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TO EVALUATE THE CORNEAL COMPLICATIONS AND ITS SUBSEQUENT VISUAL IMPAIRMENT IN PATIENTS OF VERNAL KERATOCONJUNCTIVITIS

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ABSTRACT

Purpose: Aim to evaluate the corneal complications and its effect on vision in patients of Vernal Keratoconjunctivitis. **Methods**: It is a cross sectional, observational study which included 55 OPD patients held over a period of 6 months from April to September 2023. Written informed consent was taken. All the patients suffering from Vernal Keratoconjunctivitis underwent a detailed and comprehensive ocular examination by slit lamp biomicroscopy. Visual acuity, Anterior segment examination and all ocular findings were recorded. Patient underwent medical management as required. Detailed analysis of the data was done. **Results:** Most common age group in our study was found to be 5-15years. There was a male predominance seen and the complications occurred mostly after 4-5 episodes. The most common complication observed was corneal scarring and where there is corneal involvement severe visual impairment was found. **Conclusion:** Vernal Keratoconjunctivitis is common in tropical regions which mostly affects the school going children and disturbs their day to day life. Although it's a self limiting disease, but it's recurrence is well known and hence it's early detection and treatment is important to avoid complications.

KEYWORDS: Vernal keratoconjunctivitis, allergic conjunctivitis, Corneal complications, Visual impairment.

INTRODUCTION

Vernal Keratoconjunctivitis is a bilateral chronic allergic inflammatory condition affecting the ocular surface, predominantly occurs in young males.[1-2] It is more prevalent in regions characterized by hot and humid climates. Typically, the disease is confined to the tarsal conjunctiva and limbus; yet, in severe instances, corneal involvement may occur, posing potential threats to sight.[2,3-4]

A destructive cycle of inflammation ensues from reciprocal interactions between the conjunctiva and cornea, leading to damage to the corneal epithelium and stroma.[5] This condition is marked by palpebral and limbal conjunctival papillary hypertrophy, bulbar conjunctival pigmentation, limbal thickening, Horner Trantas dots, mucous discharge, and the development of shield ulcers and plaques. Vernal keratoconjunctivitis (VKC) may progress to complications such as infectious keratitis, keratoconus, scarring, and limbal stem cell deficiency, potentially causing a permanent decrease or loss of vision in affected children.

Primary management for Vernal Keratoconjunctivitis involves allergen avoidance, conservative measures, and cold fomentation. Nonetheless, the efficacy of topical antihistamines, dual-action agents, mast cell stabilizers, steroids, and immune modulators in providing therapeutic benefits is well-established.[6-7]

MATERIAL AND METHOD

The present study is a cross sectional, observational study of 55 patients suffering from Vernal keratoconjunctivitis (VKC) attending the eye OPD at R.D Gardi Medical College, Ujjain from April to September 2023. A total number of 55 patients were enrolled in the study.

METHODOLOGY

An informed written consent of all patients who were enrolled in the study was taken. All patients underwent comprehensive ocular examination pertinent to the disease. The preliminary data of patients such as name, age, sex, socioeconomic status and education status were recorded.

We also recorded personal and family allergies, "atopic" illnesses, age of onset of the disease, duration of the disease and the presenting symptoms.

The chief complaints were recorded in detail especially watering, redness of eye, foreign body sensation, itching,

photophobia, burning, eye involvement whether unilateral or bilateral was recorded.

Details of ophthalmic examination of both the eyes was done including record of visual acuity and intraocular pressure. Conjunctiva and cornea was examined on slit lamp for clinical sign(Congestion, Horner trantas dots, stringy mucus discharge etc) upper eyelid is everted to find papillary hypertrophy and any complications such as corneal scarring, shield ulcer was observed, either due to the disease or treatment were also noted. Follow-up was done.

Inclusion Criteria

1. All the patients with recurrent allergic conjunctivitis.
2. Patients under age group 5-15years suffering from chronic bilateral itching and redness.

Exclusion criteria

1. Patients with preexisting corneal opacity and scarring.
2. Patients with refractive error, squint and any retinal anomalies.
3. Patients with history of trauma.
4. Patients age above 35 years.

RESULTS

Table no. 1: Age and Gender distribution of patients in study group. (n=55 patients)

AGE	GENDER		NUMBER OF PATIENTS	PERCENT-AGE
	MALE	FEMALE		
<5 YEARS	2	-	2	3.63
5-10 YEARS	11	7	16	29.0
11-15 YEARS	15	6	23	41.8
16-20 YEARS	5	3	8	14.5
>21 YEARS	2	4	6	10.9
TOTAL	35	20	55	100

In our Study, 35 (63.7%) patients were males whereas 20 (36.33%) patients were females and 39 (71.1%) patients were 5-15 years of age, 8 (14.5%) patients were 16-20 years of age, 6 (10.9%) patients were >21 years of age whereas only 2 (3.63%) patients were <5years of age.

Table no. 2: Disease pattern of patients in study group. (n=110 eyes)

DISEASE PATTERN	NUMBER OF EYES	PERCENTAGE
Palpebral	63	57.27
Limbal	18	16.36
Mixed	29	26.36
TOTAL	110	100

In our study majority of eyes exhibit palpebral form of vernal keratoconjunctivitis i.e 63 (57.27%) followed by mixed form in 29 eyes (26.36%) and limbal form in 18 eyes (16.36%).

Table no. 3: Incidence of symptoms in our study group. (n=110 eyes)

SYMPTOMS	NUMBER OF EYES	PERCENTAGE
Ocular itching	98	89.09
Redness	73	66.36
Ropy discharge	66	60.00
Photophobia	61	55.45
Burning sensation	45	40.90
Watering	34	30.90

In our study the most common symptom showed is Ocular itching in 98 eyes (89.09%), 73 (66.36%) eyes presented with Redness, 66 (60%) eyes presented with complain of ropy discharge.

Table no. 4: Distribution of Ocular signs in patients in study group. (n=110 eyes)

OCULAR SIGNS	NUMBER OF EYES	PERCENTAGE
Papillae on upper palpebral conjunctiva	90	81.81
Conjunctival congestion	65	59.09
Limbal papillae	36	32.72
SPKs	34	30.90
Horner tranta's spot	30	27.27
Pseudogerontoxon	7	6.36

In our study 90 eyes (81.81%) had papillae on upper palpebral conjunctiva, 65 eyes (59.09%) had conjunctival congestion, 36 eyes (32.72%) had limbal papillae while 36 eyes (32.72%) had superficial punctuate keratitis.

Table no. 5: Incidence of Complications in our study group. (n=110eyes)

COMPLICATIONS	NUMBER OF EYES	PERCENTAGE
Peripheral corneal neovascularization	14	12.72
Corneal scarring	13	11.81
Shield ulcer	5	4.54
Keratoconus	4	3.63

In our study out of 110eyes, 14 eyes (12.72%) had peripheral corneal neovascularization as complication, in 13 eyes (11.81%) corneal scarring was noted, shield ulcer was seen in 5 eyes (4.54%) and keratoconus was seen in 4 eyes (3.63%).

Table no. 6: Visual impairement in our study.

Mild	6/18-6/9	18 (16.36%)
Moderate	6/60-6/24	14 (12.72%)
Severe	<6/60	4 (3.63%)

In our study, 18 (16.36%) have mild visual loss, 14 eyes (12.72%) have moderate visual loss and 4 eyes (3.63%) have severe visual impairment.

Table no.7: Eye involved in our study group.

EYE INVOLVED	NO. OF PATIENTS
RE>LE	19
LE>RE	16
RE=LE	20

In our study we have found that both eye equally involvement is more as compare to asymmetrical involvement.

DISCUSSION

Vernal keratoconjunctivitis (VKC) is a chronic allergic condition seen most commonly in adolescents age group. VKC's specific cause is unknown, but it appears to have a multifactorial origin.[8-9] Vernal Keratoconjunctivitis was regarded as a type 1, IgE-mediated disorder.[9,10] Current clinical findings imply that it is a Th2-driven mechanism like asthma. Histamine is released by mast cells and basophils, which in turn triggers inflammatory lymphocytes and eosinophils, causing inflammation and tissue damage on the ocular surface.[10] **Metz DP et al (1997)** in their study found that elevated levels of the inflammatory cytokines IL-3, IL-4, and IL-5 have been seen.[11]

In our Study, 35(63.7%) patients were males whereas 20 (36.3%) patients were females. This results of our study shows that Vernal Keratoconjunctivitis is commonly seen in male population as compared to female population. Results of our study are comparable with the study of **Saboo US et al (2003)** who also found in their study 87% males and 13% females.[12] In study conducted by **J Ayub MED Coll(2017)** there were 207 males and 83 females with male to female ratio 2.49:1.[13] In their study **Leonardi and co workers** also found male to female ratio was 3.3:3.5.[14-15]

In our Study, 39 (71.1%) patients were 5-15 years of age, 8 (14.5%) patients were 16-20 years of age, 6 (10.9%) patients were >21 years of age whereas only 2 (3.63%) patients were <5years of age. A study conducted by **J Ayub MED Coll(2017)** found mean age of presentation was 10.83+/- 6.13 years[13] and a study in India conducted by **Saboo US et al (2003)** found mean age group of 12years, while there were 12% of patients whose age was above 20years.[12] **Akinsola FB et al (2008)** reported in their study that VKC affect children and young adults mainly children of less than 10years.[16] In all these studies including ours found that VKC is common in young adolescent group of population mainly 5-15 years of age.

In our study majority of eyes exhibit palpebral form of vernal keratoconjunctivitis i.e 63 (57.27%) followed by mixed form in 29eyes (26.36%) and limbal form in 18 eyes (16.36%). **Nagpal H et al (2017)** also found in their study that out of 150 cases 93 cases belong to palpebral form of VKC and 35 cases belong to mixed form of VKC.[17]

In our study out of 110 eyes, 14 eyes (12.72%) had peripheral corneal neovascularization as complication, in 13 eyes (11.81%) corneal scarring was noted, shield ulcer was seen in 5 eyes (4.54%) and keratoconus was seen in 4 eyes (3.63%). In their study **J Ayub Med Coll et al (2017)** found that commonest complication was corneal scarring 59eyes (20.3%), Keratoconus in 17eyes (5.9%), Corneal neovascularization which was present in 7eyes(2.4%) and Shield ulcer was seen in 9(3.1%) patients.[13] **Arif AS et al (2017)** in their study found that Corneal scarring was observed in 59 (20.3%) eyes, shield ulcer was detected in 9(3.1%) eyes while 7(2.4%) eyes had corneal neovascularization as complication.[18] In their study **Brindisi G et al (2021)** found complications such as corneal neovasculaization and shield ulcer that are generally located in the upper cornea.[19]

In our study assessment of visual loss was done on the basis of WHO classification for visual impairment which was found mild in 18 eyes(16.36%), 14 eyes(12.72%) have moderate visual loss and 4 eyes (3.63%) have severe visual impairement the study done by **J Ayub Med Coll et al (2017)** also found the same result.[13]

Topical mast cell stabilisers, antihistamines or there combinations are the first line of treatment (olopatadine or lodoxamide). These medications had to be started one month before the onset of disease and can be used safely for long term in moderate-to-severe cases. To minimize the risk of iatrogenic glaucoma, steroids are reserved for severe inflammation and corneal shield ulcers. Cyclosporine becomes an option for cases unresponsive to steroids, while nonsteroidal anti-inflammatory eye drops serve as a safe alternative in milder situations. Environmental therapy includes allergen avoidance, cold compresses, and relocating to a gentler climate.[20]

CONCLUSION

Though Vernal Keratoconjunctivitis is very common allergic conjunctivitis which has variety of clinical presentation and most of the time it do not affect visual outcome, However, recurrent episodes significantly disrupt patients' daily lives, affecting academic performance and overall quality of life. Chronic condition may lead to vision loss due to corneal involvement suggesting that it requires early and proper medical intervention.

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