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ORIGINAL RESEARCH

A Retrospective Study of Vernal Keratoconjuctivitis in district Doda: Sociodemographic correlates and clinical characteristics

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ABSTRACT

Purpose: To study the demographic and clinical profile of patients with vernal keratoconjunctivitis (VKC) in district Doda. **Materials and Methods:** A retrospective study was conducted on patients with Vernal Keratoconjunctivitis (VKC) who visited the outpatient department (OPD) of Govt Medical College, Doda between March 2023 and February 2024. A total of 560 VKC patients were identified. **Results:** The mean age at presentation was 10.96 years± 3.84 years.More than half of the patients, 68.2% were males while 31.8% were females. Majority of the patients had mixed pattern disease (72.14%). About 90.56% of the patients were school going children and 70% of patients were from rural areas.The study found that among the VKC patients, 350 had dust exposure and 310 had close animal contact, suggesting potential environmental triggers for the condition. Personal or family history of allergies was noted in 25% patients.The common symptoms were itching (90%), redness (88%), foreign body sensation (48%) and watering (65%). The most common signs were palpebral papillae (86%) and limbal thickening (80%). The signs and symptoms of VKC were exacerbated during the spring season (Mid May) in 67.86 % patients. The most common complication was corneal scarring (6.07%), keratoconus (5%), corneal shield ulcers (3%) and microbial keratitis (2.14%). Due to indefinite use of corticosteroids, complications like cataract and glaucoma were seen in 8% and 3.34% of patients, respectively. Lid abnormality due to frequent rubbing was seen in 1 patient (0.17%). **Conclusion:** Vernal Keratoconjunctivitis is a common bilateral allergic disorder, mostly seen during school going age group (11 -18years) and it more commonly affects males. Close animal contact, personal or family allergic history, and dust exposure were positively associated with vernal keratoconjunctivitis.

Key words: Ocularallergy, papillae, keratoconus, vernal keratoconjunctivitis

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a severe, recurrent ocular allergy causing chronicbilateral inflammation of the ocular surface. If left untreated or undertreated, it can lead to permanent damage and visual impairment. Vernal keratoconjunctivitis (VKC) predominantly affects children and young adults, especially in the first decade of life (5-10 years), with a higher male preponderance (3:1). [1, 2, 3].VKC typically resolves around puberty but can leave lasting damage in severe cases, emphasizing the importance of proper management to prevent long-term complications.Vernal keratoconjunctivitis (VKC) is more prevalent in regions with hot, humid, and windy climates, where airborne allergens are abundant. It is a common ocular surface disorder in the Mediterranean region, central Africa, India, and South America. Vernal keratoconjunctivitis (VKC) significantly impacts patients' quality of life due to morbidity, vision-threatening complications, and potential treatment side effects, making it a concerning ocular disorder.

Vernal Keratoconjunctivitis is defined as the presence of tarsal and or limbal papillae ≥ 1 mm diameter with itching sensation and at least one of the following symptoms in the last 6 months: photophobia, sticky mucous discharge, redness, tearing and foreign body sensation.

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Classification

Palpebral Vernal Keratoconjunctivitis is defined as the presence of papillae > 1 mm on the tarsal conjunctiva without limbal involvement with itching sensation and at least one of the following symptoms in the last 6 months: photophobia, redness, tearing, sticky mucus discharge and foreign body sensation.

Limbal Vernal Keratoconjunctivitis is defined as at least one of the following limbal findings: thickening, broadening, opacification, Horner-Trantas dots with itching sensation and at least one of the following symptoms in the last 6 months: photophobia, sticky mucus discharge, redness, tearing and foreign body sensation.

Mixed Vernal Keratoconjunctivitis if they had the features of both limbal and tarsal VKC.

Pathophysiology: Vernal keratoconjunctivitis (VKC) is characterized by a Th2 lymphocyte-driven response, involving inflammatory cells like eosinophils, mast cells, and T lymphocytes. This leads to the release of pro-inflammatory cytokines (IL-4, IL-5, and IL-13) and mediators, causing corneal damage, inflammation, and itch. The exaggerated IgE response to allergens may be a secondary event, contributing to the disease's pathogenesis.

MATERIALS AND METHODS

A retrospective study was conducted on patients with Vernal Keratoconjunctivitis (VKC) who visited the outpatient department (OPD) of Govt Medical College, Doda, between March 2023 and February 2024. A total of 560 VKC patients were identified.

The diagnosis of VKC was made on the basis of history and typical signs and symptoms. Active VKC was diagnosed based on the complaint of ocular itching in the presence of upper tarsal conjunctival papillae and/or limbal hypertrophy with bulbar conjunctival pigmentation. The quiescent form was diagnosed on the basis of inactive upper tarsal conjunctival papillae and/or scarring and a previous history of ocular itching.[1]

The following data was retrieved:

Age, gender, personal and family non ocular allergies, age of onset of the disease, presenting symptoms, duration of disease, and details of ophthalmic examination including visual acuity, slit lamp examination for clinical signs, intraocular pressure, fundus examination, details of treatment (medical and surgical), and complications. Sociodemographic correlates were sought by questionnaire which was adopted by reviewing different kinds of literatureon similar studies.

RESULTS

Total of 560 patients diagnosed with VKC presented in the OPD of GMC Doda from March 2023 to Feb 2024. The mean age at presentation was 10.96 years± 3.84 years (±Standard Deviation).Fifty-one percent (290) of the patients were in the age group of 11–18 years and thirty nine percent (220) in age group of 6-10 years.

Table 1: Age distribution of study patients

Age (years)	Frequency	Percentage
2-5	50	8.9
6-10	220	39
11-18	290	51
Total	560	100

More than half of the patients, 382 (68.2%) were males while 178 (31.8%) were females. The male (M) to female (F) ratio was 2.15:1.

Table 2: Gender distribution of study patients

Gender	Frequency	Percentage
Male	382	68.2
Female	178	31.8
Total	560	100

Clinical characteristics of vernal keratoconjunctivitis
The common symptoms were itching seen in 504 patients (90%), redness in 493 patients (88%), foreign body sensation in 258 patients (48%) and watering in 353 patients (65%). The most common signs were palpebral papillae seen in 482 patients (86%) and limbal thickening in 488 patients (80%). Perilimbalconjunctival pigmentation was present in 118 patients (21.07%). The signs and symptoms of VKC were exacerbated during the spring season (Mid May) in 380 patients (67.86 %).

About 404 (72.14%) patients had a Mixed form of VKC with involvement of both limbal and palpebral conjuctiva while isolated Limbal form of VKC was present in 88 patients (15.72%) and isolated Palpebral form was seen in 68 patients (12.14%).

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Table 3: Clinical characteristics		
SYMPTOMS	**Frequency**	**Percentage**
Itching	504	90.0
Redness	493	88.0
Watering	353	63.0
Mucoid discharge		0.0
Foreign body sensation	258	46.0
Photophobia	112	20
SIGNS		
Palpebral papillae	482	86.0
Limbal thickening	488	80.0
Perilimbal conjuctival pigmentation	118	21.07
EXACERBATION		
Spring	380	67.86
Summer	112	20.0
Not specified	68	12.14
TYPE		
Limbal	88	15.72
Palpebral	68	12.14
Mixed	404	72.14

About 12 patients (2%) had a positive family history of atopy or allergic disorders. And 130 patients 23%) had a personal history of allergic diseases that included respiratory tract-related allergies in 112 (variably termed as “dust allergy,” rhinitis, bronchitis, and asthma by patients) and allergic dermatitis in 18 patients.

Complications

The different ocular complications were seen due to VKC in various patients. The most common complication was corneal scarring seen in 34 patients (6.07%), keratoconus in 28 patients (5%), corneal shield ulcers were seen in 17 patients (3%) and microbial keratitis in 12 patients (2.14%). Due to indefinite use of corticosteroids, complications like cataract and glaucoma were seen in 45 (8%) and 19 (3.34%) of patients, respectively. Lid abnormality due to frequent rubbing was seen in 1 patient (0.17%).

Table 4: Complications in VKC		
COMPLICATION	**Frequency**	**Percentage**
Corneal scarring	34	6.07
Keratoconus	28	5.0
Shield ulcer	17	3.0
Microbial Keratitis	12	2.14
Cataract	45	8.0
Glaucoma	19	3.34
Acquired Ptosis	1	0.17

Sociodemographic correlates

Large percentage of patients in our study, about 70% were from rural areas

Table 5: Area distribution of study patients		
Area	**Frequency**	**Percentage**
Rural	392	70.0
Urban	168	30.0
Total	560	100

Table 6:Other Sociodemographic correlates		
FACTORS	**Frequency**	**Percentage**
Dust exposure(kacha roads)	350	62.5
Non cemented house floor	288	51.4
Animal contact	310	55
Total	560	100

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DISCUSSION

More than half of the patients, 382 (68.2%) were males while 178 (31.8%) were females. Also in previous studies, particularly from Europe and Asia, we found a male predominance in all types of VKC. [1, 2, 3]. Fifty-one percent (290) of the patients were in the age group of 11–18 years and thirty nine percent (220) in age group of 6-10 years. The mean age at presentation was 10.96 years ± 3.84 years (±Standard Deviation). This is in accordance with a study from Tertiary Eye CareInstitute in South India which found the mean age of presentation 12 years ± 6.63 years (±Standard Deviation).[2]

The proportion of different types of VKC varies widely in different studies. In this study more than half about 404 (72.14%) patients had a Mixed form of VKC with involvement of both limbal and palpebral conjuctiva while isolated Limbal form of VKC was present in 88 patients (15.72%) and isolated Palpebral form was seen in 68 patients (12.14%). This finding is supported by other studies done in Ethiopia 35 (81.4%) [3, 4] and India 102(40.80%) [2, 5].Other studies including Italy (53.8%) [6, 15] andEthiopia (58.5%) [7]reported that limbal type was the most common type of VKC.On the other hand, studies done in Mali (65.22%) [8] and Nigeria (47.1%) had palpebral type VKC. [9]

The signs and symptoms of VKC were exacerbated during the spring season (Mid May) in 380 patients (67.86 %).This is in agreement with a study conducted in southern part of India and Nigeria which reported a perennial presentation of VKCwith seasonal variation [2,9] with a high chance of increased environmental allergens during the hot and dryspring season. Perilimbalconjunctival pigmentation is a new clinical sign described in VKC. [10-13] In this series, perilimbalconjunctival pigmentation was documented in 118/560 (21.07%) of the patients whereas a cross sectional study conducted at a tertiary eye care center in Western Maharashtra, India it was present in 81 cases (53.29%) and in a study conducted in southern part of India perilimbalconjunctival pigmentation was documented in 52/468 (11%) of the patients. [2, 10]

Corneal scars were noted in 6.07% of patients. Corneal shield ulcers were present in 3% of patients as in study done in southern india by Saboo US *et al*., [2]; however, slightly greater incidence of corneal shield ulcers were reported by Bonini*et al*.,[14]9.7%) and Leonardi*et al*.,[15] (15.3%) as compared to our series. Due to indefinite use of corticosteroids, complications like cataract and glaucoma were seen in 45 (8%) and 19 (3.34%) of patients, respectively. Saboo US *et al*., [2] reported that Corticosteroid-induced cataract was seen in 29 patients (6%), while glaucoma affected 18 patients (4%). Bonini*et al*., [14] described corticosteroid-induced glaucoma in 2.1% of patients in their series while Leonardi*et al*., [15] reported only 1 case of corticosteroid-induced cataract.

This study found an association between family and history of non-ocular allergic disease, such as asthma, atopic rhinitis, and eczema and VKC which is in concordance to studies done in Ethiopia and Southern India [2,3,4,16 and 17].In our study majority of the patients were school going children (90.56%). Large percentage of patients in our study, about 70% were from rural areas, where allergen exposure was more common. Most of these lived near forests or in meadows, thus were more exposed to pollen allergens. Dust exposure was present in 350 patients due to nonavailability of macadamized (pakka) roads. On further questioning it was found around 288 patients had non cemented house floors which made them more prone to dust exposure.About 310 patients had close animal contact.Animals and their danderhave a high probability of harboring different allergen sources which can lead to type I hypersensitivity reaction [18] and pet allergens suspend in the air, stick to clothes,walls and other significant areas where children usually spend their time. Also childrenmight directly have close contact with these domestic/pet animals which in turn expose themto allergens that might cause a reaction to conjunctiva[19].

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