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## RESEARCH ARTICLE

### PREVALENCE OF KERATOCONUS IN PEDIATRIC PATIENTS PRESENTED WITH VERNAL KERATOCONJUNCTIVITIS

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#### ABSTRACT

Vernal Keratoconjunctivitis(VKC) is a chronic inflammatory bilateral external eye disease affecting mainly patients in the first and second decade of life and keratoconus is a bilateral, asymmetric, non-inflammatory and slowly progressive corneal ectatic disease and characterized by corneal thinning and protrusion, progressive myopia, and irregular astigmatism, Here in this study we are calculating the prevalence of keratoconus in pediatric patients presented with vernal keratoconjunctivitis since this condition's progression can be delayed with adequate treatment and keeping the patients in a close follow up

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## INTRODUCTION

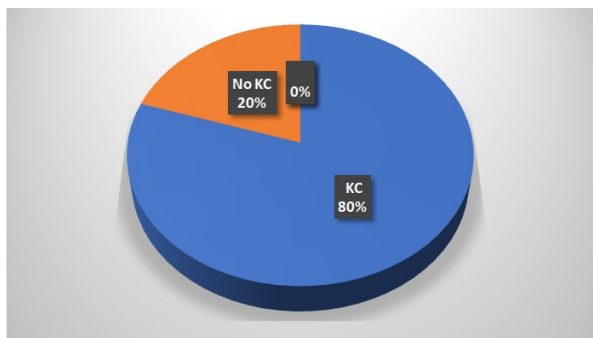
Vernal Keratoconjunctivitis(VKC) is a chronic inflammatory bilateral external eye disease affecting mainly patients in the first and second decade of life. The predominant symptom is severe ocular itching followed by marked blepharospasm, redness, watering and foreign body sensation. It may involve only the palpebral area or only limbal area, but generally occurs in mixed form. The hallmark of palpebral VKC is papillary hyperplasia of the upper tarsal conjunctiva, papillae ranging from 1 mm in diameter to giant papillae or typical cobblestoned. In limbal VKC predominates the infiltration of limbal subconjunctival tissues forming nodules, sometimes neovascularization in cornea's periphery, making limbal appearance thickened and opaque. They are often covered by white calcified excrescences known as Horner-Trantas nodules. The extension of limbal lesions to the center of the cornea can affect vision, and there can be irregular pigmentation of the exposed part of bulbar conjunctiva. Keratoconus is a bilateral, asymmetric, non-inflammatory and slowly progressive corneal ectatic disease with an incidence of 1 in 2000 individuals. This condition is characterized by corneal thinning and protrusion, progressive myopia, and irregular astigmatism.

The resultant irregular astigmatism can progress to levels that can significantly affect everyday activities and overall quality of life. Therefore, stopping the progression of the disease is an essential part in managing patients with keratoconus. Its onset is classically around puberty, and progression is maximal during adolescence and early adulthood. In children, keratoconus tends to be more severe and fast progression is often encountered requiring closer follow-up intervals. The major concerns comprise of the accelerated progression of the disease in the pediatric age group and management of co-morbidities such as vernal kerato-conjunctivitis.

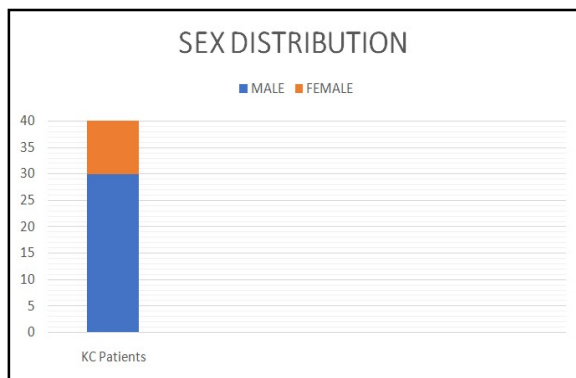
**ROLE OF VKC IN KERATOCONUS:** Histopathology and biochemical analysis of cornea shows increased levels of: Dermatan sulphate to keratan sulphate, Proteoglycans, MMP-2, Collagenolytic activity, IL-1 binding to fibroblasts, protein synthesis activity. Some of these factors may be attributed to or aggravated by eye rubbing and the associated constant mechanical stress. Eye rubbing is a constant feature of VKC. In keratoconus patient's increased serum levels of IgE have been found which is seen in patients of atopy, allergic rhinitis and VKC. Increased levels of lysosomal hydrolases have been found in conjunctival epithelium suggesting the role of conjunctiva in the development of keratoconus.

**INTERPRETATION**

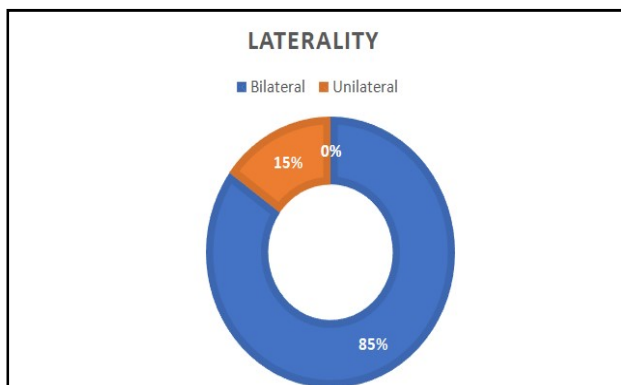
Total 50 patients of VKC were under study out of which 40 patients had keratoconus



- In this study, out of 50 patients 35 were male and 15 were female.
- Out of the 40 patients of KC, 30 were male and 10 were female.
- Hence from this study we conclude that keratoconus is more common in male patients associated with VKC.



- Out of the 40 keratoconus patients, majority had manifest keratoconus and rest were suspects.
- 36 patients had manifest keratoconus out of which 25 were detected clinically and 11 were detected via topography.
- **Laterality of keratoconus:** - From our study, we can conclude that out of 40 keratoconus patients, 34 patients have bilateral ocular involvement and only 6 patients have unilateral ocular involvement.

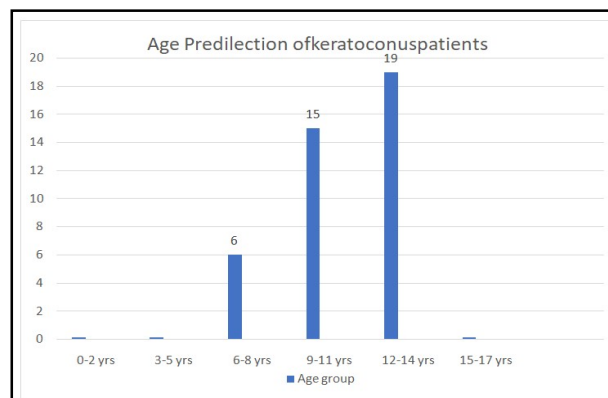


- **Age predilection of KC:** Mean age of patients suffering from keratoconus 12.4 years (Range 0-18 years). Mean age of non-keratoconus patients is 10.4 years (range 0-18 years)

**DISCUSSION**

Keratoconus is a gradually progressive disorder, slowly involving both the eyes therefore it is an important task to identify and halt the

progression of the disease, especially since pediatric keratoconus has an accelerated rate of deterioration. In a study conducted by Bhavna Et al, the mean age of this paediatric keratoconus patient cohort was  $9.3 \pm 1.8$  years, and there was a male preponderance of 70% , compared to our study where the mean age was 12.4 years and the male preponderance was 75%.



In another study conducted by Hashemi ET al, after a comprehensive meta-analysis of keratoconus and its prevalence and risk factors, they have mentioned that keratoconus has a low prevalence in the world but the history of eye rubbing, allergy, atopy and family history are the most important risk factors for development of the disease, therefore conferring an importance of repeated follow ups of the patients to check for progression of the disease. Hashemi Et Al has said that the prevalence of keratoconus was 20.6 per 1000 (95% CI: 11.68–28.44 per 1000) in men and 18.33 per 1000 (95% CI: 8.66–28.00 per 1000) in women in studies reporting sex. The odds ratio of eye rubbing, family history of keratoconus, allergy, asthma, and eczema was 3.09 (95% CI: 2.17–4.00), 6.42 (95% CI: 2.59–10.24), 1.42 (95% CI: 1.06–1.79), 1.94 (95% CI: 1.30–2.58), and 2.95 (95% CI: 1.30–4.59), respectively.

**CONCLUSION**

It is hence proven that VKC has a role in the development of keratoconus, and parents of such children should be explained of the warning signs and be called for regular follow ups and explained about the methods to decrease exposure to allergens. In our study, 40/50 children with VKC had keratoconus and out of these 40 patients, 30 were male and 10 were female, thirty-six patients had manifest Keratoconus out of which 25 were detected clinically and 11 were detected via topography; thirty-four patients have bilateral ocular involvement and only six patients have unilateral ocular involvement. In the control group only two children had shown clinical symptoms of keratoconus. The mean age of patients suffering from keratoconus was 12.4 years

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