ORIGINAL ARTICLE

CORNEAL COMPLICATIONS AND VISUAL IMPAIRMENT IN VERNAL KERATOCONJUNCTIVITIS PATIENTS

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Background: Vernal kerato-conjunctivitis (VKC) is an infrequent but serious form of allergic conjunctivitis common in warm and humid areas where air is rich in allergens. It affects both eyes asymmetrically. Although VKC is a self-limiting disease but visions affecting corneal complications influence the quality of life in school children. The aim of this study was to list the corneal complications due to this condition and to find out the extent of visual impairment among VKC patients. **Methods:** This cross-sectional study was conducted in the department of Ophthalmology, Benazir Bhutto Shaheed Hospital on 290 eyes of diagnosed cases of VKC. The diagnosis of VKC was made on the basis of history and examination. Visual acuity was recorded using Snellen's notation and visual impairment was classified according to World Health Organization classification for visual disabilities. **Results:** The mean age of presentation was 10.83±6.13 years. There were 207 (71.4%) males and 83 (28.6%) females. Corneal scarring was observed in 59 (20.3%) eyes. Keratoconus was found to be in 17 (5.9%) eyes. Shield ulcer was detected in 09 (3.1%) eyes while 07 (2.4%) eyes had corneal neovascularization. Majority of the patients with visual loss had corneal scarring and the complication that led to severe visual loss in most of the eyes was Keratoconus. **Conclusion**: Vernal kerato-conjunctivitis in the presence of corneal complications is a sight threatening disease and can lead to severe visual impairment.

Keywords: Vernal kerato-conjunctivitis; Corneal complications; Visual impairment

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INTRODUCTION

Vernal kerato-conjunctivitis (VKC) is an infrequent but serious form of seasonal allergic conjunctivitis and perennial form of disease may occur in 23% of the patients.[1,2] According to one European study prevalence were found to be 1.2–10.6/10,000.[3] The disease mostly affects young population, predominantly males.[4,5]

It is common in warm and humid areas where air is rich in allergens. Many studies reported it in Mediterranean region, central Africa, India and South America and it appears that there are geographical variations regarding its clinical profile.[4–10] It affects both eyes asymmetrically. VKC is basically the result of type 1 and type 4 hypersensitivity reactions.[1,11,13] Vernal kerato-conjunctivitis has been observed to occur in patients who have family history of atopy, but clear correlation with specific genetic loci has not been elucidated.[1]

Most of the patients have presenting complaints of severe itching and photophobia while foreign body sensation, mucous discharge, redness, lacrimation, blepharospasm and blurring of vision have also been noticed by some patients.[1,11]

The characteristic and diagnostic signs of VKC are papillary hypertrophy, limbal thickening and conjunctival pigmentation. Apart from these, Horner Trantas dots with mucous discharge and diffuse conjunctival injection are also found. The papillary hypertrophy when affects palpebral conjunctiva, give rise to cobble stone appearance leading to mechanical ptosis. Sometimes VKC progresses to involve cornea leading to complications like Keratoconus, shield ulcer, neovascularization, and pseudo-gerontoxon leading to visual impairment.[5,12–15]

The first line of treatment is conservative including avoidance of allergens and cold fomentation. However, the benefits of topical anti histamines, mast cell stabilizers, dual action agents, steroids and immune modulators are beyond doubts.[16–18]

Although VKC is a self-limiting disease but visions affecting corneal complications influence the quality of life in school children.[19] Our aim behind doing this study was to know the magnitude of severity of visual loss in relation to complications, so that necessary actions can be taken to decrease the morbidity related to visual loss.

MATERIAL AND METHODS

This cross-sectional study was conducted in the department of Ophthalmology, Benazir Bhutto Shaheed Hospital from 01.11.2013 to 01.11.2014 after approval from Hospital's Ethical Committee. The study was done on 290 eyes of diagnosed cases of VKC. Selection was done using Non-probability convenient sampling. The diagnosis of VKC was

made on the basis of history (redness, itching and watering) and examination (Papillary hypertrophy, limbal thickening, and limbal pigmentation). These findings were recorded on a specifically designed Proforma that included age, gender, presenting complaints, and examination of the patient. Visual acuity was recorded using Snellen's notation and visual impairment was classified according to World Health Organization classification for visual disabilities. Clinical signs and complications were notified after slit lamp bio-microscopy of each patient. Intraocular pressure was measured by applanation tonometer and keratometry was done to find out keratoconus. Patients with other types of allergic conjunctivitis, contact lens induced conjunctivitis; cataracts and steroid induced glaucoma were excluded from the study. All above mentioned data was stored and analysed into SPSS version 16.00. Mean±Standard deviations were calculated for numerical variables like age. Frequencies and percentages were calculated for categorical variables like gender, corneal complications and visual impairment.

RESULTS

This study was done on 290 eyes. The mean age of presentation was 10.83±6.13 years. The youngest patient was 03 years old and oldest was 48 years old. There were 207 (71.4%) males and 83 (28.6%) females.

Corneal scarring was observed in 59 (20.3%) eyes. Keratoconus was found to be in 17 (5.9%) eyes. Shield ulcer was detected in 9 (3.1%) eyes while 7 (2.4%) eyes had corneal neovascularization.

The assessment of visual loss was done on the basis of WHO classification for visual impairment. In our study, there were 45 eyes that had mild visual loss, 38 eyes had moderate visual loss while only 9 eyes had severe visual loss.

When we compared the visual loss with corneal complications, we found that majority of the patients with visual loss had corneal scarring and the complication that led to severe visual loss in most of the eyes was Keratoconus.

Table-1: Frequency distribution of corneal complications with visual impairment

Corneal Complications	Frequency		Visual Impairment		
	Yes	No	Mild	Moderate	Severe
Corneal Scarring	59 (20.3%)	231 (79.7%)	35 (59.3%)	21 (35.6%)	3(5.1%)
Keratoconus	17 (5.9%)	273 (94.1%)	3 (17.6%)	9 (53%)	5 (29.4%)
Shield Ulcer	9 (3.1%)	281 (96.9%)	4 (44.4%)	4 (44.4%)	1 (11.1%)
Neovascularization	7 (2.4%)	283 (97.6%)	3 (43%)	4 (57.1%)	0 (0.00%)

DISCUSSION

This study was conducted on 290 eyes with vernal kerato-conjunctivitis. Vernal kerato-conjunctivitis usually starts at the age of 3 years and when the patients reach puberty the symptoms and signs regress in 95%. However, 5% of the patients can have the disease even after puberty. In our study, youngest patient was 3 years old and oldest was 48 years old.

The mean age of presentation was 10.83±6.13 years. A study conducted by Saboo in India found mean age of presentation to be about 12 years, while there were 12% of patients whose age was above 20 years.[21] In a hospital based study conducted by Shafiq, noted that 6% of the patients were above 20 years and Leonardi reported about 4%.[20,4]

Vernal kerato-conjunctivitis affects boys more commonly than girls. In our study there were 207 males and 83 females with male to female ratio of 2.49:1. In the study conducted by Saboo there were 405 males and 63 females with M:F ratio of 6.4:1.[21] Leonardi and co-workers found M:F ratio between 3.3 and 3.5.[6,7] Ukponmwan reported M: F ratio of 1:1.3 from Nigeria.[9] M:F ratio in our study is higher and it shows similarity with the global values. In most of the studies male to female ratio was between 4:1 and 2:1.[8,10]

Vernal kerato-conjunctivitis is a recurrent disorder which shows seasonal variations. It tends to affect children during early spring and late summer season. In our study the highest numbers of patients were found in the month of May and June was the second highest month. Saboo and co-workers also found a higher incidence in the month of May.[21]

Sometimes patients with vernal kerato-conjunctivitis present with complications like corneal scarring, Keratoconus, shield ulcer, and corneal neovascularization. Although the frequency of these complications is not very high but they can cause mild, moderate, and severe visual loss which affects the quality of life among school children and so their learning abilities as well. In our study about 20.3% eyes developed corneal scarring, 5.9% eyes developed Keratoconus, while 3.1% eyes and 2.4% eyes developed shield ulcer and corneal neovascularization respectively. Saboo found corneal scarring in 11% of patients, shield ulcers in 3%, Keratoconus in 6.2% and corneal neovascularization in 7.26%.[21]

The assessment of visual loss was done on the basis of WHO classification for visual

impairment. There were 35 (14%) eyes that had mild visual loss, 21 (60%) eyes that had moderate visual loss and 3(60%) eyes that had severe visual loss secondary to corneal scarring. Keratoconus led to mild visual loss in 3 (1.2%) eyes, moderate visual loss in 9 (25.7%) eyes, and severe visual loss in 5 (100%) eyes. The visual loss secondary to shield ulcer and corneal neovascularization is shown in table-3. Saboo found visual loss of <20/50 in 12% of patients while 3.44% were noted to have a visual acuity <20/200.[21] It can be observed from the table-1 that 59 (20.3%) eyes developed corneal scarring, and 17 (5.9%) eyes developed Keratoconus but when we compared these complications with visual loss we found that the complication that led to severe visual loss in most of the eyes was Keratoconus while in a study conducted by Bonini in London noticed permanent visual loss in 6% patients was due to corneal scarring.

CONCLUSION

Vernal kerato-conjunctivitis in the presence of corneal complications is a sight threatening disease and can lead to severe visual impairment.

AUTHORS' CONTRIBUTION

ASA, BA: Data collection & Data analysis. AS, ZN: Statistical analysis. UF: Study design.

REFERENCES

1. Kumar S. Vernal keratoconjunctivitis. Acta Ophthalmo 2009;87(2):133–47.
2. Bonini S, Bonini S, Lambiase A, Marchi S, Pasqueletti P, Zuccaro O, *et al*. Vernal keratoconjunctivitis revisited: a case series of 195 patients with long term followup. Ophthalmology 2000;107(6):1157–63.
3. Bremond-Gignac D, Donadieu J, Leonardi A, Poliquen P, Doan S, Chiambarretta F, *et al*. Prevalence of vernal keratoconjunctivitis: a rare disease? Br J Ophthalmol 2008;92(8):1097–102.
4. Leonardi A, Secchi AG. Vernal keratoconjunctivitis. Int Ophthalmol Clin 2003;43(1):41–58.
5. Bonini S, Coassin M, Aronni S, Lambiase A. Vernal keratoconjunctivitis. Eye (Lond) 2004;18(4):345–51.
6. Leonardi A, Busca F, Motterle L, Cavarzeran F, Fregona IA, Plebani M, *et al*. Case series of 406 vernal keratoconjunctivitis patients: a demographic and epidemiological study. Acta Ophthalmol Scand 2006;84(3):406–10.
7. Lambiase A, Minchiotti S, Leonardi A, Secchi AG, Rolando M, Calabria G, *et al*. Prospective, multicenter demographic and epidemiological study on vernal keratoconjunctivitis: a glimpse of ocular surface in Italian population. Ophthalmic Epidemiol 2009;16(1):38–41.
8. Tabarra KF. Ocular complications of vernal keratoconjunctivitis. Can J Ophthalmol 1999;34(2):88–92.
9. Ukponmwan CU. Vernal conjunctivitis in Nigerians: 109 consecutive cases. Trop Doct 2003;33(4):242–5.
10. Akinsola FB, Sonuga AT, Aribaba OT, Onakoya AO, Adefule-Ositelu AO. Vernal keratoconjunctivitis at Guinness Eye Centre, Luth (a five-year study). Nig Q J Hosp Med 2008;18(1):1–4.
11. Buckley RJ. Vernal keratoconjunctivitis. Int Ophthalmol Clin 1988;28(4):303–8.
12. Krachmer JH, Mannis MJ, Holland EJ. Cornea. 2nd ed. Philadelphia: Elsevier/Mosby; 2005.
13. La Rosa M, Lionetti E, Reibaldi M, Russo A, Longo A, Leonardi S, *et al*. Allergic conjunctivitis: a comprehensive review of literature. Ital J Pediatr 2013;39:18.
14. De Smedt S, Wildner G, Kestelyn P. Vernal keratoconjunctivitis: an update. Br J Ophthalmol 2013;97(1):9–14.
15. Cameron JA, Al-Rajhi AA, Badr IA. Corneal ectasia in vernal keratoconjunctivitis. Ophthalmology 1989;96(11):1615–23.
16. Leonardi A. Management of vernal keratoconjunctivitis. Ophthalmol Ther 2013;2(2):73–88.
17. Oray M, Toker E. Tear cytokine levels in vernal keratoconjunctivitis: the effect of topical 0.05% cyclosporine a therapy. Cornea 2013;32(8):1149–54.
18. Vichyanond P, Kosrirukvongs P. Use of cyclosporine A and tacrolimus in treatment of vernal keratoconjunctivitis. Curr Allergy Asthma Rep 2013;13(3):308–14.
19. Sacchetti M, Baiardini I, Lambiase A, Aronni S, Fassio O, Gramiccioni C, *et al*. Development and testing of the quality of life in children with vernal keratoconjunctivitis questionnaire. Am J Ophthalmol 2007;144(4):557–63.
20. Shafiq I, Shaikh ZA. Clinical presentation of vernal keratoconjunctivitis (VKC): A Hospital based study. J Liaquat Uni Med Health Sci 2009;8:50–4.
21. Saboo US, Jain M, Reddy JC, Sangwan VS. Demographic and Clinical Profile of Vernal Keratoconjuctivitis at a tertiary eye care centre in India. Indian J Ophthalmol 2013;61(9):486–9.

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