



Proportion of Refractive Errors in Patients with Vernal Keratoconjunctivitis.

A Author's Affiliation

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Purpose: The purpose of this study was to determine the proportion of refractive errors in patients having vernal keratoconjunctivitis and also to investigate the type of refractive error more commonly associated with vernal keratoconjunctivitis.

Method: Fifty subjects with vernal keratoconjunctivitis were selected and cycloplegic refraction was performed in all of them.

Results: Eighty percent of all the vernal keratoconjunctivitis patients had refractive errors of which 25% were myopic, 55% were astigmatic, and 20% were hyperopic.

Conclusion: Refractive errors were seen in 80% of the patients. This shows that vernal keratoconjunctivitis might be associated with the development of refractive errors but this has to be investigated in longitudinal studies.



Introduction:

Normal vision is defined as in terms of visual acuity, which is the sharpness or clarity of vision, depending upon the acuteness of the image focused on the retina within the eye and the brain's ability to interpret it as such.¹

The function of the eye is to see clearly the objects around us. Emmetropia (optically normal eye) is the status of refraction wherein the parallel rays of light coming from infinity are focused at retina with accommodation being at rest. The converse is the state of ametropia or "refractive error" where the rays of light coming from distance (infinity) do not converge exactly on a single point of focus on the retina.

Based on this, refractive errors are generally divided into two main categories on the basis of cause.

- Spherical ametropia
- Astigmatism

Thus, in an emmetropic eye all internal optical elements will function normally to create a clear and sharp image of a distant object without any adjustment.

In myopia or short-sightedness these parallel rays of light come to a point focus anterior to the retina with accommodation being at rest.

The second type of refractive error is hyperopia (hypermetropia) wherein parallel rays of light originating from a source at infinite distance are not bent sufficiently and come to a focus posterior to the retina (with accommodation at rest). Another type of refractive error is termed astigmatism (stigma = spot or point) wherein the power of refraction of the eye varies in different meridians resulting in absence of a point focus as the rays of light not converge evenly. This often occurs due to different curvatures of the cornea in different directions being more or less in one as compared with the others. No eye is perfectly stigmatic as almost all individuals have a minor degree of physiological astigmatism. About 60% cases of refractive errors have astigmatism which needs to be corrected².

Vernal keratoconjunctivitis (VKC) (spring catarrh) is a recurrent, bilateral, external, ocular inflammation affecting children and young adults. It is more common in males than in females. The condition is more common in warm, dry climates and is seen far less frequently in colder climates.

VKC is an allergic disorder in which IgE and cell-mediated immune mechanisms play an important role. The onset of VKC is usually after the age of 5 years and the condition usually resolves around puberty, only rarely persisting beyond the age of 25 years.

The symptoms and signs of Vernal Keratoconjunctivitis or spring catarrh vary on a seasonal basis, being most severe in spring or early summer (i.e. between April and August) but some of the patients may not have seasonal variation and show some activity all the year-

round.

The main symptoms are intense ocular itching which may be associated with lacrimation, photophobia, foreign body sensations and burning. Thick mucus discharge from the eyes and ptosis may also occurs³.

Signs of Vernal Keratoconjunctivitis may include hyperaemia of palpebral and/or bulbar conjunctiva, chemosis, and mucous discharge that has been described as ropy (Filamentous and sticky). The distinguishing characteristic of VKC, however, is the presence of giant papillae, resembling cobblestones, at the upper tarsal conjunctiva (palpebral form) or at the limbus (limbal or bulbar form). Although the two forms may have different presentations, they are thought to represent clinical manifestations of the same disease. The difference is thought to occur due to geographical variation.⁴

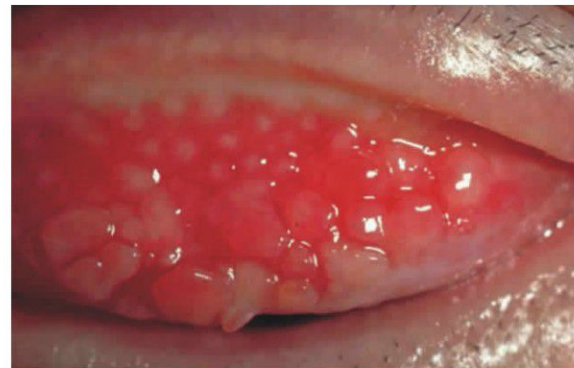


Figure 1: Cobblestones⁵



Figure 2: Limbal form - Tranta's dots⁶

Vernal Keratoconjunctivitis is a disease of the young & usually regresses with the onset of adolescence, but some type of treatment may be required even later to counter the complications of the disease. Occasionally, vision may be compromised due to permanent changes to the ocular



surface and transparency.⁷

Tabbara studied ocular complications of Vernal Keratoconjunctivitis and results showed that patients with VKC may have visual impairment due to corneal scarring, astigmatism and keratoconus. Complications arising out of unsupervised use of topical steroid eye drops posed additional reason for visual loss⁸.

Patients with VKC have chances of developing refractive errors and so these patients should have a proper refraction after the diagnosis. Refraction should also become a necessary procedure in the follow up for these patients.

Pattern of eye diseases and visual impairment among students in southwestern Nigeria was studied. A total of 1144 students were involved in this study, out of them 117 were found to have eye diseases in which Vernal Keratoconjunctivitis was 7.4% and refractive errors were 37.3%⁹.

A study was conducted to find the topographic changes in cornea in Vernal Keratoconjunctivitis patients. Results showed high frequency of patients with keratoconus associated with VKC. Visual performance was compromised by aberrations and changes in corneal asphericity and other topographic variables¹⁰.

In another study relationship between myopia and levels of IgE (specific for indoor vs. outdoor allergens) in patients with allergic conjunctivitis was studied. It was found that patients who were positive for specific IgE to indoor allergens had higher myopia than those who were negative. Antibody-positive and antibody-negative patients for outdoor allergens showed no significant differences of refraction. Refractions in indoor group and indoor/outdoor group were higher than those in outdoor group, while no correlation between refractive error and outdoor allergens was proven¹¹.

In another study to investigate the relationship between refractive error and allergic conjunctivitis in 1015 subjects it was suggested that refractive error itself may be a risk factor for allergic conjunctivitis¹².

Objectives:

1. To determine the proportion of refractive errors in patients of vernal keratoconjunctivitis.
2. To investigate which refractive error is more common in patients with vernal keratoconjunctivitis.

Methodology:

Study design: Cross-sectional study.

Population: Patients with vernal keratoconjunctivitis.

Sampling method: Non-probability purposive sampling.

Sample size: 50 patients with vernal keratoconjunctivitis.

Inclusion criteria:

Patients diagnosed as having vernal keratoconjunctivitis (VKC) on slit lamp examination.

Exclusion criteria:

Patients having any other ocular pathology

Data Collection Method:

Data was collected by examining all the diagnosed patients with vernal keratoconjunctivitis. Visual acuity and refraction was done. The main points of proforma were:

- Patient profile
- Ocular and medical history
- Clinical examination
- Result of tests.

Instruments/ Equipments Used:

- Snellen visual acuity chart
- Pinhole and occluder
- Trial lens box and trial frame
- Pen torch
- Auto-refractor
- Retinoscope
- Slit lamp

Results:

The study was an institution based, cross-sectional study using a structured proforma. All the patients who met the inclusion criterion were included and a sample of 50 consecutive patients was taken. The results were tabulated and analyzed using SPSS 13.0.

Out of 50 patients of VKC, most of the patients fall in the category of 9- 15 years. It was seen less after 15 years of age, as Vernal Keratoconjunctivitis resolves after puberty. Fifty six percent were males and forty four percent females. Out of total 50 cases, majority of patients had history of developing this disease in the last 1-2 years.

66% of the cases had multiple clinical signs of VKC i.e. follicles, papillae, cobblestones and tranta's dots. In 24% of the cases the only sign found was follicles while in 10% of the cases only papillae were found.

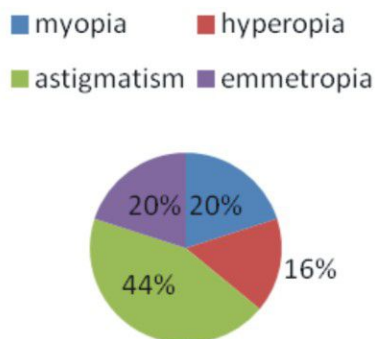


Figure 1: Proportion of refractive errors in Vernal Keratoconjunctivitis patients.

This figure shows that 22 out of the total 50 patients had astigmatism, 10 were myopes, 8 hyperopes, while 10 (20%) were emmetropes. In other words 80% of patients with VKC have refractive errors.

Discussion:

Vernal keratoconjunctivitis (spring catarrh) is a common ocular condition in Pakistan especially at the onset of hot weather because of hot, dry, dusty and dirty climate. It causes redness, itching, watering in eyes and photophobia. Prolonged history and severity of the disease can lead to visual disturbance and decrease in visual acuity which ultimately leads to the development of refractive errors.

Many patients with Vernal Keratoconjunctivitis often go untreated as they have no awareness about the disease, its treatment and complications that occur as a result of it. Early diagnosis of VKC patients is important for the beginning of proper treatment in early stage. So that less visual loss occurs in such patients and patient stays with his best visual acuity.

This study was conducted to find out the proportion of refractive errors among Vernal Keratoconjunctivitis patients and also the relationship between refractive errors and VKC.

In this study, patients with Vernal Keratoconjunctivitis were examined by pen torch and slit lamp. Visual acuity and pin-hole visual acuity were measured. Cycloplegic refraction was done in those patients who complaints of decreased or blurred vision or those who had decreased visual acuity on Snellen's chart. Out of the total 50 patients, 44% patients were astigmatics, 20% were myopes, 16% were hyperopes and 20% were emmetropes.

The results of my study agree with the previous studies⁹⁻¹¹ showing that a relationship exists between Vernal Keratoconjunctivitis and refractive errors and astigmatism is more common in such patients among all the refractive

errors.

Refractive error is most common eye disease and uncorrected refractive error is the main cause of visual impairment in the world. Vernal Keratoconjunctivitis is also a very common ocular disorder in developing and under developed countries. A number of people go untreated without knowing about the disease and its complications. Vernal Keratoconjunctivitis is associated with the development of refractive errors. So awareness among people about this disorder is very important.

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