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DON'T RUB; IT WILL BE EVIDENT- CORNEAL TOPOGRAPHIC CHANGES IN PATIENTS WITH VERNAL KERATOCONJUNCTIVITIS

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Abstract

Aim
To study topographic findings in patients with established vernal keratoconjunctivitis (VKC).

Materials and methods
In a hospital based cross sectional study, 112 eyes of age group 11-22 years with established case of VKC were selected for topography.

Result
In 112 eyes with VKC; 69.64% (78 eyes) had significant history of eye rubbing. 14.28% (16 eyes) had K^{max} values >=47.2D , 85.71%(96 eyes) had K^{max} values <47.2D. 19.64%(22 eyes) had I-S Difference >=1.2D ; 80.36%(90 eyes) had I-S Difference <1.2D. Topographical patterns observed included 49.11%(55eyes) with round pattern, 20.54%(23 eyes) with oval shaped, 9.82%(11 eyes) with symmetric bowtie, 6.25%(7 eyes) with asymmetric bow tie with skewing of radial axis, 5.36%(6 eyes) with inferior steepening, 6.25%(7 eyes) with irregular pattern, 0.89%(1 eye) with crab claw pattern.

Conclusion-
High occurrence of keratoconus-like topographic pattern seen in patients of VKC. Topographic analysis should be performed in all cases of VKC.

KEYWORD: Corneal topographic, vernal keratoconjunctivitis

Introduction

Vernal keratoconjunctivitis (VKC) is a chronic, bilateral, conjunctival inflammatory condition found in individuals predisposed by their atopic background.[1] This chronic allergic disease has seasonal recurrence and is characterized by intense itching, tearing, photophobia and conjunctival inflammation. Onset usually occurs at about 10 years age and resolves after about 4-10years after onset. VKC can be tarsal, limbal or both. Usually, VKC is considered as benign condition, severe complications such as corneal involvement, ectasias have been reported in chronic patients with more severe forms of disease [1]. Chronic rubbing of the eye has been thought to be a trigger associated with development of corneal ecstatic disorders [2]. Resultant thinning of cornea leads to protrusion, irregular astigmatism and myopia which further decreases quality of vision of the patient. In clinical practice many patients with keratoconus or other corneal ectatic disorders are found to have VKC retrospectively. Hence, this study has been taken to determine topographic changes in patients with moderate to severe VKC.

Materials and method

A hospital based cross-sectional study was carried out among 112 eyes of age group 11-22 years with established case of VKC coming to C.H. Nagri eye hospital from 1 September,2019 to 1 September,2020. Patients with other coexisting diseases, diseases other than VKC, those with previous corneal scars, having history of any surgery and those unwilling to participate have been excluded from this study. Diagnosis of VKC was done based on symptoms and careful slit lamp examination findings. Slit lamp findings include examination of bulbar conjunctiva, tarsal conjunctiva, cornea and limbus. Based on these eyes were classified into mild, moderate, severe and blinding. [3]

Table 1 Grades of VKC

	Mild	Moderate	Severe	Blinding
Bulbar Conjunctiva	**Congestion**	**Congestion**	**Thickening + Horner-Tanta's dots**	**Granuloma**
Tarsal conjunctiva	**Micro papillae**	**Macro papillae(<1mm)**	**Giant papillae(>1mm)**	**Mega cobblestones**
Cornea		**Micro erosions**	**Macro erosions**	**Shield ulcer**
Limbus	**-**	**Focal inflammation (<180^{O})**	**Diffuse inflammation (>180^{O})**	**Limbal deficiency**

Corneal topography was performed for all patients. Details regarding steep-k, flat-k, astigmatism, I-S difference and shape of the axial map were noted. Corneal topography was performed with Atlas 9000 topography system which is a Placido-based topographer. It uses Pathfinder II Software that analyse various topographical patterns. All data was entered in computer database for statistical analysis. Topographic indices were analyzed and results were contemplated.

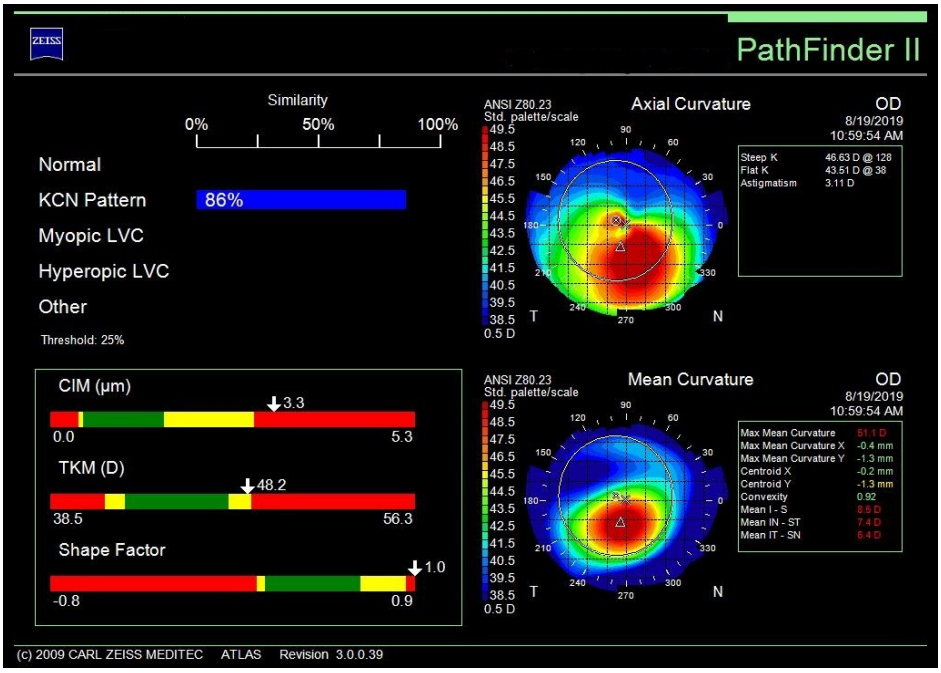


Figure 1 Showing topographical patterns and pathfinder II analysis

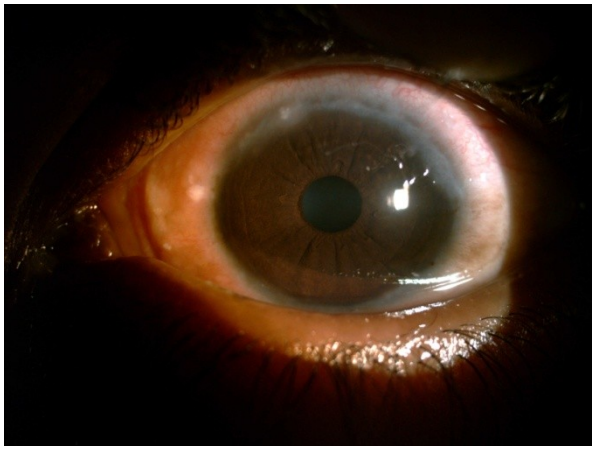
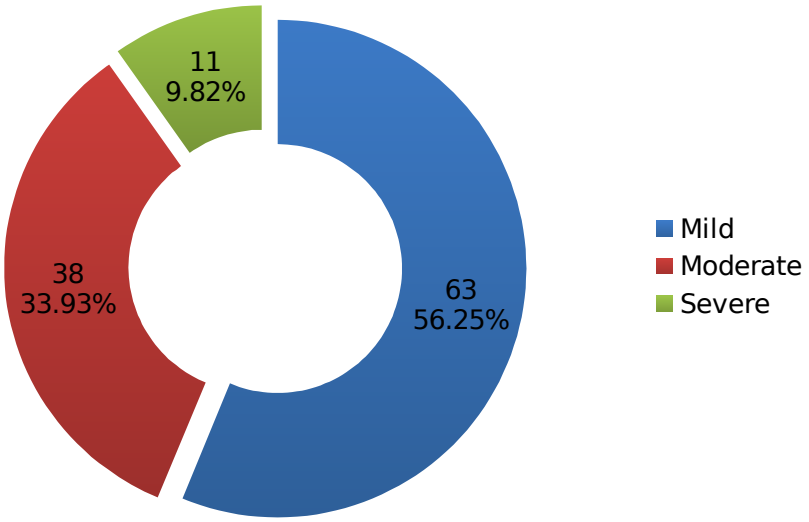


Figure 2 Showing limbal hypertrophy

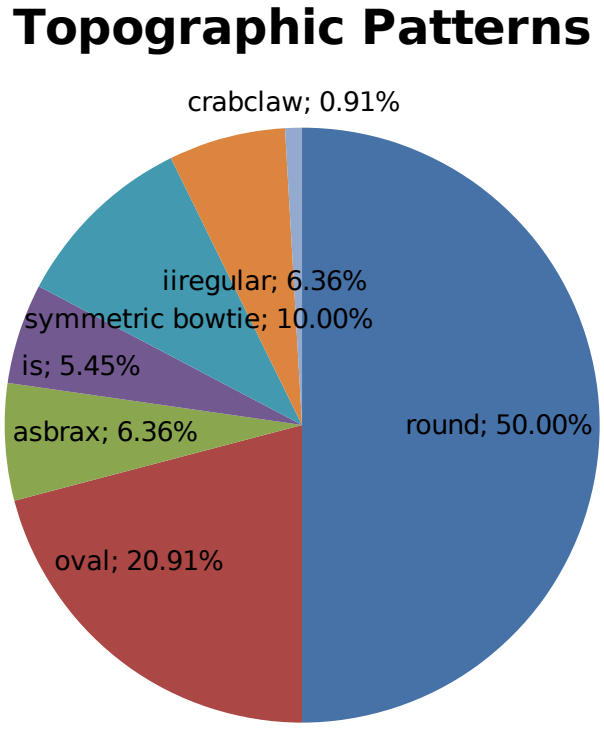
Figure 3 Showing cobble-stone papillae

Results

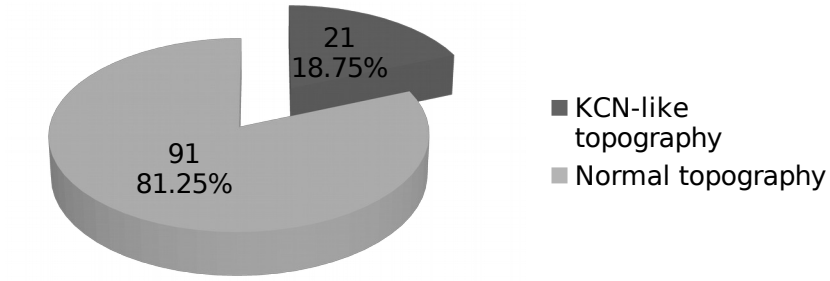
Among 112 eyes of age 11-22years, mean age of presentation was 14.75years. Majority of them 56.25% (63 eyes) presented with mild VKC; 33.93% (38 eyes) presented with moderate VKC and 9.82% (11 eyes) presented with severe form of VKC.



There was significant history of eye rubbing in 69.64% (78 eyes). 14.28% (16 eyes) had K^{max} values >=47.2D, 85.71% (96 eyes) had K^{max} values <47.2D. 19.64% (22 eyes) had I-S Difference >=1.2D; 80.36% (90 eyes) had I-S Difference <1.2D. 83.04% (93 eyes) had astigmatism of <3D while 16.96% (19 eyes) had astigmatism of >=3D.Various topographical patterns were observed; 49.11%(55eyes) had round pattern, 20.54% (23 eyes) had oval shaped, 9.82% (11 eyes) had symmetric bowtie, 6.25% (7 eyes) had asymmetric bow tie with skewing of radial axis, 5.36% (6 eyes) had inferior steepening, 6.25% (7 eyes) had irregular pattern, 0.89% (1 eye) had crab claw pattern.



18.75% (21 eyes) had KCN like topographical pattern.



Discussion

This is a study of topographic patterns in patients of VKC. 21 eyes (18.75%) were seen to have some sort of corneal abrasions which can be considered pathological. Keratoconus-like topography is characterized by an abnormal steepening generally seen in inferior area. It may also be present as steepening in superior or central areas. This abnormal steepening causes asymmetry and a large refractive power difference on surface of cornea. Kerseras and Ruben[4] elicited a history of eye rubbing in 66% of their patients Another study by Rahi[5] reported that 48% of patients in their study rubbed their eyes. Our study reported eye rubbing in 69.64% of eyes. Dantas et al [6] showed a pathological topography in 22.53% of all patients with VKC. Another study by Gautam et al [7] showed pathological topography in 11.3% of all patients with VKC. Totan et al [8] observed 26.8% keratoconus-like topography. Gortzak et al [9] observed 22.5% of keratoconus-like topography. Shoja and Besharati [10] detected keratoconus-like topography in 28% VKC subjects. Our study showed 18.75% keratoconus like topography. The use of topography as a tool for detecting corneal ectatic conditions like keratoconus may prove to

be beneficial to detect disease earlier in such patients. Every patient of VKC must be advised topography to screen for corneal ectasias.

Conclusion

High occurrence of keratoconus-like topographic pattern seen in patients of VKC. Topographic analysis should be performed in all cases of VKC.

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