

Clinical Spectrum of Vernal Keratoconjunctivitis in A Tertiary Care Hospital in Kashmir

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Abstract:

Purpose: To study the clinical spectrum of Vernal Keratoconjunctivitis [VKC] in a tertiary care hospital in Kashmir

Materials and Method: This was a hospital based cross-sectional study conducted over a period of one and half year. Patients with VKC were included and data regarding age, gender, residence and chief complaint was taken.

Results: A total of 156 patients were studied the mean age of patients was 14.11 ± 5.41 years, with 39.1% of patients aged 11-15 years. A male predominance was observed, with 75% males and 25% females. Most patients (75.6%) were from rural areas. VKC was seasonal in 62.8% of cases. Itching was the most common symptom (60.98%), often accompanied by redness and watering. Limbal VKC was the predominant form (52.6%), followed by mixed (30.8%) and tarsal (16.7%) types. Complications included keratoconus (10.89%), corneal scarring (5.77%), and shield ulcers (2.56%).

Conclusion: VKC is a significant cause of ophthalmic morbidity, especially among young males in rural areas of Kashmir. The limbal form is the most common, and complications such as keratoconus are frequent if the condition is not adequately managed. Early diagnosis and appropriate treatment can prevent long-term vision impairment. Based on the findings, tailored management strategies are essential to address the regional burden of VKC and prevent complications.

Keywords: VKC, Keratoconus, Acute Hydrops.

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Introduction

Vernal keratoconjunctivitis (VKC) is a member of a group of allergic diseases that include perennial and seasonal allergic conjunctivitis, atopic keratoconjunctivitis and giant papillary conjunctivitis. [1] VKC is a chronic, bilateral, inflammatory condition. It more commonly affects young, male patients, but it is frequently observed in tropical regions where it may affect both sexes equally. The incidence, as well as the type of VKC, varies depending on geographic region: limbal VKC is the predominate form in central and southern African countries, while the tarsal form is most frequent in Europe and the Americans. [2] It usually occurs in the first decade of life, most frequently between the 6th and 7th year of life and resolves mainly during puberty. [3] The clinical symptoms of VKC are as follows: Itching, Redness, Photophobia, Foreign body sensation, Lacrimation, Burning, White mucous discharge at waking, which obstructs the opening of the eye.[4]

Inadequately treated VKC can lead to:

1. Shield Ulcer.
2. Microbial Keratitis.

3. Keratoconus,
4. Limbal Stem Cell Deficiency (LSCD) and Scarring. [5]

Iatrogenic Complications: Patients due to prolonged steroid treatment can develop ocular hypertension, open-angle glaucoma, and posterior subcapsular cataract. [4]

Material and Methods

The study was a hospital- based cross-sectional study with prospective recruitment of cases conducted over a period of one and half year. After taking consent, data were collected from the patients visiting outpatient department, Department of Ophthalmology at SMHS Hospital, Government Medical College, Srinagar. Patients with clinical signs and symptoms of VKC, Patients with recurrent VKC and Patients with VKC refractory to topical medications or requiring surgical management were included. Patients with acute and chronic allergic conjunctivitis other than VKC were excluded. Data regarding age, gender, residence (Rural or urban), chief complaints, laterality (unilateral or bilateral),

occurrence of symptoms (seasonal or perennial) general physical examination, and a detailed ocular examination of all the patients.

Statistical analysis was done using EpiInfo. Continuous variables were summarized as mean and standard deviation. Categorical variables were

summarized as frequency and percentages. Graphically the data was presented by bar and pie diagrams. P values were reported and <0.05 was considered statistically significant.

Results

Table 1: Frequency Distribution Table of Age Groups		
Age Groups (Years)	Frequency	Percent (%)
0-5	8	5.1
6-10	33	21.2
11-15	61	39.1
16-20	31	19.9
21-25	21	13.5
>25	2	1.3
Total	156	100.0
Mean $\pm$ SD = 14.11 $\pm$ 5.41		

Age distribution of patients with a mean age value of 14.11 $\pm$ 5.41 years. The majority of the patients were in the age group 11-15 (39.1%).

Table 2: Frequency Distribution Table of Gender		
Gender	Frequency	Percent (%)
Male	117	75.0
Female	39	25.0
Total	156	100.0

Among the total of 156 patients, 117 (75%) were males and 39 (25%) were females.

Table 3: Frequency Distribution Table of Residence		
Residence	Frequency	Percent (%)
Rural	118	75.6
Urban	38	24.4
Total	156	100.0

Among all the patients, 118 (75.6%) were residing in rural areas and 38 (24.4%) were residing in urban area.

Table 4: Frequency Distribution Table of Duration of Symptoms		
Seasonal/Perennial	Frequency	Percent (%)
Seasonal	98	62.8
Perennial	52	33.3
1st Visit	6	3.8
Total	156	100.0

Symptoms were present only in summer season in 98 (62.8%) patients, and were present throughout

the year in 52 (33.3%) patients and in 6(3.8%) patients it was their first visit.

Table 5: Frequency Distribution Table of Laterality		
Laterality	Frequency	Percent (%)
Unilateral	8	5.1
Bilateral	148	94.9
Total	156	100.0

94.9% of the patients had bilateral presentation whereas 5.1% on presentation were unilateral.

Table 6: Frequency Distribution of Visual acuity

Visual Acuity	Frequency	Percent (%)
6/6	94	60.3
6/9	16	10.3
6/12	22	14.1
6/24	4	2.6
6/36	5	3.2
Not Cooperative	15	9.6
Total	156	100.0

94(60.3%) patients had visual acuity of 6/6, 22 (14.1%) patients had visual acuity of 6/12, 6/9 in 16(10.3%) patients, 6/24 in 4(2.6%) patients, 6/36 in

5 (3.2%) patients and in 15 patients visual acuity could not be assessed.

Table 7: Frequency Distribution Table of Chief Complaint

Complaints	Frequency	Percent (%)
Itching	95	60.98
Itching + Redness	30	19.23
Watering + Redness + Itching	25	16.03
Diminution of vision	5	3.21
Pain	1	0.64
Total	156	100.00

Among chief complaints, Itching was present in 96.24%, alone in 60.89%, along with redness in 19.23%, and along with both watering and redness

in 16.03%, 3.21% had diminution of vision due to corneal scarring and pain in 0.64% in case of acute hydrops.

Table 8: Frequency Distribution Table of Clinical Signs

Clinical Signs	Frequency	Percent (%)
Conjunctival hyperemia + Pseudogerontoxon	29	18.59
Conjunctival hyperemia + Papillary Hypertrophy	26	16.67
Pseudogerontoxon	50	32.05
Pseudogerontoxon + Papillary Hypertrophy	40	25.64
Horner trantas dots	11	7.05
Total	156	100.00

Among clinical signs, Conjunctival Hyperemia was present along with Pseudogerontoxon in 18.59% and along with Papillary Hypertrophy in 16.67%. Pseudogerontoxon alone was present in 32.05% and

along with Papillary Hypertrophy in 25.64% of patients. In 7.05% of patients Horner Trantas dots were seen.

Table 9: Frequency Distribution Table of Type of VKC

Type of VKC	Frequency	Percent (%)
Limbal	82	52.6
Mixed	48	30.8
Tarsal	26	16.7
Total	156	100.0

Limbal type was seen in 82 (52.6%) patients, mixed in 48 (30.8%) patients and Tarsal pattern was seen in 26 (16.7%) patients.

Table 10: Frequency Distribution Table of Complications

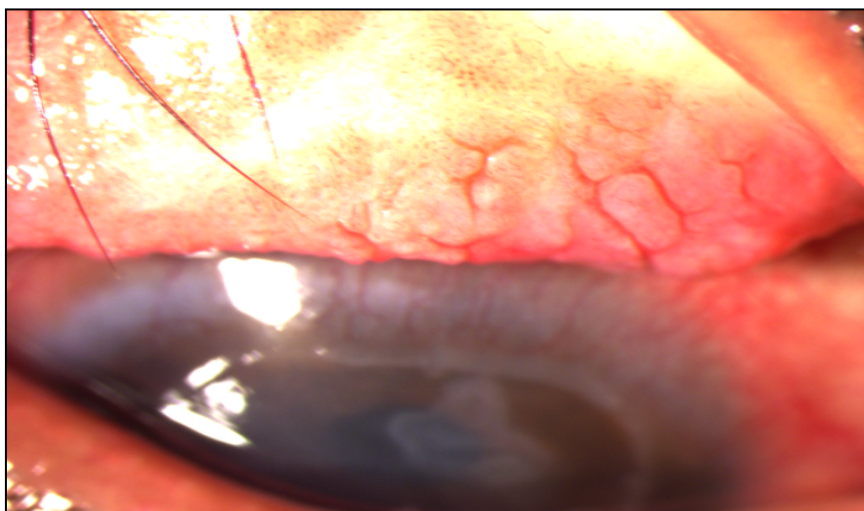
Complications	Frequency	Percent (%)
Keratoconus	17	10.89
Acute hydrops	1	0.64
Shield ulcer	4	2.56
Corneal scarring	9	5.77
Limbal stem cell deficiency	2	1.28
Steroid induced glaucoma	2	1.28
No complications	121	77.56
Total	156	

Out of 156, 35 patients developed complications and keratoconus was most common in 10.89%, corneal scarring was seen in 5.77%, shield ulcer was seen in

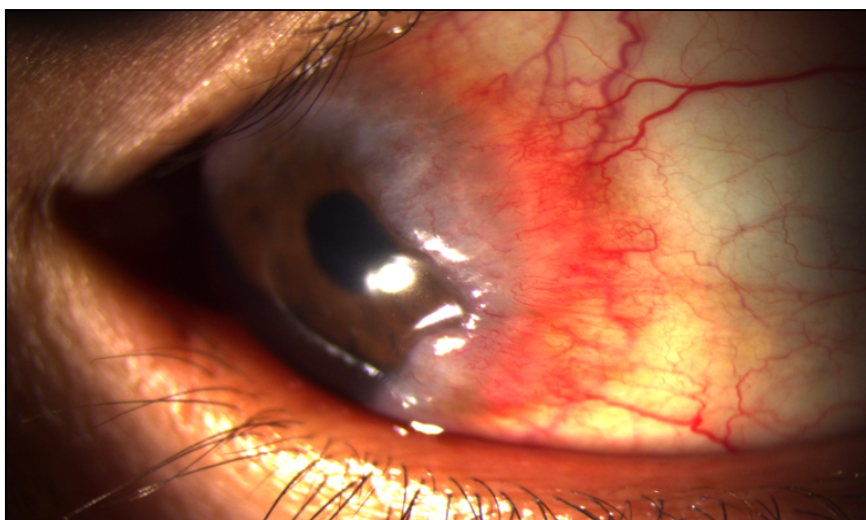
2.56%, both LSCD and steroid induced glaucoma in 1.28% and acute hydrops was seen in 0.64%.



Cobblestone appearance of the papillae on upper tarsal conjunctiva



Papillary hypertrophy with Shield ulcer



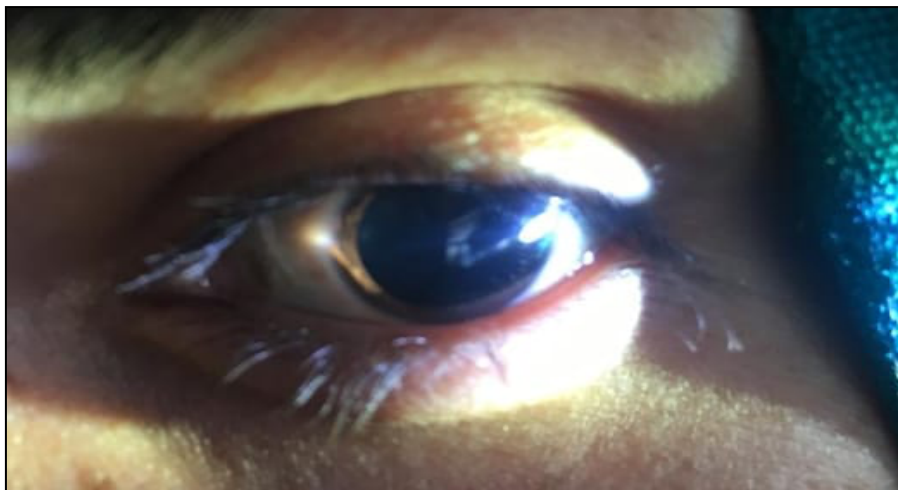
Conjunctival hyperemia with limbal gelatin deposits.



Limbal gelatin deposits



Keratoconus



Rizzuti sign in keratoconus

Discussion

This hospital based cross-sectional study, evaluated 156 patients of VKC. The maximum patients were in the age group of 11-15 years with mean age of 14.11 ± 5.41 years and persistent disease beyond age 21 years was seen in 14.8% of patients. This is consistent with a study conducted on 186 patients of VKC by Sushil O et al [6] in which out of 186, 120 patients were in the age group of 11-15 years with mean age of 10.40 ± 5.78 years. This finding was also supported by study conducted by S Saboo et al [7] in which also mean age of presentation was 12 ± 6.63 years persistent disease beyond 20 years was found in 12% of patients.

VKC has predilection towards male gender, in our study similar observation was made with 117 (75%) males and 39 (25%) females with male: female ratio of 3:1. This is in accordance with study conducted by Al-Akily et al [8] with male: female ratio of 3.1:1. Whereas, study conducted by Sinha R et al [9] & S Saboo et al [7] has reported M:F ratio of 6.5:1 & 6.4:1 respectively.

We observed 75.6 % of patients from rural area and 24.4% from urban area. Siddegowda S et al [10] in their study of 100 patients has observed frequency distribution of residence 60% from rural area and 40% from urban which is somewhat similar to our study.

Disease is more common in summer season in 62.8% mostly in the month of April to June. This is in agreement with study conducted by Chaudhary Neha et al [11] where 87.50% has seasonal form. Similar findings were reported by Jivangi VS et al [12] who also reported highest incidence in hot and dry season in Kerala and by Sinha R et al [9] in Patna. This is consistent with a study done by S Saboo et al [7] and Adhikari S et al [13].

In our study majority of the patients with 94.9% were bilateral on presentation whereas only 5.1%

were unilateral which is in agreement with study done by Bonini et al [14]

In our study, 84.7% of patients had vision between 6/6 to 6/12, 5.8% patients had vision between 6/24 to 6/36. Around 9.6% patients were not cooperative. Our finding was somewhat consistent with results given by Saboo S et al [7] that showed visual acuity of 6/6 to 6/18 in 88.03% of the patients and 6/18 to 6/60 in 8.33% of the patients Bonini et al [14] noted permanent visual loss in 6% of patients due to corneal complications and scarring.

The most common clinical symptom was Itching, followed by redness and watering. In most patients these symptoms were present in combination. Due to corneal complications like keratoconus and corneal scarring, 3.1% patients had diminution of vision and 0.64% had pain which was due to acute hydrops. This is supported by study by Sinha R., et al [9] which also reported Itching as a most common symptom followed by redness. Study by Agarwal M et al., [15] Kosrirukvongs P et al. [16], Rajsekar K [17] also supported this finding.

In our study on clinical examination, we found that majority patients had more than one clinical sign. Pseudogerontoxon followed by Papillary Hypertrophy & Conjunctival Hyperemia was the most common finding. Pseudogerontoxon was present in 76.28%, alone in 32.05%. Papillary Hypertrophy was present in 42.31% of the patients along with other findings. Conjunctival Hyperemia was present in 35.26% of the patients along with Pseudogerontoxon and Papillary hypertrophy. However, in a study conducted by P N Chaudhary et al [11] Conjunctival hyperemia was the most common sign followed by tarsal and limbal papillae. Study conducted by Sinha R et al [9] reported Papillae on upper palpebral conjunctiva in 79.16%, Conjunctival congestion in 34.16%, SPK's and limbal papillae in 16.66% and Horner trantas spots in 14.67%. Kosrirukvongs P et al [16]., reported

chemosis and fine papillae (93%) as most common sign.

In our study the most common type of VKC seen was Limbal in 52.6% followed by Mixed in 30.8% and Tarsal in 16.7% of the patients with. This finding was consistent with study conducted by Adhikari et al [13] and Malu KN et al [18] who also reported limbal form as most common. This was in contrast to study conducted by Siddegowda S et al [10] in southern Karnataka which reported mixed form as most common type. In a study conducted by Sinha R et al [9] in Patna, Tarsal form was most common.

In our study, complications were present in 22.4% of patients. Among all complications, keratoconus seen on corneal topography was most common in 10.89% followed by corneal scarring in 5.77%, shield ulcer in 2.56%, LSCD and steroid induced glaucoma in 1.28% and acute hydrops in 0.64%. This was supported by study by Khan D et al [19] with incidence of keratoconus as 7%. Our finding was consistent with study by Bonini et al [14] that showed corneal scarring in 6% and steroid induced glaucoma in 2%. Few findings were contradicted by Saboo S et al [7] in a study which showed corneal scarring as most common complication in 11%, but keratoconus in 6.2% but LSCD in 1.2% and shield ulcer in 3% was in agreement with our finding. In a study conducted by Solomon A [5] reported incidence of shield ulcer among patients with VKC is 3-11%, which is close to our finding. This was contradicted by Singh R et al [20] in a study with no shield ulcer in VKC cases but agreed on LSCD in 1%. Totan Y et al [21] reported incidence of keratoconus in 26.8% in long-standing VKC especially in mixed and palpebral form. In our study Acute hydrops was present in only 1 patient whereas study of Cameron JA et al [22], acute hydrops occurred in 16 (30%) of 53 keratoconus subjects with VKC.

Conclusion

VKC is a bilateral recurrent allergic disease with male preponderance affecting typically young individuals. In most of the patients, presentation is seasonal but chronic form with recurrences exist. In most of the patients it got resolved in teen years but untreated cases may persist beyond 20 years and leads to vision impairment complications. In our study most common form was limbal and most common complication was keratoconus, other than this, rest all the findings were similar to sub-tropical and tropical regions of India. Based on the severity, treatment strategy should be formed as untreated cases can lead to complications resulting in visual impairment.

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