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Demographic and Clinical Features of Vernal Keratoconjunctivitis In A Hot Region: A Hospital-Based Study

Sıcak Bir Bölgede Vernal Keratokonjonktivitin Demografik ve Klinik Özellikleri: Hastane Bazlı Bir Çalışma

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ABSTRACT

Objective: We aimed to evaluate the demographics and clinical features of patients with vernal keratoconjunctivitis who have presented to our hospital which serves the hottest and the driest climate region in our country and also the severity of the disease.
Material and Methods: We retrospectively examined the examination findings of 143 patients diagnosed with vernal keratoconjunctivitis in the Bismil state hospital ophthalmology polyclinic between April 2018 and September 2018.
Results: Of the patients included in the study, 106 (74.1%) were male and 37 (25.9%) were female with a mean age of 8.7 ± 3.9 (3–21) years. The disease most frequently affected patients aged 6–10 years (59 patients, 41.2%). Mixed type (81 patients, 56.6%) was the most common type, followed by limbal type (34 patients, 23.8%) and palpaberal type (28 patients, 19.6%). The most common symptoms were itching (100%), redness (70.6%), photophobia (57.3%) and watering (48.9%). The most common clinical findings included conjunctival congestion (67.8%), upper palpebral papilla (65.2%) and limbal papilla (40.5%). Mild severe type most commonly affected males (50 patients, 47.2%), while moderate type (62.2%) was seen more frequently in females. Only 7 patients (4.8%) had an allergic family history.
Conclusions: Vernal keratoconjunctivitis is one of the main cause of ocular morbidity with different types of involvement and severity in our region especially in childhood. Hence, Patients with vernal keratoconjunctivitis should be monitored and treated during seasonal exacerbations to prevent possible complications of this disease especially in hot and dry areas such as our region.

Key Words: Vernal keratoconjunctivitis, Allergy, Hot region

ÖZET

Amaç: Ülkemizin en sıcak kuru iklim bölgesinde hizmet sunan hastanemize başvuran vernal keratokonjonktivitli hastaların demografik ve klinik özellikleri ile hastalığın şiddetini değerlendirmeyi amaçladık.
Gereç ve Yöntemler: Nisan 2018 ve Eylül 2018 tarihleri arasında Bismil Devlet Hastanesi Göz polikliniğinde vernal keratokonjonktivit tanısı konmuş olan 143 hastanın muayene bulgularını retrospektif olarak inceledik.
Bulgular: Çalışmaya alınan hastaların 106 (%74.1)'sı erkek ve 37 (% 25.9)'si ise kadındı. Ortalama yaş 8.7±3.9 (3–21) yıl idi. Hastalık en sık olarak 6-10 yaş aralığında (59 hasta, %41.2) görüldü. En sık olarak miks tip (81 hasta, % 56.6) görülürken, daha az sıklıkta ise limbal tip (34 hasta, % 23.8) ve palpaberal tip (28 hasta, % 19.6) görüldü. En sik görülen semptomlar ise sırasıyla kaşıntı (%100), kızarıklık (%70.6), fotofobi (%57.3) ve sulanma (%48.9) olarak saptanırken, en sık görülen klinik bulgular ise konjonktival konjesyon (%67.8), üst palpebral papilla (%65.2) ve limbal papilla (%40.5) olarak saptandı. Erkeklerde en sık olarak hafif şiddetli form görülürken (50 hasta, %47.2), kadınlarda ise orta şiddetli form (%62.2) daha sık görüldü. Sadece 7 hastada (4.8 %) alerjik aile öyküsü mevcuttu.
Sonuç: Vernal keratokonjonktivit, bölgemizde özellikle çocukluk çağında farklı tutulum tipi ve şiddeti ile oküler morbiditenin ana nedenlerinden biridir. Bu nedenle, Vernal keratokonjonktivitli hastalar, özellikle bölgemiz gibi sıcak ve kuru bölgelerde, bu hastalığın olası komplikasyonlarını önlemek için mevsimsel alevlenmeler boyunca izlenmeli ve tedavi edilmelidir.

Anahtar Kelimeler: Vernal keratokonjonktivit, Allerji, Sıcak bölge

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Introduction

Vernal keratoconjunctivitis (VKC) is an inflammatory ocular surface disease affecting children and young adults. It frequently occurs as an allergic response in hot climates; can be recurrent, bilateral, and sometimes asymmetric; is often heavily seasonal; and may cause severe complications.

The diagnosis is based on clinical features, age, disease progression, and the presence of typical clinical signs and symptoms, usually resolving spontaneously after puberty or around age 20 years. Although clinical and immunohistochemical studies demonstrate that immunoglobulin E (IgE)-dependent and IgE-independent mechanisms play a role in the immunopathogenesis of VKC, the etiopathogenesis of this disease is multifactorial. (1)

The disease is categorized as palpebral, limbal, or mixed depending on the affected area. Papillary conjunctivitis (cobblestone papillae) of varying sizes is seen in palpebral type, which is more common in Europe and America. The limbal type, in which the corneal limbus has Horner-Trantas nodules, is more common in Africa and Asia. (2,3)

VKC has a continuous process indicated by symptom worsening in the spring and summer months. Corneal involvement may range from superficial punctate keratitis to corneal ulcers causing visual impairment. VKC patients have typical ocular symptoms that impair the quality of life including, photophobia, red eyes, itching, thick mucoid discharge, and foreign body sensation. The disease is characterized by symptoms such as conjunctival hyperemia, papillary hypertrophy of the tarsal conjunctiva, limbal papillae, and Horner-Trantas dots.

Visual acuity is typically normal because VKC is usually benign and self-limiting. However, corneal changes may cause visual impairment in VKC patients. (4) Treatment can include antihistamines, mast cell stabilizers, corticosteroids, and omalizumab, the recently approved anti-IgE monoclonal antibody. (5,6) Various complications such as cataract and glaucoma can be seen in these patients due to the long-term use of corticosteroids. (7)

The aim of this study was to demonstrate the clinical features, severity of the disease, and demographics of patients with vernal keratoconjunctivitis presenting to our hospital, which serves the hottest and dryest areas of the country.

Material and Methods

In the present study, we retrospectively evaluated the records of patients who were diagnosed with VKC in our ophthalmology clinic between April 2018 and October 2018. The research was performed in a single state hospital. The research was approved by the Institutional Ethics Committee (decision no 2018/161, Gazi Yasargil Training and Research Hospital Ethics Committee) and was conducted in accordance with the principles of the Declaration of Helsinki.

Age, sex, familial or personal history of allergy, age at onset of VKC, and seasonal course of the patients were recorded. The disease was classified as palpebral, limbal, or mixed type according to the clinical signs and symptoms of VKC. The patients were put into the following age groups: 0-5 years, 6-10 years, 11-15 years, and > 15 years.

The same physician performed all of the examinations, including a complete ophthalmologic examination consisting of visual acuity measurement, slit-lamp anterior segment examination, fundus examination, and intraocular pressure measurements. VKC diagnosis was based on the patient's history, presence of infiltrates in the tarsal conjunctiva and limbus, clinical symptoms such as papillae, and complaints of pruritus, photophobia, or mucosal discharge. According to the presence of clinical examination findings such as conjunctival hyperemia, chemosis and mucus secretion, upper tarsal and limbal papillary reaction, superficial punctate keratopathy and corneal ulcers, and according to the presence of symptoms such as pruritus, watering, burning, and photophobia, the disease was classified as mild type, moderate type, severe type, and very severe type. (8) Corneal involvement was determined by staining the patients' corneas using a fluorescein strip and then staining the affected area under a cobalt blue light.

IBM SPSS Statistics software, version 22.0 (IBM Corp, Chicago, Illinois, USA) was used to perform data analysis. Continuous variables are reported as mean ± standard deviation and categorical variables are presented as frequency and percentage. $P<0.05$ was considered significant for all analyses.

Results

Of the patients included in the study, 106 (74.1%) were male and 37 (25.9%) female with a mean age of 8.7±3.9 (range, 3-21) years. The most common

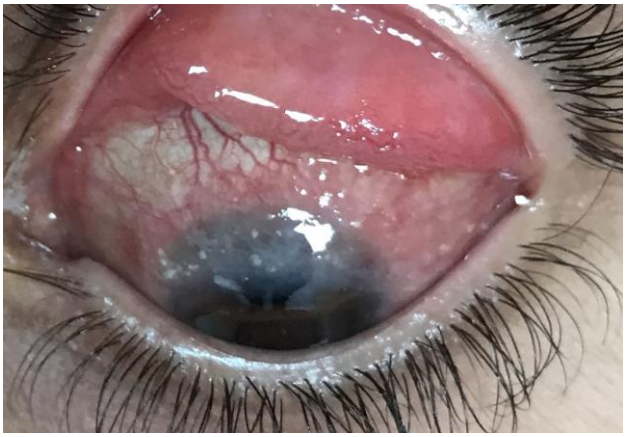

Fig. 1. Mixed type VKC, Horner Trantas nodules

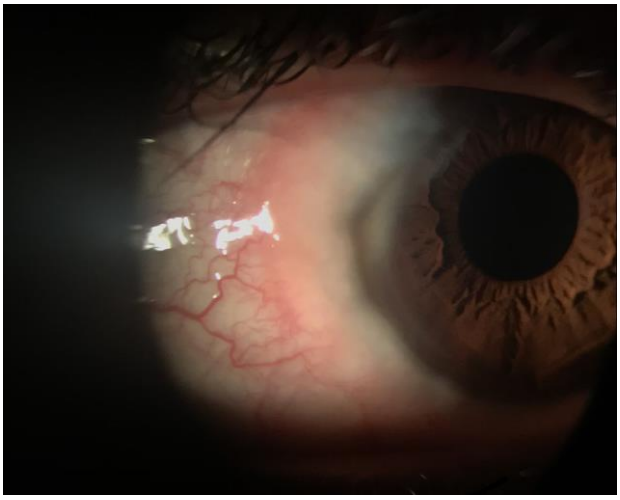

Fig. 2. Limbal type VKC, jellatinous accumulation in limbus

type was mixed type (Figure 1) (81 patients, 56.6%), followed by limbal type (34 patients 23.8%) and palpaberal type (28 patients, 19.6%). (Table 1). The age groups most frequently affected by VKC were 6–10 years (59 patients, 41.2%), 11-15 years (42 patients, 29.4%), 1–5 years (34 patients, 23.8%), and > 15 years (8 patients, 5.6%) (Table 2).

Types seen in males included mild type (50 patients, 47.2%), moderate type (46 patients, 43.4%), severe type (7 patients, 6.6%), and very severe type (3 patients, 2.8%), whereas women had moderate-severe type (23 patients, 62.2%), mild type (10 patients, 27.0%), severe type (3 patients, 8.1%), and very severe type (1 patient, 2.7%) (Table 3).

The symptoms included itching (143 patients, 100%), redness (101 patients, 70.6%), photophobia (82 patients, 57.3%), watering (70 patients, 48.9%), thick mucoid discharge (45 patients, 31.4%), and foreign body sensation (27 patients, 18.8%). The clinical findings were conjunctival congestion (97 patients, 67.8%),

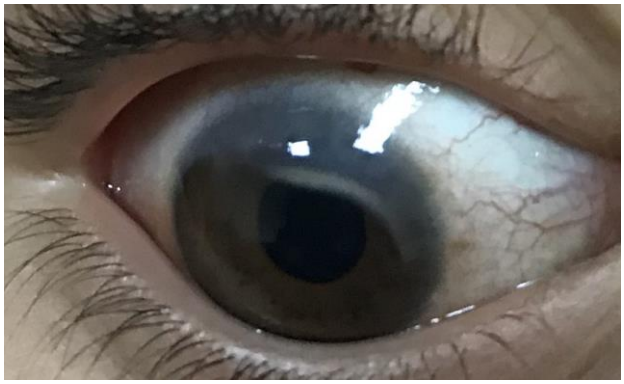

Fig. 3. Limbal type VKC, pseudogerontoxone image

palpebral papilla (64 patients, 44.7%), limbal papilla (58 patients, 40.5%) (Figure 2), Horner-Trantas dots (Figure 1) (52 patients, 36.3%), superficial punctate keratopathy (20 patients, 13.9%), and pseudogerontoxone (Figure 3) (4 patients, 2.8%) (Table 4). Only 7 patients (4.8%) had allergic family history.

Discussion

Our region has the dryest and hottest air in the country, and cotton, wheat, corn, and many other agricultural activities are performed extensively. Therefore, these cultivated products come with different varieties of pollens and product dusts that are seen from spring to autumn.

Due to the high temperatures in our region and the wide range of allergens from the wide variety of agricultural activities, VKC frequently differs in severity and involvement in the pediatric age group. Unlike the geographic characteristics of our country, mixed type VKC is seen frequently in our region, while limbal and palpebral type are seen less frequently and in close ratio. This could be because patients are sometimes exposed to dry-hot air and sometimes to humid-hot air depending on the intensity of agricultural activities in our region. In addition, patients' exposure to many different allergens due to agricultural activities was also significant.

Studies have reported age range and average age (3–21 years, mean, 8.7 years) similar to that in our study; however, other studies have reported a higher age range and average age. (9,10) In our study, male: female ratio was 2.8:1. Although this rate was found to be high according to many previous studies, the number of studies performed in different regions reported equal distribution or sex dominance between the sexes. (3,10-12) VKC was often seen as moderate type and mild type.

Table 1. Demographic and characteristic features

Characteristic	
Age (Year) (Mean ± SD)	8.7 ± 3.9 (3-21)
Gender N(%)	
Male	106 (74.1)
Female	37 (25.9)
Type N(%)	
Mixed	81 (56.6)
Limbal	34 (23.8)
Palpebral	28 (19.6)

Table 2. Severity of VKC by age

		Age (Year)				
Severity		1-5 N(%)	6-10 N(%)	11-15 N(%)	>15 N(%)	Total N(%)
	Mild	17 (11.9)	22 (15.3)	18 (12.6)	3 (2.1)	60 (41.9)
	Moderate	13 (9.1)	31 (21.7)	21 (14.7)	4 (2.8)	69 (48.3)
	Severe	3 (2.1)	4 (2.8)	2 (1.4)	1 (0.7)	10 (7.0)
	Very Severe	1 (0.7)	2 (1.4)	1 (0.7)	0 (0)	4 (2.8)
Total		34	59	42	8	143

Table 3. The severity of VKC by gender

		Gender		
Severity		Male N(%)	Female N(%)	Total N(%)
	Mild	50 (47.2)	10 (27.0)	60 (42.0)
	Moderate	46 (43.4)	23 (62.2)	69 (48.2)
	Severe	7 (6.6)	3 (8.1)	10 (7.0)
	Very Severe	3 (2.8)	1 (2.7)	4 (2.8)
Total		106	37	143

The most common complaints were itching and redness, while conjunctival congestion and palpebral or limbal papillae were the most common clinical findings. In the study group, superficial punctate keratopathy was seen as a corneal complication, and no severe corneal involvement was observed.

In our study, mixed type (56.6%) was the most common (Figure 1), while palpebral type (19.6%) was the least common. Similar to our study, mixed type (71.8%) was reported in India, limbal type (53.8%) was reported in Italy, and palpebral type was the least common (21.2%) type observed.(13,14) Again, many studies reported the frequency of each of the 3 different types of VKC at very different rates. (9,11,15)

In our study, we found that most of the VKC patients were aged between 6 and 11 years (41.3%). Similar to other studies, only 5.5% of the patients were aged > 15 years.(16) In our patients, a history of personal or familial allergy was found in 4.8%, which is consistent with many studies; however, some studies have reported rates as high as 48.7%.(11,14,17) In our study, superficial punctate keratopathy was detected in 13% of patients and pseudogerontoxone was seen in 2.8%. Corneal shield ulcer was not detected in any patient. In contrast to our study, reports have shown incidences of corneal shield ulcers from 3%–15.3% and permanent vision impairment due to corneal scars in 6%.(13,18) A possible reason for this difference was the low prevalence of palpebral type in our patients with VKC, because corneal complications were higher in patients with

Table 4. Symptoms and clinical findings of VKC

Symptom	N (%)	Finding	N (%)
Itching	143 (100.0)	Conjunctival congestion	97 (67.8)
Redness	101 (70.6)	Palpebral papilla	64 (44.7)
Photophobia	82 (57.3)	Limbal papilla	58 (40.5)
Watering	70 (48.9)	Horner-Trantas dots	52 (36.3)
Thick mucoid discharge	45 (31.4)	Superficial punctate keratopathy	20 (13.9)
Foreign body sensation	27 (18.8)	Pseudogerontoxone	4 (2.8)

palpebral type. (14,15)

A limitation of our study was the patients were examined in our clinic only between the spring and autumn months. In addition, this is a retrospective study based on hospital presentations. Therefore, our study may not reflect the characteristic features of VKC in our region over the whole year.

In conclusion, VKC is the main cause of ocular morbidity with different types of involvement and severity in our region having a hot and dry climate. Hence, to prevent possible complications of the disease, treatment and follow-up of VKC patients as well as administering various eye health screening exams, especially during certain seasons, are important especially in childhood.

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