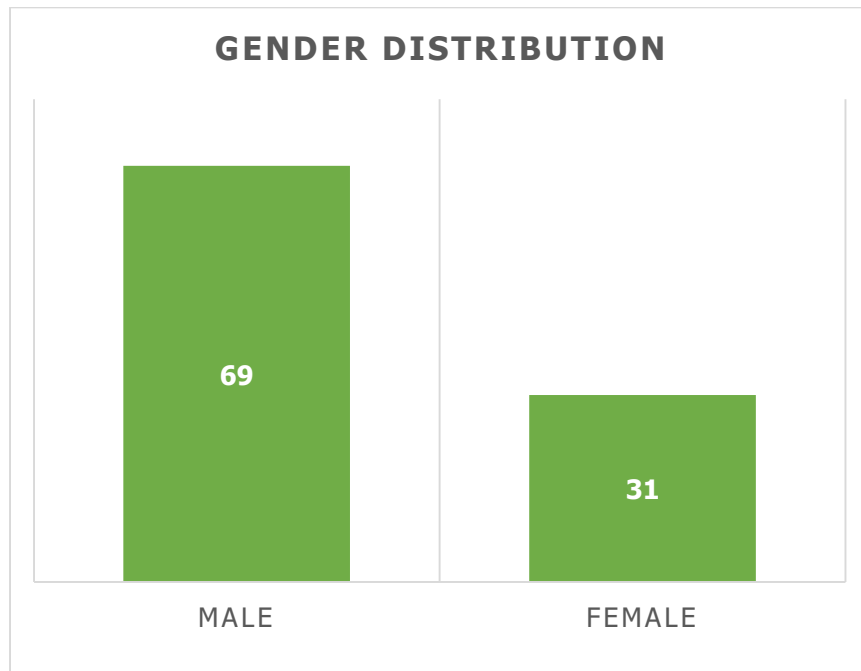
Although, the signs like keratoconous and shield ulcer was not observed in the selected cases.

The statistical analysis was done using SPSS (26.0 version Statistical Package for Social Sciences) statistical analysis software. Point estimate and 95% confidence interval calculated with p-value less than 0.05 will be considered as significant.

RESULTS

A total of 100 cases of VKC were selected from the patients who visited ophthalmology OPD.

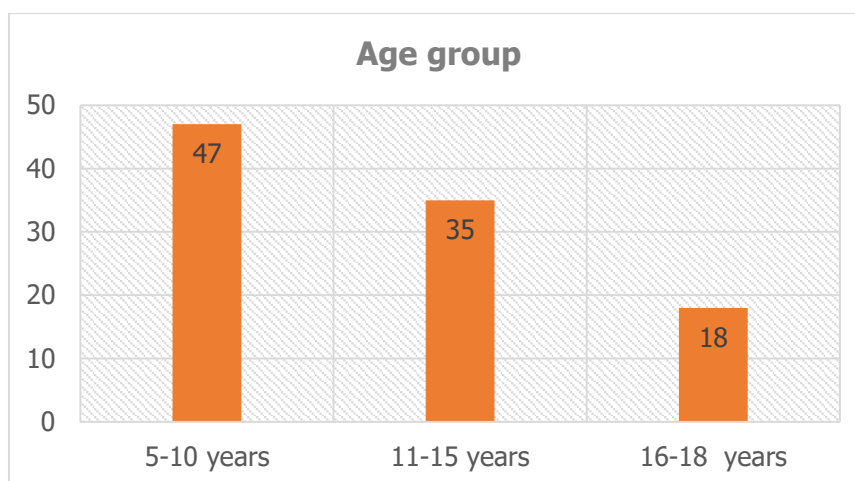
There mean age at the time of presentation is 11 years. There were 69 males and 31 females who were affected. This shows that this disease is more common in male population (Figure.1). The male: female ratio is 2.23:1. The prevalence of disease was found to be 0.10.



(Figure.1)

Most of the patients were in age group 5-10 years (47%). 35% patients were in age group 11-15 years and 18% patients were in age

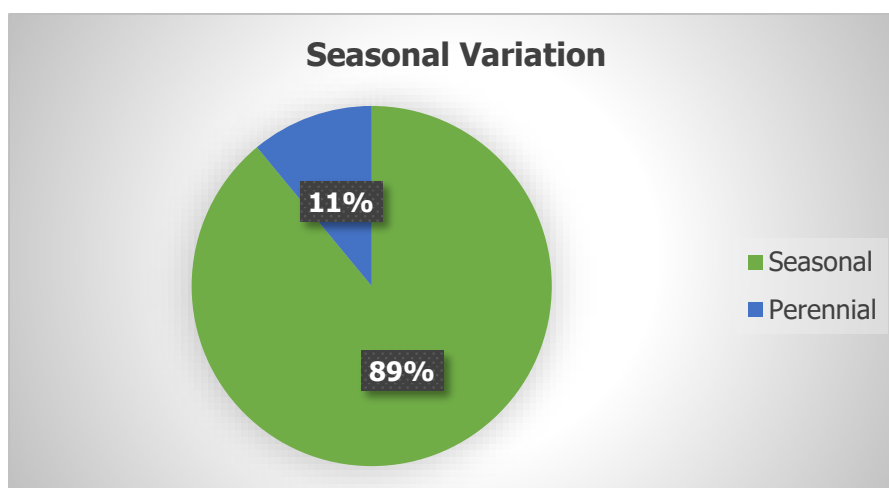
group 16-18 years. Hence the most common age group affected is 5-10 years according to this study (Figure.2)



(Figure.2)

In this study seasonal predominance is seen in 89 patients were symptoms occurred mostly in

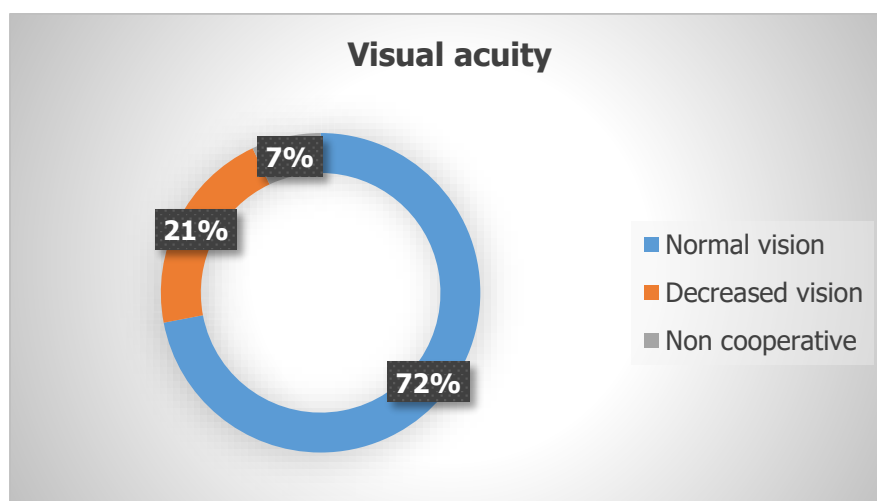
summer season whereas the occurrence was perennial in 11 patients. (Figure.3)



(Figure.3)

In this study 72% patients presented with normal visual acuity, 21% patients have decreased vision mostly due to keratits, and 7%

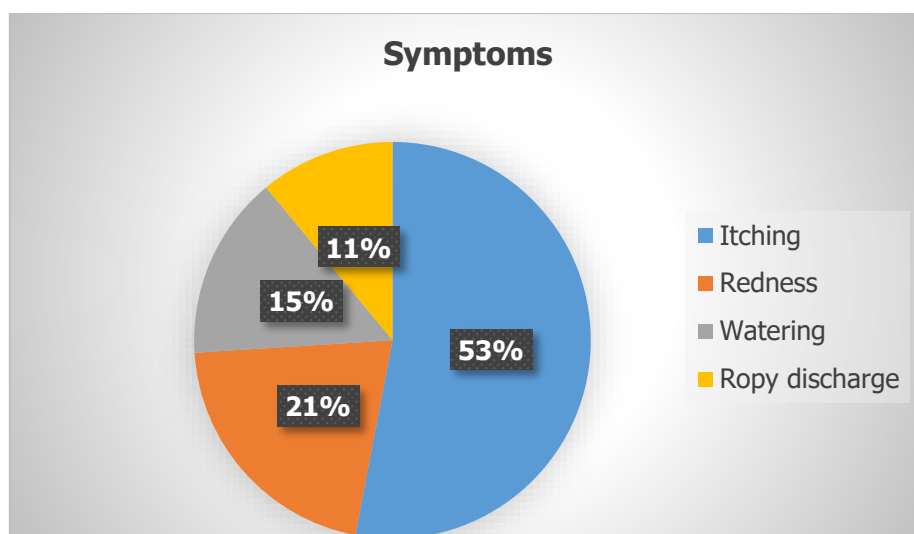
children were non cooperative visual acuity assessment due to their tender age. (Figure.4). In this study, worst visual acuity was 6/36.



(Figure.4)

In this study, the most common presenting symptom is itching seen in 53% of patients, followed by redness which is seen in 21% of patients. 15% patients presented with

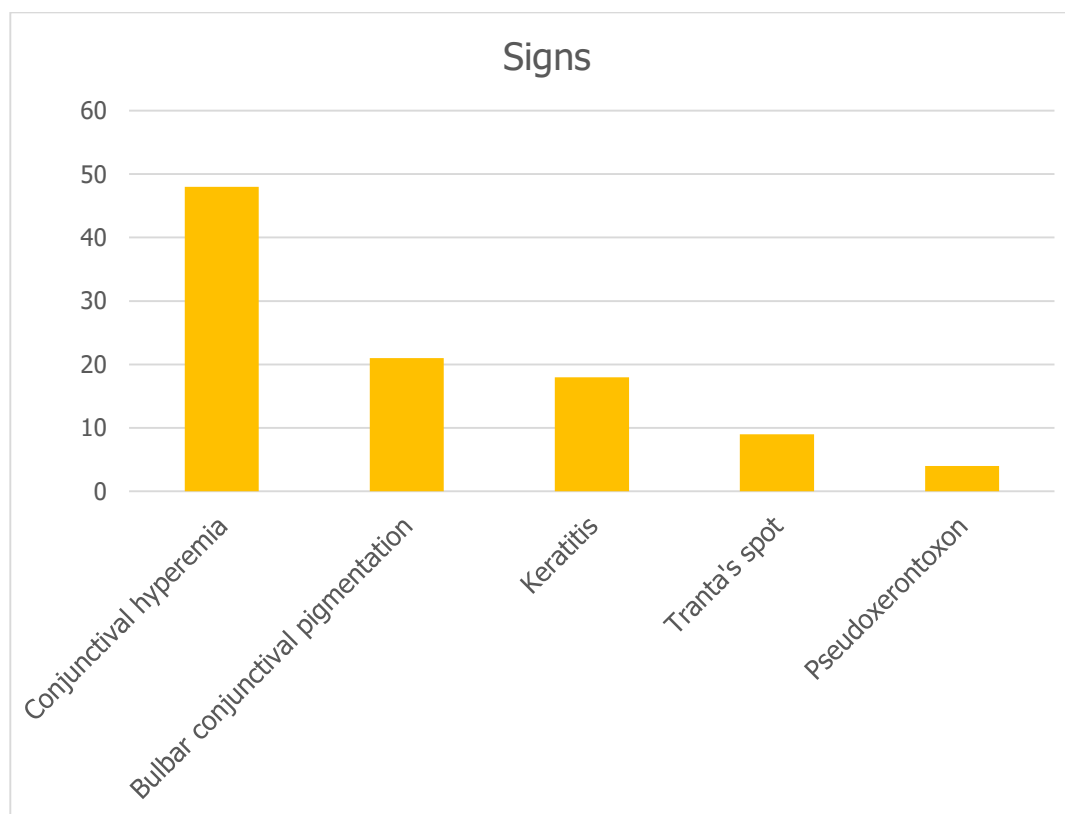
symptom like watering and 11% patients presented with ropy discharge (Figure.5). Hence, this study shows that itching was the most common symptom in this population.

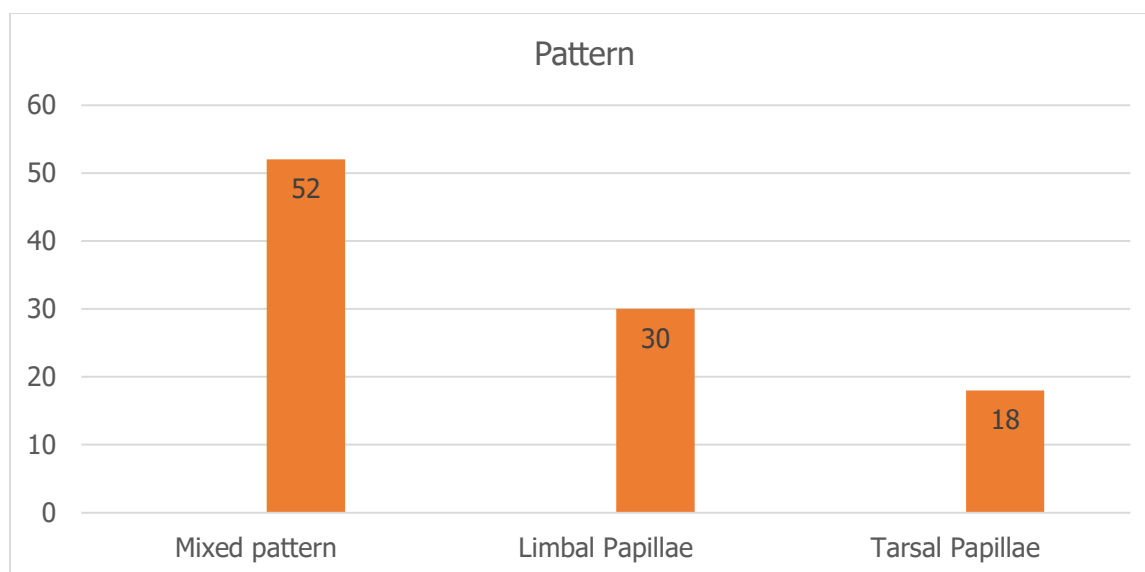


(Figure.5)

Signs like conjunctival hyperemia seen in 48% patients, bulbar conjunctival pigmentation seen in 21% patients, keratitis seen in 18%, tranta's spot seen in 9%, pseudoxerontoxon seen in 4%

of patients. (Figure.6). Hence, this study shows conjunctival hyperemia is the most common sign of VKC in this population





DISCUSSION

This study showed that the prevalence of VKC in this region of state is 10.2%, which is slightly higher than the prevalence mentioned in the studies conducted in the tropical Indian sub-continent and other tropical countries. Majority of patients in the study were in age group 5-10 years 47%, 35% were in age group 11-15 years, and 18% were in age group 16-18 years. In a study done in India, persistent disease beyond 20 years of age was reported in 12% of patients and the mean age of presentation in their study was 12 years (8). This study showed that majority of affected individuals were male, i.e. 69% and remaining 31% were females.

In this study all patient were having bilateral involvement of eyes, however there was variation in severity of symptoms among both the eyes of the same patient.

The occurrence of disease was seasonal in 89% of patients, although in 11%, the occurrence of disease was perennial. In this study the majority of patients, i.e. 72% visual acuity was not affected, However visual acuity found to be decreased in 21% of the patients who were not compliant for medications. It signifies that the patient should follow proper treatment protocol and follow up advice in order to avoid compromise in visual acuity.

The most common symptom reported in this study was itching (53%) followed by redness (21 %), watering (15%) and ropy discharge (11%). In another study conducted by Rao et al reported itching (88%), redness (86%) and watering (65%).(9)

Majority of the patients, i.e. 48% had Conjunctival hyperemia, 21% had bulbar conjunctival pigmentatation, 18% had keratitis, 9% had tranta's spot and 4% had

pseudoxerontoxon. Another study done in India reports tarsal papillae in 85% of patients and limbal thickening in 73% of patients with VKC (10). Perilimbal conjunctival pigmentation is a new clinical sign described in VKC. (11-13)

In this study, the majority of patients were having VKC of the mixed pattern that is 52%, 30% patients had limbal form of disease, and 18 % patients had palpebral form of disease. In a study done in India, it was reported that most of the cases i.e. 71.8% had a mixed presentation comprising of both limbal as well as palpebral involvement, followed by isolated palpebral involvement in 15.6% and limbal involvement in 12.6% of the patients (8)

In all forms of allergic ocular diseases, including VKC the the clinical response occurs due to mast cell activation due to either an antigen–mast cell linkage or T-cell activation of mast cells. When conjunctival mast cells gets activated, it leads to the release of histamine, prostaglandin D2, leukotriene C4, tryptase, chymase, platelet-activating factor, and other chemo-attractants. This further attracts eosinophils and neutrophils leading to the occurrence of signs and symptoms of VKC. (14-16)

The limitation of this study was that the patients were not followed up, as the study design was descriptive cross sectional study. A multicentric study could have been done to achieve better precision.

CONCLUSION

This study showed that the prevalence of vernal keratoconjunctivitis is slightly higher than the studies conducted in other parts of the country and other tropical countries. However the

clinical features are similar to the typical pattern of VKC seen in other parts of the country.

Conflict Of Interest: None

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