



## CLINICAL PROFILE OF VERNAL KERATOCONJUNCTIVITIS IN A TERTIARY CARE HOSPITAL

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**ABSTRACT** **Introduction:** This study was carried out to evaluate the clinical profile and epidemiological variants of vernal keratoconjunctivitis in a dry humid region of Jammu state which is more prone to vernal keratoconjunctivitis. Materials and Methods: Vernal keratoconjunctivitis is a non-infectious allergic reaction of conjunctiva, is characterized by bulbar and palpebral conjunctival involvement with characteristic signs and symptoms like redness, itching, burning, ropy discharge. It is more common in pre-pubertal males in spring and summer season. This study was carried out for duration of 12 months at outpatient department, in a teaching institute in Jammu. The patient data were recorded with a specially prepared proforma. Age and gender of the patients were noted. The clinical diagnosis was based upon history and characteristic signs and symptoms of vernal keratoconjunctivitis. Special emphasis was given upon age, first age of presentation, family history of rhinitis, atopy and eczema. An analysis of 108 patients was done. **Results:** Out of 108 patients of age group 1- 25 years, Maximum cases were seen in 6-10 years of age which were 54 (50%). The male to female ratio was 5.3:1 which showed a clearcut male preponderance. 62 patients (58%) were having the disease presentation for the first time and 46 patients (42 %) were having a history of previous occurrence of the same disease. Most common symptom was itching, followed by redness (50%) , photophobia in (25%), ropy discharge in (16%), and foreign body sensation (14%). Palpebral form was the commonest one in 77 cases (72%), mixed form in 22 cases (21%), limbal form in 8 cases (7%). 86 cases (80%) had papillae on upper palpebral conjunctiva, 36 cases (34%) had conjunctival congestion, 17 cases (16%) had SPKs and limbal papillae, and 16 cases (15%) had Horner Tranta's spots. Majority of the patients had a seasonal occurrence of the disease **Conclusion:** The geographical pattern seen in this region is mostly similar to rest of Indian climate with few distinct features like high association with atopy and rhinitis and higher incidence of new cases.

### KEYWORDS :

#### INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a chronic, recurrent bilateral inflammation of conjunctiva and cornea that tends to occur in children and young adults. It presents with intense itching, swollen eyelid, tearing, red eye, foreign body sensation, mucous discharge and photophobia. The most common signs are lid edema, chemosis, tarsal papillae, Horner-Trantas dots, limbal infiltrates (limbitis), giant papillae and corneal epitheliopathy. Based on the above clinical presentation, VKC is classified into: palpebral, limbal and mixed VKC<sup>[1,2]</sup>. VKC has a global distribution with a widely varying incidence. It is less common in Northern Europe and North America but relatively common in warm dry climates such as the Mediterranean countries, Central and South America, Sub – Saharan Africa, the Middle East and India. It accounts for about 1 % of eye disease in most parts of the world and 3 % of serious ophthalmic disease in tropical countries<sup>[3,4]</sup>. Males are affected twice as often as females with a peak incidence between the ages of 11 and 13 years old, although 10 % of VKC patients are older than 20 years old at the time of onset. A large number of patients with VKC have symptoms that are exacerbated in the spring, possibly due to the increase in pollen count<sup>[5-7]</sup>. About 2/3 of the patients have some form of allergic history and they are more commonly associated with childhood asthma and atopic conditions. 4 The onset is usually after 5 years of age and it subsides usually after 25 years of age 5.<sup>[8]</sup>

We undertook this study to understand and stress upon the importance of clinical manifestations, to understand geographical variations of the disease and to know about the sequel of the disease and associations of the disease.

#### MATERIAL AND METHODS

This is a hospital based prospective cohort descriptive study conducted upon the patients visiting outpatient department of a tertiary care hospital at Jammu. Proper ethical approvals were granted from the institutional ethics committee (human research) before commencing this study. A total of 130 patients were identified during the period of 12 months among of them 22 patients were lost on follow up. A total 108 patients were followed up. The relevant history and clinical examination data were noted on a specially designed proforma. The diagnosis was based upon history, clinical signs and symptoms and slit lamp examination. The chief complains were itching, ropy mucoid discharge, photophobia and foreign body sensation.

#### Inclusion Criteria

1. All patients who had history of itching, redness, photophobia, lacrimation and mucous discharge were included in the study.
2. Age 1 year to 25 years of either sex.

#### Exclusion Criteria

Patients with history of contact lens induced, allergic conjunctivitis, other ocular comorbid conditions and trauma were excluded from the study.

#### Three forms of the diseases were identified and noted as

- (A) Bulbar/limbal- Papillae of <1 mm on the upper palpebral conjunctiva with limbal infiltration marked the limbal form of VKC.
- (B) Palpebral- Papillae of size > 1mm on upper palpebral conjunctiva with no limbal infiltration implies the palpebral form of VKC.
- (C) Mixed- features of both limbal and palpebral form.<sup>[9,10,11]</sup>

#### The severity of the disease was noted as:

1. Mild
2. Moderate
3. Severe<sup>[9,10,11]</sup>

Complete ocular examinations including visual acuity, subjective correction, slit lamp examination, examination of conjunctiva especially for the signs of VKC like papillae, Horner Trantas spots at limbus with thickening of the conjunctiva and gelatinization of the limbus were done. Cornea was examined for epitheliopathies and shield ulcers. Staining and scraping of corneas were taken where required. Complete cycloplegic refraction was carried out where required. The data was entered in excel spread sheet and analyzed. All discrete variables were expressed as frequency and continuous variables as means.

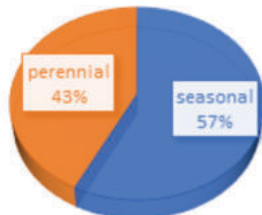
#### RESULTS

Out of 108 patients of age group 1- 25 years, 91 were males (84.25%) and 17 were females (15.74%, Table 1). Maximum cases were seen in 6-10 years of age which were 54 (50%, Table 1). The male to female ratio was 5.3:1 which showed a clearcut male preponderance. 62 patients (58%) were having the disease presentation for the first time and 46 patients (42 %) were having a history of previous occurrence of the same disease.

**Table 1 Distribution of Patients by Age and Gender**

Gender	No of cases	Percentage %
Male	91	84.25
Female	17	15.74
Age distribution in years	No of cases	
1-5	7	6
6-10	54	50
11-15	32	30
16-20	12	11
21-25	4	3
Total	108	100

According to symptom profile (Table 2), all the patients presented (100%) with itching, followed by redness seen in 54 (50%) cases, photophobia in 27 cases (25%), ropy discharge in 17 cases (16%), and foreign body sensation in 15 cases (14%). According to disease pattern (Table - 2) it was found that Palpebral form was the commonest one in 77 cases (72%), mixed form in 22 cases (21%), limbal form in 8 cases (7%). 86 cases (80%) had papillae on upper palpebral conjunctiva, 36 cases (34%) had conjunctival congestion, 17 cases (16%) had SPKs and limbal papillae, and 16 cases (15%) had Horner Tranta's spots. Majority of the patients had a seasonal occurrence of the disease seen in 62(57.4%) while perennial disease was seen in 42.59% cases as shown in Figure 1



**Figure 1 Showing Seasonal Variation**

Majority of the patients had mild disease (60 patients; 56 %) while 30 patients (28%) had severe disease. Associated allergic conditions like family history of atopy in 45(42%) rhinitis 17(15%), history of asthma 13(12%) like eczema 4(3%), childhood and were observed as shown in Figure 2. The most common complication/sequel was corneal scarring 21(20%). It was followed by corneal neovascularization 18 (17%).

**Table 2 Showing Distribution of cases by symptoms, clinical types and Ocular signs**

Symptoms	No of cases	Percentage
Itching	108	100
Redness	57	50
Photophobia	28	26
Ropy discharge	17	16
Foreign body sensation	15	14
Clinical types		
Palpebral	77	72
Limbal	8	7
Mixed	22	21
Ocular signs		
Papillae on upper conjunctiva	86	80
Conjunctival congestion	36	34
SPKs and limbal papillae	17	16
Horner Tranta's spots	16	15

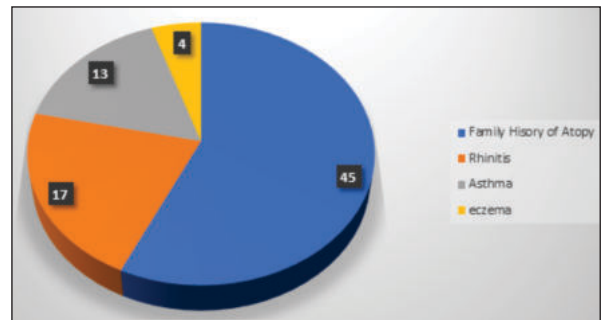
**DISCUSSION**

Vernal keratoconjunctivitis is believed to be a childhood disease which is more common in pre-pubertal males and is found to resolve spontaneously at puberty. It is less common below the age of 5 years. In this study 91 patients were male (83%) and 17 patients were female (17%). The male: female ratio was observed to be 5.3:1. A hospital based study in south India by Saboo et al<sup>14</sup> found the prevalence in males to be 87 % and the prevalence beyond the age of 20 was 12%, while the male: female ratio was observed to be 6.4:1. An international study by Lambiase and co-workers<sup>12</sup> found the male: female ratio to be 3.5:1, while another study by Bonini et al<sup>7</sup> measured the male to female ratio as 4:1. An Nigerian study by Ukponmwan and co-workers<sup>16</sup> found the male: female ratio as 1:1.3.

An Indian clinical study in Hubli by Jivangi et al<sup>16</sup> and Saboo et al<sup>14</sup> at South India found to have a mixed disease pattern to be more common

(60% and 72% respectively). Whereas a neighborhood study from Pakistan by Shaikh et al<sup>18</sup> found the palpebral pattern as the most common finding (54%). While an international study series by Bonini et al<sup>19,20</sup> found out the mixed type to be the most common (48%). This in relation to our study where the palpebral pattern is among the most common occurrence (72%), followed by mixed form and lastly the bulbar form.

Majority of the patients had a seasonal occurrence of the disease seen in 62(57%) while perennial disease was seen in 43% cases as shown in Figure 3. VKC showed seasonal variation in our study. The symptoms become more prominent during dry and hot spring season in more than half of the children with VKC. This is in agreement with a study conducted in Nigeria which reported a perennial presentation of VKC with seasonal variation<sup>[22]</sup> with a high chance of increased environmental allergens during the hot and dry spring season.



**Figure 2 Showing Association of Systemic Allergies**

Majority of the patients presented with itching followed by redness and watering. Intense itching with papillary hypertrophy have always been the impetus of VKC and we have seen in other studies too.<sup>[23-26]</sup> Alemayehu et al observed itching in all of the VKC patients.<sup>[23]</sup> Papillary hyperplasia was the commonest sign followed by conjunctival congestion and perilimbal gelatinization in our study. Sethi et al observed 78.70% to have palpebral papillae, limbal thickening was seen in 63.22% and 8.3% had perilimbal conjunctival pigmentation.<sup>[25]</sup> Clinically we found Palpebral form of VKC to be the commonest as seen in 72 % followed by mixed seen in 22% and then bulbar seen in 7 % of the cases. This was as seen in studies conducted in other parts of a country as seen by Saboo et al and Nagpal et al though Lambiase et al observed limbal subtype in 58.3% cases.<sup>[12,14,26]</sup> VKC thus may have varied ocular presentation from a trivial itching complaint to a potentially blinding disease.

This study found an association between family history of non-ocular allergic disease, such as asthma, atopic rhinitis, and eczema and VKC. There are conflicting reports in the literature about this association with one study showing a high association while another study conducted by the same author indicated that VKC is commonly not associated with a family history of atopic diseases<sup>[20,21]</sup> Patient should be counselled about the recurrent nature of disease and treatment should be tailored according to severity of disease.

**CONCLUSION**

Vernal keratoconjunctivitis is a recurrent bilateral disorder in which both IgE and cell mediated immunity play important roles. It primarily affects boys and onset is generally from about age of 5 years onwards and resolves around puberty. Few cases showed history of atopy and other allergic illnesses. It is mostly seen in tropical counties like our which has warm and dry climate. So, after knowing the geographical trend and clinical profile of VKC in our region, we can make the treatment plan and preventing measures can be taken for recurring cases.

**REFERENCES**

- Eiichi U, Ryoji K, Hironori M, Masahiko K, Kazuaki K. Demographic aspects of allergic ocular disease and evaluation of new criteria for clinical assessment of ocular allergy. Graefes Arch Clin Exp Ophthalmol. 2008;246:291-6.
- Awargaonkar AV, Wagingard VD, Nandedkar V, Khaire BS. Clinical profile of vernal kerato-conjunctivitis patients at tertiary eye care hospital Aurangabad district of Maharashtra, India. MedPulse-Int Med J. 2014;1(4):168-70.
- Khan MD, Kundi N, Saeed N, Gulab A, Nazeer AF. A study of 530 cases of vernal keratoconjunctivitis from the North West Frontier of Province of Pakistan. Pakistan J Ophthalmol. 1986;2:111-11.
- Stephan JT, Ian AC, Mark W, David Y. Limbal vernal keratoconjunctivitis in the tropics. Rev Int Trachome. 1988;3(4):53-71.
- Hall A, Shilio B. Allergic eye disease vernal keratoconjunctivitis. Community Eye Health J. 2005;18(53):76-8.
- Shafiq I, Shaik ZA. Clinical presentation of vernal keratoconjunctivitis(VKC): a hospital

- based study, Sindh-Pakistan. *J Liaquat Uni Med Health Sci.* 2009;8(1):50-4.
7. Bonini S, Coassin M, Aroni S, Lambiase A. Vernal keratoconjunctivitis. *Eye.* 2004;18:345-51.
  8. Kanski JJ. Disorders of the conjunctiva: Vernal keratoconjunctivitis. *Clinical Ophthalmology.* 1999, 4th edition, p 66-71.:
  9. Bisht A, Singh G, Sharma V, Sharma T. Clinico immunological aspects of vernal catarrh in hilly terrains of himanchal Pradesh. *Indian J Ophthalmol.* 1992;40:79-82.
  10. Saboo US, Maniash J, J R, Sangwan VS. Demographic and clinical profile of vernal keratoconjunctivitis at a tertiary eye care center in India. *Indian J Ophthalmol.* 2013;61(9):486-489.
  11. Shafiq I, Z S. Clinical presentation of vernal keratoconjunctivitis (VKC): A hospital based study. *J Liaquat Univ Med Health Sci.* 2009;8:50-54.
  12. Lambiase A, Bonini S, Marchi S, Pasqualetti P, Zuccaro O, Rama P. Vernal keratoconjunctivitis revisited: a case series of 195 patients with long term follow up. *Ophthalmol.* 2000;107(6):1157-1163.
  13. Bisht A, Singh G, Sharma V, Sharma T. Clinico immunological aspects of vernal catarrh in hilly terrains of himanchal Pradesh. *Indian J Ophthalmol.* 1992;40:79-82.
  14. Saboo US, Maniash J, J R, Sangwan VS. Demographic and clinical profile of vernal keratoconjunctivitis at a tertiary eye care center in India. *Indian J Ophthalmol.* 2013;61(9):486-489.
  15. Shafiq I, Z S. Clinical presentation of vernal keratoconjunctivitis (VKC): A hospital based study. *J Liaquat Univ Med Health Sci.* 2009;8:50-54.
  16. Ukponmwan CU. Vernal Keratoconjunctivitis in Nigerians: 109 Consecutive Cases. *Tropical Doctor.* 2003;33(4):242
  17. Jivangi V, Raikar H, Khatib Z, Abhilasha MN, Suhana A. Clinical profile of patients with vernal keratoconjunctivitis. *Int J Res Med Sci.* 2015;3(10):2831-2834
  18. Shaikh A, Ovais SM. The morbidity of vernal keratoconjunctivitis. *Pak J Ophthalmol.* 2001;3:86-89.
  19. Bonini S, Coassin M, Aronni S, Lambiase A. Vernal Keratoconjunctivitis. *Eye(Lond).* 2004;18(4):345-351.
  20. Bonini S, Sacchetti M, Mantelli F, Lambiase A. Clinical grading of vernal keratoconjunctivitis. *Curr Opin Allergy Clin Immunol.* 2007;7(5):436-441
  21. Bonini S, Lambiase A, Marchi S, Pasqualetti P, Zuccaro O, Rama P, et al. Vernal keratoconjunctivitis revisited: a case series of 195 patients with longterm follow up. *Ophthalmol.* 2000;107:1157-63
  22. Malu KN. Vernal keratoconjunctivitis in Jos, North-central Nigeria: A Hospital based study. *Sahel Med J.* 2014;17(2):65-70.
  23. Alemayehu AM, Yibekal BT, Fekadu SA. Prevalence of vernal keratoconjunctivitis and its associated factors among children in Gambella town, southwest Ethiopia. *PLOS* 2018; Published: April 18, 2019 <https://doi.org/10.1371/journal.pone.0215528>
  24. Rajappa SA, Fatima F, Avinash S. A Clinical Study of Vernal Keratoconjunctivitis *Int J Biomed Res* 2014;5:284-7
  25. Sethi M, Nanda R, Bali AS, Sadhotra P. Hospital based study of demography and clinical picture of vernal keratoconjunctivitis. *Int J Res Med Sci* 2018;6:65-8.
  26. Nagpal H, Rani N, Kaur M. A retrospective study about clinical profile of vernal keratoconjunctivitis patients at a tertiary care hospital in Patiala, Punjab. *Kerala J Ophthalmol* 2017;61:189-91.