ORIGINAL ARTICLE

CLINICAL FEATURES OF VERNAL CONJUNCTIVITIS IN CICENDO NATIONAL EYE HOSPITAL

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ABSTRACT

Introduction: *Vernal conjunctivitis is a chronic, recurrent form of allergic conjunctivitis that occurs mainly in children and is commonly found in warm and humid climates or tropical countries, including Indonesia. Although vernal conjunctivitis is a self-limiting disease, it often leads to visual impairment and significantly affects the patient's quality of life.*

Methods: *This retrospective descriptive study was conducted in Cicendo National Eye Hospital from March to April 2023 using the total sampling method to obtain the clinical features of vernal conjunctivitis patients.*

Result: *This study took 117 patients (234 eyes) registered in electronic medical records from January to December 2022 with an age range of 7-18 years. The mean age of the patients was 10.73 ± 3.69 years, with total of 78 patients (66.67%) being male. A total of 30 patients (25.64%) had a history of atopic allergies. All patients in this study had a bilateral condition. The palpebral type was diagnosed in 85 patients (72.64%). Red eyes were the most prominent symptom experienced in 89 eyes (76.06%). Papillary signs were seen in 203 eyes (86.75%), with an uncorrected visual acuity of 6/6 to 6/18 were found in 163 eyes (69.66%). A small proportion of patients experienced complications in 93 eyes (39.74%).*

Conclusion: *The clinical features of vernal conjunctivitis patients in Cicendo National Eye Hospital are similar to those in other tropical countries. Most patients were male and complained of itching and red eyes. The palpebral type is the most common type. Few distinct features were noted indicating a low association with atopy.*

Keywords: *pediatrics, allergy, conjunctivitis, vernal conjunctivitis*

INTRODUCTION

Vernal conjunctivitis is a chronic, recurrent form of allergic conjunctivitis caused by an inflammatory condition of the conjunctiva, usually bilateral, which often occurs in childhood.[1] Globally, the prevalence of vernal conjunctivitis is between 0.1 – 0.5% with an incidence rate that tends to be higher in developing countries. Vernal conjunctivitis is generally found in warm and humid climates or tropical countries such as Asia, Africa, or the Middle East. This condition is commonly found in male patients who are starting to enter the prepubertal period and can last around 5-10 years until it slowly disappears at the age of 18 years.[2,3]

Most of the patients have presented symptoms of severe itching and redness of the eyes, the presence of a foreign body sensation, recurrent burning and pain, mucous discharge, lacrimation, to photophobic reactions in some patients. There are two characteristics of the clinical manifestations that distinguish the types of vernal conjunctivitis. The palpebral type is

characterized by the presence of giant papillae on the superior tarsal conjunctiva, known as Cobblestone papillae. Meanwhile, the limbal type is represented by a thickening of the limbus and a gray nodule filled with eosinophils called Horner-Trantas dot.[4,5]

Vernal conjunctivitis usually does not cause blindness; it is more commonly known as a self-limiting disease. However, this disease can cause visual impairment if it spreads to the other part of the eye. In some cases, vernal conjunctivitis may involve the patient's corneal epithelium, identified by the development of superficial punctate keratitis due to inflammation. Repeated episodes of allergic reactions in some patients can also induce another complication like shield ulcers in the upper third of the patient's cornea.[4,6] If it worsens, vernal conjunctivitis often leads to visual impairment and significantly affects the patient's quality of life due to limitations in daily activities, schooling, as well as potential psychological issues.[3,7,8] This surely has a substantial impact on the patient's well-being, necessitating a better understanding of the disease's nature and it's predisposing factors.

As a tropical country, Indonesia has various risk factors causing vernal conjunctivitis, ranging from various allergens to seasonal factors. Interestingly, the clinical features and severity of the disease may also change according to the geographical condition of the patient. Considering the lack of studies and evidence on this disease in warmer climates such as Indonesia, studies on vernal conjunctivitis have great potential to continue to be researched. Knowing the clinical features of vernal conjunctivitis also helps in the early diagnosis of the patient's manifestations as well as the other threatening complications. Thus, this study is aimed to describe clinical features of vernal conjunctivitis in Cicendo National Eye Hospital.

METHODS

A retrospective, descriptive study was conducted from March to April 2023 and approved by Cicendo National Eye Hospital Research Ethics Committee with protocol number LB.02.01/2.3/2827/2023. Subjects were selected using the total sampling method. All vernal conjunctivitis patients who came in for their first or follow-up visits in the Pediatric Ophthalmology and Strabismus Unit in Cicendo National Eye Hospital from January to December 2022 with an age range of 7 to 18 years were included in this study. Exclusion criteria include patients with incomplete electronic medical records, especially those with incomplete data variables that have been listed.

Variables in this study were based on anamnesis of electronic medical record data, including age, gender, atopic history, visit history, patient's residence, clinical symptoms, clinical signs, type of vernal conjunctivitis, uncorrected visual acuity (UCVA), and complications. Age was determined based on data recorded when the patient registered for their

first visit and assessed by calculating the average age obtained in years. Patient's visit history was grouped into first and follow-up visits. Follow-up visits were taken based on the patient's last control visit in 2022. Patient's residence was classified into Bandung, consisting of Bandung City, Bandung Regency, and West Bandung Regency, and outside Bandung.

Clinical symptoms are subjective complaints of patients written on anamnesis. Clinical signs are the findings on ophthalmological examination that the examiner observes. Vernal conjunctivitis types are classified into palpebral, limbal, and mixed types. Uncorrected visual acuity (UCVA) result is a measurement of the degree of visual acuity of the patient, which is recorded in the electronic medical record data. Complications in this study included the presence of shield ulcers, superficial puncture keratitis, and treatment-related complications, such as glaucoma and cataract. Data obtained were processed using Microsoft® Excel 2022.

RESULTS

Based on electronic medical record data, 117 vernal conjunctivitis patients were obtained with an average age of 10.73 ± 3.69 years and dominated by males (66.67%). A total of 30 patients studied had a history of atopic (25.64%). Most of the patients lived in Bandung (77.78%) and went as follow-up patients (76.07%). The clinical profile of vernal conjunctivitis patients is listed in Table 1.

Table 1. Vernal Conjunctivitis Patient Characteristics

	Patients (n=117)	Percentage (%)
Age (years old)		
Mean ± SD	10.73 ± 3.69	
Range	7 – 18	
Gender		
Male	78	66.67
Female	39	33.33
Atopic history		
Atopic	30	25.64
Non atopic	87	74.36
Patient's residence		
Bandung	91	77,78
Outside Bandung	26	22.22
Visit history		
First	28	23.93
Follow-up	89	76.07

All patients in this study were presented with a bilateral condition and most of them were diagnosed with palpebral types (72.64%), followed by mixed and limbal types. Patient symptoms were dominated by redness eyes (76.06%), followed by itching (63.24%) and

burning (29.91%).

Distinctive papillae on the tarsal conjunctiva were seen in 203 eyes (86.75%) and Horner-trans dots in 39 eyes (16.67%). Most of the uncorrected visual acuity (UCVA) had the range of 6/18 to 6/6 (69.66%) and was measured using the Snellen chart.

Table 2. Vernal Conjunctivitis Clinical Characteristics

	Patients (n=117)	**Percentage (%)**
Types		
Palpebral	85	72.64
Limbal	3	2.56
Mixed	29	24.8
Clinical symptoms		
Redness eyes	89	76.06
Itching	74	63.24
Burning sensation	35	29.91
Foreign body sensation	1	0.85
Discharge	20	17.09
Photophobia	7	5.98
Blurry eyes	29	24.78
Lacrimation	33	28.21
	Eyes (n=234)	**Percentage (%)**
Clinical signs		
Papillae	203	86.75
Giant papillae	10	4.27
Hyperemia	36	15.38
Hornes-Trantas dot	39	16.67
Limbal hypertrophy	18	7.69
Conjunctival hyperpigmentation	43	18.37
Blepharospasm	10	4.27
Crust	14	5.98
Uncorrected visual acuity		
6/6 – 6/18	163	69.66
< 6/18 – 6/60	42	17.94
< 6/60 – 3/60	11	4.71
<3/60	18	7.69
Complications		
Yes	93	39.74
No	141	60.26

Table 3 shows the complications involving the cornea, with superficial punctate keratitis being the most common complication in patients (32.48%), followed by shield ulcers (5.12%). In addition, a small proportion of patients experienced treatment-related complications, such as glaucoma (9.41%) and cataract (3.01%).

Table 3. Vernal Conjunctivitis Patient Complications

	Eyes (n=234)	Percentage (%)
Complications		
Shield ulcers	12	5.12
Superficial punctate keratitis	76	32.48
Treatment-related Complications		
Glaucoma	22	9.41
Cataract	7	3.01

DISCUSSION

Vernal conjunctivitis is a chronic recurrent bilateral allergic condition that is generally caused by seasonal factors. This condition usually occurs in school-aged children, with prepubertal onset or before ten years of age in 80% of cases.[2,3] In this study, it was presented that the average age of 117 vernal conjunctivitis patients was 10.73 years, with an age range of 7 to 18 years old. The result of our study is similar to a previous study conducted by Roumeau et al. that stated the average age of vernal conjunctivitis patients was 11.2 years with an age range of 3 to 38 years old.[9] These two studies show the similarity that vernal conjunctivitis patients are mostly found in the first decades of life.[7]

Gender is one of the predisposing factors where the highest prevalence distribution of vernal conjunctivitis patients is male.[10] Ahmed et al. stated that sex differences had been observed and men represented 63.3% of all vernal conjunctivitis study subjects.[11] This result matches this study in that the majority of patients were male, with a proportion of 66.67% or two-thirds of all research subjects. Significant differences between sexes confirm that hormonal factors play a major role in causing vernal conjunctivitis.[3]

Vernal conjunctivitis is a clinical form of allergic conjunctivitis in which IgE-mediated hypersensitivity mechanisms play an important role in its pathogenesis. This statement is also supported by previous studies which stated that patients with vernal conjunctivitis commonly have a family history of atopic or are influenced by other atopic conditions, for example house dust mites and pollen, or by other systemic allergic factors such as allergic rhinitis, eczema, and asthma. It is also related to the fact that systemic allergic factors have a similar immunopathology to vernal conjunctivitis.[12] However, the study of Sacchetti et al. showed that approximately half of the patients with vernal conjunctivitis have a negative allergic test, suggesting that other pathogenic mechanisms participate in the disease's inflammatory reaction.[13] This study's result aligns with the previous one, which found that a history of atopic allergies was not a significant factor in the appearance of vernal conjunctivitis exacerbations. Moreover, this study was found that 25.64% of patients had a history of atopic such as allergies

to sunlight and dust. Di Zazzo et al. also found that 23.07% of vernal conjunctivitis patients had a history of atopic allergies.[14] Although there is a possibility of patient cluelessness regarding the allergic history that is not registered in the electronic medical record data, several other factors that may be involved in the pathogenesis of vernal conjunctivitis can help clarify the result of this study, for example imbalance of innate immunity, hormonal changes, genetic susceptibility, and neurogenic factors.[13,15,16]

In this study, 77.78% of vernal conjunctivitis patients lived and came from Bandung. Cicendo Eye Hospital is a national referral hospital located in Bandung, West Java which makes it more accessible for patients living in Bandung compared to those referred from other cities. Environmental factors, including climate, temperature, or air pollution, in Bandung were also considered to play a significant role in the incident of vernal conjunctivitis. The results of the International Study of Asthma and Allergies in Childhood (ISAAC) studies indicated that the sunlight intensity, current of air, and other climate factors were mostly associated with a higher prevalence of this disease in each patient region.[17]

Vernal conjunctivitis has different types and characteristics in each country with various manifestations. The palpebral type is most often found in European and American countries, while the limbal type is more dominant in central and southern African countries.[11,15] This study shows that most of the patients with vernal conjunctivitis in tropical countries have the palpebral type, which is 72.64%, followed by the mixed type and the limbal type. The cobblestone papillae were found as the most common clinical sign in this study. These results were also mentioned by another study conducted by Nagrale et al. in India, also a tropical country, and stated that the palpebral type (48.75%) is also the most common type of vernal conjunctivitis.[3]

Red (76.06%), itchy eyes (63.24%) followed by a burning sensation (29.91%) were this study's three most common symptoms. A previous study by Ahmed et al. indicated that itching and burning sensations (100%) were observed in all cases.[11] Because most of the patients studied were follow-up patients, it was suspected that other complaints, such as watery, blurry eyes, or discharge, were no longer felt. In contrast to other forms of allergic conjunctivitis, the clinical symptoms of vernal conjunctivitis can cause complications that may threaten the patient's vision.[2,3,18]

Seeing that UCVA can be a parameter of the severity of vernal conjunctivitis, a study by Bangal et al. stated that 82% of vernal conjunctivitis cases have good UCVA ranging from 6/6 to 6/9 in the right and left eyes.[16] This study has a similar result in which 69.66% of eyes had good vision in the range of 6/6 to 6/18. Good visual acuity results might indicate that this study has more vernal conjunctivitis patients with no complications (60.26%).

Complications usually have different rates in each case of vernal conjunctivitis. In the present study, shield ulcers were found in 12 eyes (5.12%) and superficial punctate keratitis in 76 eyes (32.48%). Other studies show a little bit lower frequency of corneal complications. Ahmed et al. stated that superficial punctate keratitis was present in 6.7% of the cases, whereas there were no cases with shield ulcers.[11] Prolonged use of topical steroids, with a duration of use exceeding 6 months, can also lead to serious treatment-related complications, such as glaucoma, cataract, and secondary infections. This could be due to develop acute rise in intraocular pressure (IOP) and permanent trabecular meshwork damage.[10,19] Persistent elevated IOP may occur depending on the duration of use, the route of administration, and the type of steroid. This study uncovered 22 eyes (9.41%) with secondary glaucoma and 7 eyes (3.01%) with cataract associated with previous long-term steroid use.

CONCLUSION

After conducting a study on 117 vernal conjunctivitis patients at Cicendo National Eye Hospital in 2022, clinical features were found with complaints of red and itchy eyes due to manifestations of allergic reactions. The palpebral type is the most common type. However, this study did not assess the severity of vernal conjunctivitis as a variable. Further research is needed to assess patient's varying degrees of severity, the correlation between certain specific genetics related to the disease, as well as other factors in more detail with vernal conjunctivitis recurrence in Indonesia.

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