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Original Research Article

Clinical profile and management of vernal keratoconjunctivitis in a tertiary health care center, North Karnataka

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ABSTRACT

Aims: To evaluate the demography, clinical features, complications and management of patients with Vernal keratoconjunctivitis.

Materials and Methods: A retrospective analysis of 80 patients who consulted in the Ophthalmology OPD of a tertiary care hospital in North Karnataka who were diagnosed with Vernal keratoconjunctivitis was done. This study was done from March 2020 to February 2021. Detailed ophthalmologic evaluation was done after taking a thorough history regarding symptoms, predisposing factors and family history. Patients were diagnosed based on their symptoms like redness, itching, watering, foreign body sensation etc and signs like papillae, limbal thickening etc into mild, moderate and severe. Detailed treatment history was also noted. Patients were also examined for any complications associated with VKC and also with the treatment.

Results: Mean age at presentation was 14.11 years ± 2.23 years. The male (M) to female (F) ratio was 1.29:1. Most of the patients had mixed pattern (71.25%) of disease. Personal or family history of allergy was noted in 5% of population. 10% of the population had moderate to severe vision loss. 30% of the patients had complications due to VKC.

Conclusions: Our study shows that vernal keratoconjunctivitis has early age of onset with higher male preponderance with frequent presentation during spring and summer season and less association with family history of allergy. VKC being a chronic disease need for long term follow up has to be advised and switching over to drugs like cyclosporine instead of steroids showed to be effective with minimal side effects.

1. Introduction

Allergic diseases are a major medical problem in the world which contributes more than 15% of the population. It includes a spectrum of diseases like allergic rhinitis, allergic conjunctivitis, atopic dermatitis etc. Out of all this allergic conjunctivitis shows an increased prevalence of 20% in the population.[1] Allergic conjunctivitis is the inflammatory response of the conjunctiva to allergens. It is not a single disease rather a group of diseases which includes atopic keratoconjunctivitis [AKC], vernal keratoconjunctivitis [VKC] seasonal allergic conjunctivitis [SAC], contact conjunctivitis, perineal allergic conjunctivitis [PAC], and Giant papillary conjunctivitis. Vernal keratoconjunctivitis is the most severe form of allergic conjunctivitis as it cause severe vision threatening corneal complications.[2]

The term Vernal is derived from the Greek meaning 'occurring in the spring'. VKC is a recurrent chronic, seasonal bilateral inflammation which involve both the bulbar and the palpebral conjunctiva. It is a self -limiting

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disorder with spontaneous resolution after puberty or early adult life.[3]

Vernal keratoconjunctivitis occurs due to a IgE mediated immune response of the mast cells to environmental allergens. The mast cells undergo degranulation and release inflammatory mediators like histamines and cytokines which will initiate a cascade of events that results in the ocular manifestations seen in allergic conjunctivitis.[4] There is increasing trends in the incidence of VKC due to changing lifestyles, environmental pollution, and rapid industrialisation etc.[1]

Patients usually present with symptoms like intense itching, redness, lacrimation, ropy discharge, foreign body sensation and photophobia. The most common signs are numerous papillae in the superior tarsal conjunctiva, conjunctival giant papillae giving a cobble stone appearance, limbal thickening, and perilimbal conjunctival hyperemia, superficial keratitis.[5]

The diagnosis of VKC is basically clinical based on symptoms like ocular itching, redness, discharge in the presence of signs like conjunctival papillae and hyperemia and/ or limbal hypertrophy. Laboratory investigations like total and specific IgE determination, conjunctival scrapping and demonstration of infiltrating eosinophils is done only in difficult cases and for research purposes.[6]

VKC is a chronic allergic disease in children that has significant impact on the quality of life because of long term treatment follow up and vision threatening complications.[7] About 6% of patients develop visual impairment due to corneal damage, cataract and glaucoma. Even though there are many anti-inflammatory drugs which can provide symptomatic relief there is no curative therapy. However VKC presents with a good long term prognosis.[8,9] Use of corticosteroids has shown to be beneficial in patients with VKC but they have to be used judiciously to prevent long term ocular complications of steroids.

This study was done to evaluate the demographic and clinical profile of patients with VKC in a tertiary care hospital in North Karnataka. This study also shows that the use of steroid sparing drugs like cyclosporine for long term treatment of moderate to severe VKC can reduce the vision threatening complications like cataract and glaucoma.

2. Materials and Methods

A retrospective chart analysis of 80 patients diagnosed with VKC who presented to the ophthalmology OPD of our tertiary health care centre from March 2020 to Feb 2021 were included in the study. The study was approved by institutional ethical committee according to the ethical standards laid down in 1964 declaration of Helsinki.

A detailed ophthalmic evaluation was done in all the patients who were included in the study and had given informed consent. A detailed history regarding age, gender, personal and family history of allergies, age of onset of the disease, presenting complaints like itching, watering, redness, photophobia, duration of disease, treatment history was taken. Routine ophthalmic examination was done in all the patients which includes Snellen's visual acuity testing, slit lamp examination to look for clinical signs, intraocular pressure measurement, fundus examination. Details of treatment and complications (if any) was noted.

Patients with quiescent form of VKC had inactive upper tarsal conjunctival papillae and/or scarring and a previous history of ocular itching. Patients with conjunctival hyperemia with diffuse papillary hypertrophy on superior tarsal plate resembling cobblestone appearance in mild cases or giant papillae with mucous deposition between the papillae in severe cases are diagnosed as palpebral VKC, while the limbal form consisted of gelatinous limbal conjunctival papillae called as Horner Tranta dots, and mixed form had features of both palpebral and limbal types of VKC. The severity of the disease was graded retrospectively based on the clinical signs at initial presentation, as per the method described by Bonini et al.[10] Visual impairment was assessed by means of the World Health Organization criteria for visual disabilities as used by Tabbara et al.[11]

3. Sample size estimation

Sample size calculation was done using open epi software version 2.3.1. At 95% confidence level & p= 72%, at 10% absolute precision, we got sample size of 78 cases which is rounded off to 80. Sample size was calculated using formula $n= [DEFF*Np(1-p)]/[(d^2/Z^2_{1-\alpha/2}*(N-1)=p*(1-p)]$

3.1. Plan for statistical analysis of study

Statistical analysis was done using SPSS software 19.0. Data obtained was entered in the excel sheet and analysed. Quantitative data was expressed as mean ± standard deviation and non parametric data expressed as median and min-max values. Percentages are used for representing qualitative data. Appropriate statistical test was applied.

4. Results

A total of 80 patients diagnosed with VKC presented from March 2020 to February 2021 were included in the study. The mean age at presentation was 14.11 years ± 2.23 years. Most common age group at presentation were from 12-16 years of age. (Figure 1) There were 45 (56.25%) males and 35 (43.75%) females with male (M) to female (F) ratio of 1.29:1. (Figure 2)

The most common symptoms were itching (88.75%), redness (85%), watering (68.75%), photophobia (2.5%), burning sensation (30%), foreign body sensation (20%) and pricking sensation (3.75%). (Figure 3)

The common signs were palpebral papillae (81.25%) and limbal thickening (76.25%). Perilimbal conjunctival

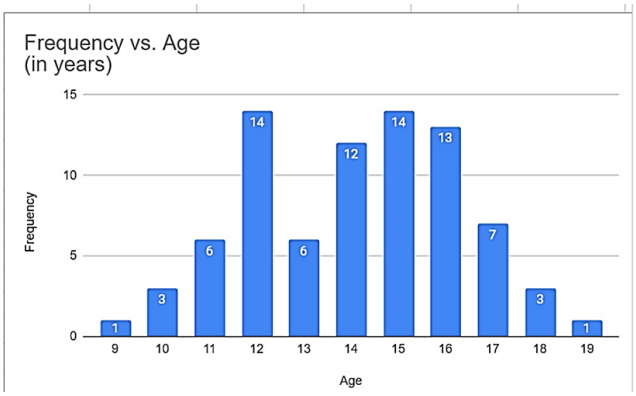


Figure 1:

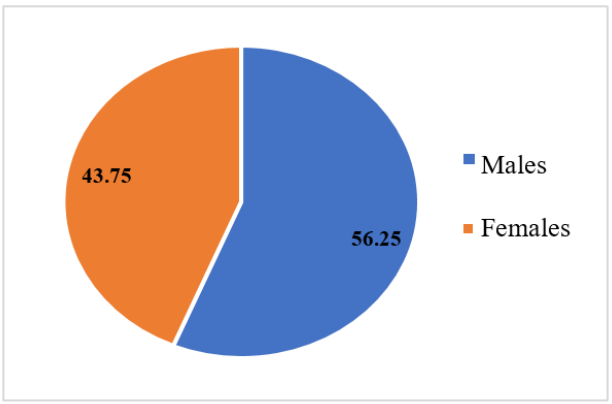
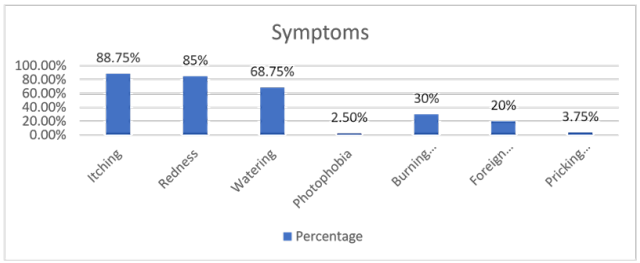


Figure 2: Gender distribution



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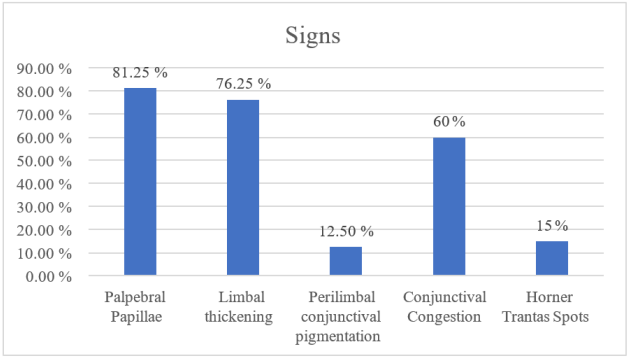

Figure 4:

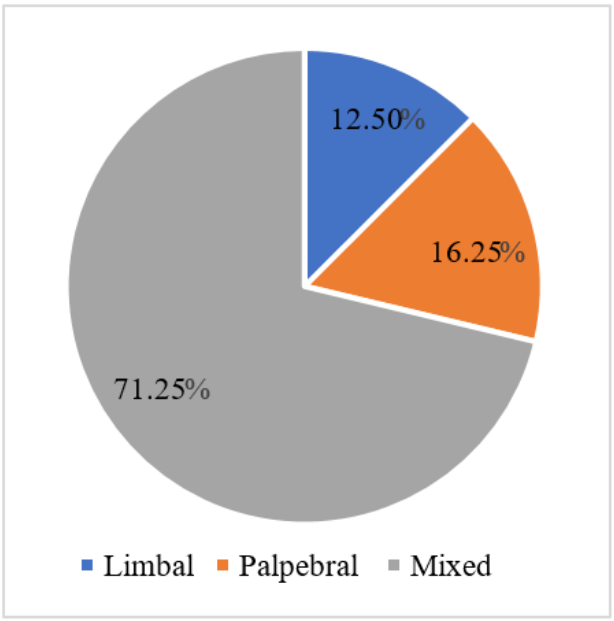

Figure 5: Types of VKC

pigmentation was present in 10/80 (12.5%) of patients and Conjunctival congestion in 60% of patients and Horner Tranta spots in 15% of patients. (Figure 4)

Majority of the patients had a mixed form of disease which involve both limbal and palpebral disease. Only 10 patients had limbal form of disease and 13 patients had palpebral form of VKC. (Figure 5)

At presentation, 20/80 (25%) patients were on topical corticosteroids like Fluorometholone 0.1% and Loteprednol 0.5%, while information about topical corticosteroids use was not available in 5/80 (6.25%) patients. 16/80 (20%) patients were on immune modulators like cyclosporine 0.05%. Remaining patients were treated symptomatically with anti histamines. In our study, around 5% of the population had positive family or personal history of atopy or allergic disorders.

We had 72/80 (90%) of the patients with visual acuity ranging between 20/20 to 20/50 (Grade A - mild visual loss). 6.25% of patients with visual acuity ranging between 20/50 to 20/200 (Grade B - moderate visual loss). 3.75% of patients had visual acuity less than 20/200 (Grade C - severe visual loss) (Figure 6)

Ocular complications due to VKC seen in our study was corneal scarring in 8/80 (10%). Corneal shield ulcers were present in 1 patient. Peripheral corneal neovascularisation seen in 8.75%. Limbal stem cell deficiency (corneal neovascularisation along with conjuctivalization and corneal scarring) was seen in

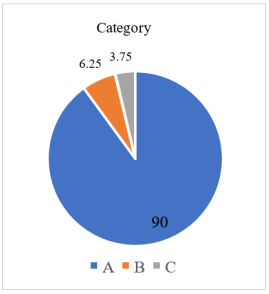

Figure 6:

1.25% of patient. Corticosteroid induced complications like Cataract and Glaucoma were seen in 3.75% and 6.25% of the patients respectively. (Figure 7)

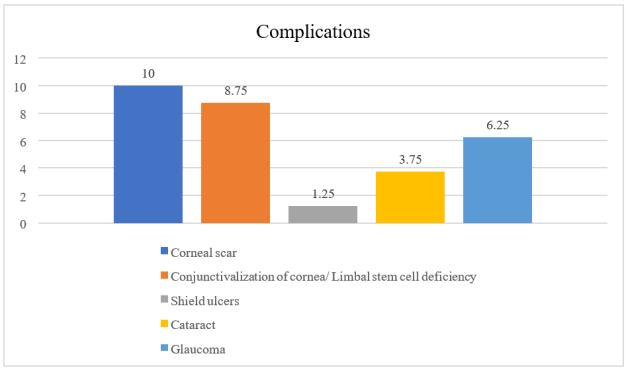

Figure 7:

5. Discussion

VKC is the most common atopic eye disease which mainly involve both palpebral and limbal conjunctiva of the eye. It has male preponderance. According to the study conducted by Ujwala et al,[8] mean age of presentation was 12 years but in this study it is 14 years.

In our study, itching, redness, foreign body sensation and watering were the most common presenting features. Most common clinical sign was papillae which was in accordance to other studies done by Ujwala et al,[8] Tabbara K F[11] and Rajshekar.[12]

Family history of allergies was seen in 5% of patients which was similar to study done by Ujwala et al.[8] but significantly less when compared to 30% in Rajsekar study.[12]

In our study ocular signs of VKC observed were papillae (81.25%), limbal thickening (76.25%), conjunctival congestion (60%) and Horner-Tranta spots(15%) which was analogous to studies done by Ujwala et al,[8] Bonini et al[10] and Rajsekar.[12]

The most common clinical type of VKC observed was mixed form in 71.25% which was in accordance to study done by Ujwala et al[8] but in other studies done by Keziath N M[13] and Adhikari S et al[14] limbal form was commonly reported.

Moderate to severe vision loss was seen in 10% of patients in our study when compared to studies by Ujwala et al[8] and Bonini et al[10] who had reported 12% of moderate to severe vision loss.

Corneal scarring,keratoconus, limbal stem cell deficiency and shieldulcerswere seen in 2.4%, 1.4%, 0.4% and 0.3% of eyes, respectively while in ours corneal scarring, limbal stem cell deficiency and shieldulcerswere seen in 10%, 8.75% & 1.25%. This difference may be because the former was a large study including 259,969 patients presenting with allergic eye disease.[15]

Systemic allergy was seen in 3 patients out of 80, which constitutes to nearly 3.75%.

Steroid sparing agents like Cyclosporine eye drops was found to be effective, safe and more beneficial in patients with moderate to severe VKC with no side effects similar to studies done by Chaterjee A.[16]

6. Conclusion

VKC is a bilateral allergic disease which most commonly affect young males between 5-15 years. Most common clinical type reported was mixed form of VKC with symptoms like itching, redness and foreign body sensation. Use of immunomodulators like cyclosporine was found to be effective with less than minimal side effects as compared to steroids. Therefore, steroid sparing agents can be preferred over steroids in patients with moderate to severe VKC. Patients has to be made aware about the need for long term follow up as VKC is a chronic disease. Also patients has to be educated regarding avoidance of allergens and the importance of non pharmacological measures like use of lubricants, lid hygiene and cold compresses etc.

7. Source of Funding

None.

8. Conflict of Interest

None.

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