

Original Article

**VERNAL KERATOCONJUNCTIVITIS IN THE TROPICAL CLIMATE:  
EPIDEMIOLOGY AT A TERTIARY CARE CENTER.**

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**ARTICLE INFO**

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Received:  
November 2017  
Accepted for publication:  
December 2017

**Keywords:**

Vernal keratoconjunctivitis  
Tropical climate  
Ocular allergy

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**ABSTRACT**

Vernal keratoconjunctivitis (VKC) is a chronic persistent disease in our country with a tropical climate. It mainly affects young school going children and if not treated in time may lead to irreversible blinding complications. A total of 41 patients under Selayang Hospital follow up were studied in a retrospective manner to provide epidemiological data, precipitating factors, common presenting symptoms, treatment options and outcomes. Our aim is to create awareness among all practitioners so that early Ophthalmology referral is commenced in aid to achieve clinical remission in the fastest time with the least complications.

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**INTRODUCTION**

Vernal keratoconjunctivitis (VKC) is a severe component of the allergic conjunctivitis spectrum. It is a bilateral, inflammatory ocular surface disease which targets the paediatric age group. The most striking difference between the milder forms of allergic conjunctivitis and VKC is that, the later can compromise the cornea, leading to ulceration and later scarring. This disease is an important public health issue, as it is responsible for visual impairment in children, especially school going children, and have severe blinding complications if not treated appropriately and in time. Vernal keratoconjunctivitis has a variety of precipitating factors ranging from environmental causes, food elements and also familial preponderance. These patients' more often than not, present initially to general practitioners, paediatricians or allergists prior to being seen by an ophthalmologist. Hence, this study was done to evaluate the epidemiology, precipitating factors, clinical features and also treatment outcomes of VKC patient, in aim to increase awareness of this debilitating disease.

**MATERIALS AND METHODS**

A total of 41 patients diagnosed with Vernal Keratoconjunctivitis (VKC) under Hospital Selayang

Ophthalmology clinic care between January to December 2016 were studied. This was done by a retrospective, noncomparative case series using our patient's clinical records. Patient's data were extracted from the computer database using keywords such as vernal keratoconjunctivitis, VKC and shield ulcer. All epidemiological data, clinical symptoms and slit lamp examination findings during each appointment were obtained from the clinical records. These data were subsequently used to classify the severity of VKC. The types of drugs and other treatment modalities were obtained from the case sheets as well as pharmacy orders database for each patient. Precipitating factors were obtained based on history taking, skin prick test and allergy blood testing where available.

**RESULTS**

Out of the 41 patients, 87.5% (35 patients) were male and the remaining 12.5% (6 patients) were female. 78.0% (32 patients) were Malay, 14.6% (6 patients) were Chinese and the least were among the Indians which amounted to 7.3% (3 patients). The age range of patients were from 6 to 24 years. The mean age of presentation to our clinic was 10.5 years of age and the mean age of onset of symptoms was 8.3 years of age (Figure 1).

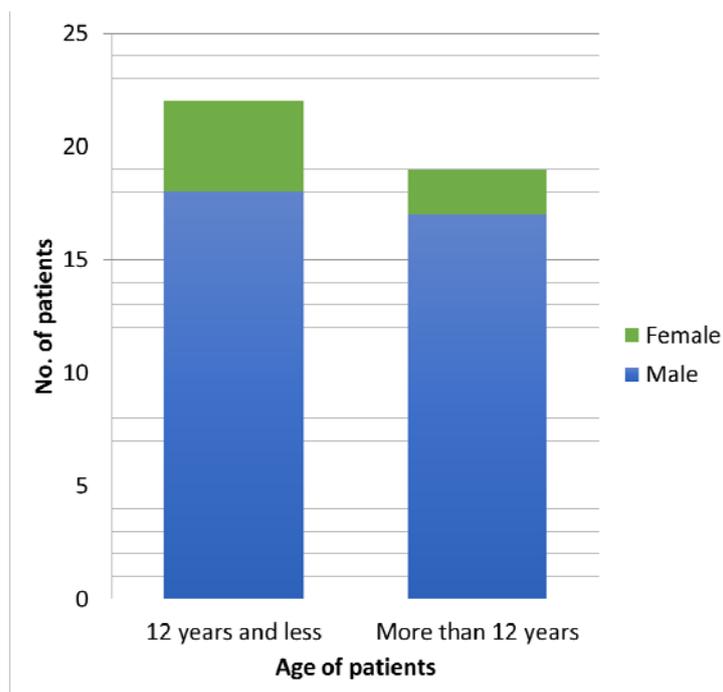


Figure 1: Bar chart of demographic distribution of age and sex of patients with Vernal keratoconjunctivitis VKC under Hospital Selayang follow up for the year 2016.

Most of our patients were referred to us by nearby general practitioners. A total of 24 patients (58.5%) were first seen at either government or private polyclinics before being referred to the Ophthalmology clinic. The remaining patients were referred to us by other specialist departments of the same hospital namely the Paediatrics and Otorhinolaryngology department. This amounted to about 12 patients (29.2%). 2 patients (4.9%) were referred from private ophthalmologists for continuation of care due to financial constraints and 3 patients (7.3%) source of referrals were not documented.

When reviewing patient's risk factors, we noticed 51.2% (21 patients) had concurrent allergic rhinitis, 41.5% (17 patients) had underlying Bronchial Asthma and 2.4% (1 patient) had eczema. 43.9% (18 patients) informed us regarding family history of atopy. Out of all of our patients, only 12 patients had either a skin prick test or a blood allergy test done to identify their precipitating factors. 41.6% (5 patients) had dust mite allergies, 33.3% (4 patients) were allergic to egg and seafood, 4.9% (2 patients) were allergic to milk, 2.4% (1 patient) had allergy to dog and cat dander and 2.4% (1 patient) was allergic to benzoyl peroxide.

The common presenting symptoms were itchiness (70%), redness of eyes (51%) and tearing of eyes (29%). All 41 patients gave history of symptoms being persistent throughout the year. Objective examination showed all patients having tarsal component of VKC with 47% having cobblestone papillae, 29% having mild papillae and the remaining 24% having giant papillae. A total of 34% of our patients had a combination of limbal component. 29.2% (12 patients)

had limbitis, 12.1% (5 patients) had tranta's dot sign and 4.9% (2 patients) had pseudogerontoxon. A total of 18 patients (44%) developed shield ulcer during the course of treatment. Out of these, eight of them had recurrent episodes of shield ulcer and 14 patients developed ulcer during the first year of presentation. Based on our hospital records, patient's presenting with acute exacerbations did not show any seasonal pattern and were distributed through all 12 months.

All patients were treated with mast cell stabilisers and lubricants. 34 patients received a short duration of topical steroids (dexamethasone 0.1% or fluoromethalone 0.1% ). Out of these 34 patients, one patient developed steroid induced glaucoma with a highest documented intraocular pressure (IOP) of 28mmHg. It was well controlled with two topical antiglaucoma drops and IOP returned to a normal range after topical corticosteroids were removed. Twelve patients in this series required topical cyclosporine 0.5% during the course of treatment. Out of all the case series only five patients received supratarsal injection with triamcinolone and all of them had documented reduction in papillae post procedure (Figure 2).

The visual acuity (VA) on presentation shows 36 patients with visual acuity of 6/18 or better, one with visual acuity less than 6/18 to 6/60, three with visual acuity of less than 6/60 to 3/60 and one patient with a vision less than 3/60. The final visual outcome showed improvement with 39 of them having a visual acuity of 6/18 or better and two of

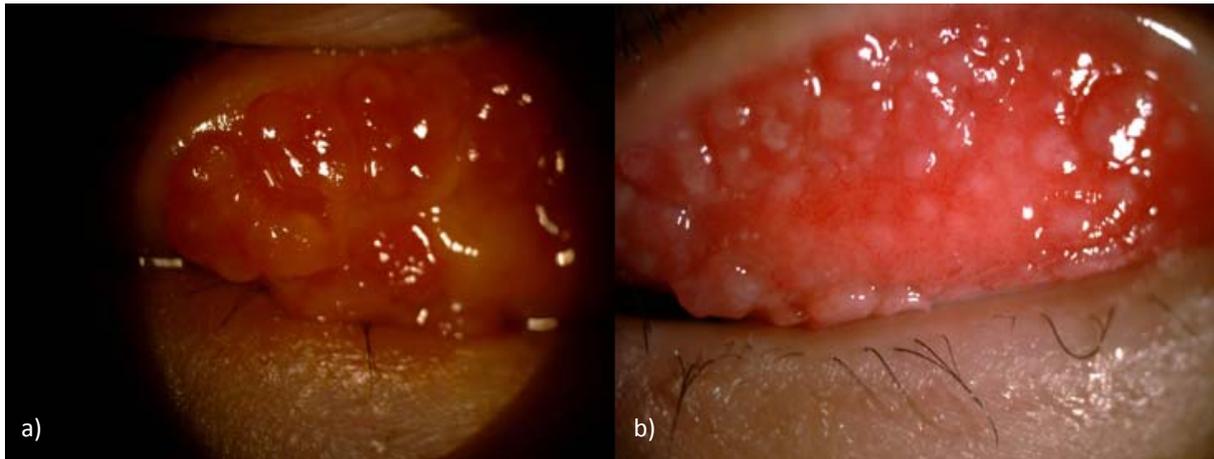
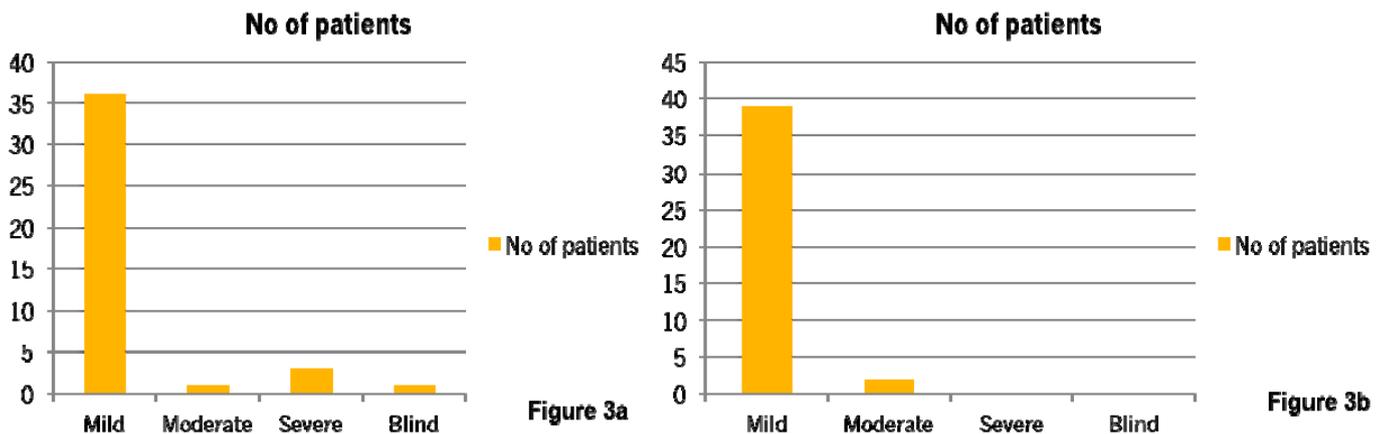


Figure 2a shows the severity of a patient's papillae prior to commencement of supratarsal triamcinolone and Figure 2b shows the same patient showing improvement after treatment.



\*Patients were categorised based on the WHO classification of visual impairment

Figure 3: The bar chart in Figure 3a shows the distribution of patients based on their presenting vision and Figure 3b shows their vision at the latest follow up.

them with visual acuity of worse than 6/18 to 6/60 (Figure 3).

## DISCUSSION

A greater part of the patients suffering from VKC in this study were young boys who have been under our sub-specialty follow up for at least 2 years. Although the mean age of presentation to our clinic was 10.5 years, the age of onset of symptoms was 8.3 years. This correlates with epidemiological data from numerous studies stating the age of onset is before the age of 10 years and majority of them outgrow their VKC at puberty [1-3]. The distribution of cases based on ethnicity in our series, represented the local population around the hospital.

All of our patients had a perennial pattern of symptoms. This is most likely due to the fact that Malaysia has an equatorial climate of being hot and humid, which leads to the persistent symptoms throughout the year. These constant symptoms are comparable to that documented by our neighbors with very similar weather [1,4]. More than half of the patients exhibit some atopy sensitization suggesting a similar pathological pathway in these clusters of diseases. Dust mites seem to be a common allergen, but it is not possible to draw conclusions as not many of our subjects were tested for it and among those who were, different tests were done.

VKC can be classified into three forms and commonly, the limbal form and mixed form has

been reported in Asia [4], while the tarsal form seems to be more prevalent in Europe [5]. However, studies from India [6] and Singapore [1] showed the tarsal form more predominant in certain areas. Most of our patients had predominantly tarsal form followed by a mixed form of VKC and none demonstrated the limbal form alone. Corneal involvement is something all Ophthalmologists are concerned about as it has a possibility to lead to severe vision-threatening sequela [7]. 18 (44%) of our patients developed shield ulcer which is much higher than the reported 3-11% [8]. This is because all of our patient had changes in the tarsal conjunctiva predisposing them to cornea compromise. 14 out of these 18 patients had corneal ulcers in the first year in our clinic suggesting, often they are referred for an eye assessment in severe ends of the disease spectrum.

The treatment of VKC is mainly medical treatment and it depends on the stage of the disease. Milder cases can be treated with avoidance of triggering factor and use of antihistamic eyedrops and mast cell stabilisers. Severe varieties are treated with either topical corticosteroids to control the disease especially in exacerbations or topical immunosuppressants to reduce cellular level inflammation which in turn shows symptomatic and structural improvements [9,10]. 83% of our patients used a course of topical corticosteroids during the course of treatment. This is similar to other studies in the east [1] and west [5] where topical corticosteroids were used 85% and 75% of patients respectively. Twelve of our patients were clinically stable while on topical cyclosporine as demonstrated in other studies [11,12]. In severe cases refractive to medical therapy, supratarsal corticosteroid injections has been shown to be successful [13]. Five of our patients had supratarsal triamcinolone injection and all showed a positive change following it.

## CONCLUSION

Our series clearly demonstrates most of these patients do not present to Ophthalmologist firsts, but in fact are seen by general practitioners or other specialists before being referred for an eye assessment. The purpose of this article is to give an overview of VKC to all, so that practitioners are aware of the risk factors and presenting symptoms, thus referral to the Ophthalmologist will be early which is imperative for prompt treatment for these patients.

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