

Corneal Complications of Vernal Kerato-Conjunctivitis

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ABSTRACT

OBJECTIVE: To determine the magnitude and types of corneal complications of Vernal Kerato-Conjunctivitis (VKC) and their effects on vision.

STUDY DESIGN: Descriptive case-series.

PLACE AND DURATION: This study was conducted from September 2007 to January 2009 at three institutions in Karachi; Department of Ophthalmology, Dow University of Health Sciences and Civil Hospital, Baqai Medical University Hospital and Sindh Government Qatar Hospital Orangi Town.

METHODOLOGY: All cases of vernal kerato-conjunctivitis presenting from the different areas of Karachi were included in the study. The diagnosis was made mainly on the basis of history and clinical examination.

RESULTS: Total 200 patients were examined. Superficial punctate keratitis was the most common corneal complication (46%). Visual impairment was more pronounced in case of Schield ulcer (16%) and corneal plaques (8%). Association with keratoconus (13%) was also noted. Corneal opacification (13%), and psuedogerontoxon (4%) were also observed.

CONCLUSION: Severe corneal complications of vernal kerato-conjunctivitis (VKC) were observed. Superficial punctate keratitis was the most common. Other complications are potentially serious causing visual impairment.

KEY WORDS: Allergic conjunctivitis, Vernal Kerato-conjunctivitis, corneal complications, keratoconus, Schield ulcer, corneal plaques.

INTRODUCTION

Vernal kerato-conjunctivitis is a bilateral, recurrent, IgE mediated allergic condition of conjunctiva and cornea.¹ Diagnosis is based on typical clinical features including intense itching, sticky mucus discharge, giant papillae on upper tarsal conjunctiva or limbus, superficial keratopathy and corneal shield ulcer.²

The condition affects children and young adults. It is more common in males than in females. About three quarters of patients have associated atopy and two-third have a close family history of atopy.³ The condition is differentiated from the Atopic keratoconjunctivitis clinically.⁴ The onset of VKC is usually after the age of 5 years and condition eventually resolve around puberty, rarely persisting beyond the age of 25 years. The condition is more common in warm and dry climate.⁴ There are three clinical presentations of the disease, palpebral, limbal and mixed.⁵ Visual morbidity is mostly due to the corneal complications of the disease. This vernal keratopathy is caused by eosinophil derived proteins including eosinophil cationic proteins, eosinophil derived major basic protein (MBP), etc.⁶ These are cytotoxic to corneal epithelium and inhibit epithelial migration and protein synthesis,⁷ their levels are elevated both in tears and serum.⁸

The purpose of this study was to determine the magnitude and potentially blinding corneal complications

of VKC in developing country like Pakistan.

PATIENTS AND METHODS

We conducted a descriptive study from September 2007 to January 2009 at departments of ophthalmology of three institutions in Karachi; Dow University of Health Sciences and Civil Hospital, Baqai Medical University Hospital and Sindh Government Qatar Hospital Orangi Town.

All patients of either sex presented at the Eye OPD of all three institutions having VKC with corneal involvement, between ages of 5 years and 25 years were included in the study.

Patients below the age of 5 years and above 25 years, history of eye trauma or any surgery to eyes and chemical burns were excluded from the study.

A careful history was taken from each patient and recorded on a pre-designed proforma which included: name, age, sex, address, presenting complaints and their duration, type and nature of any discharge, history of any allergic disorder (asthma, eczema, drug or food allergy), and family history of atopy. Written consent was taken from the patients or from parents of the patients below 15 years of age.

Complete ocular examination was done and findings were recorded, which included visual acuity unaided and with pin-hole, ptosis and its measurement when present, type of reaction on the upper tarsal conjunctiva, gelatinous thickening on the limbus,

Horner-trantas dots, punctate epithelial staining, corneal epithelial erosions, Schield ulcer, Psuedogeron-toxon and corneal signs of Keratoconus.

VKC was differentiated from AKC on clinical grounds like younger age at the presentation, having less severity of symptoms, seasonal variation and history of dermatitis on exposed parts of the body.

Descriptive analysis of the data was carried out by calculating frequencies and proportions. Results are presented in the form of frequency distribution tables.

RESULTS

A total of 200 patients were evaluated and analyzed. Most of the patients presented with the signs and symptoms of the disease in the first decade of life i.e. 139 (69.5%), whereas 50 (25%) and 11 (5.5%) patient in the second and third decade of life respectively. There were 184 (92%) males and 16 (8%) females. A family history of atopy was present in 64 (32%) patients. The commonest clinical sign was moderate papillary reaction on upper palpebral conjunctiva that was present in 58% patients. Gelatinous limbal thickening was present in 92 (46%) patients, as detailed in **Table I**. Different corneal complications are summarized in **Table II**. Study showed that palpebral VKC was the most common clinical form present in 108 (54%) patients, followed by mixed VKC in 52 (26%) patients and limbal VKC in 40 (20%) patients. Visual acuity (VA) was recorded in different age groups. Mostly decreased vision was due to corneal involvement. VA of worse affected eye is shown in **Table III**.

TABLE I:

CLINICAL SIGNS IN DIFFERENT FORMS OF VKC (n=200)

Clinical Signs	Number of Patients	Percentage
Moderate Papillae	116	58
Limbal Thickening	92	46
Cobblestones (Giant Papille)	43	21.5
Horner-Trantas Dots	33	16.5
Ptosis	6	3

DISCUSSION

The study data showed that most of the patients presented with VKC in their first decade of life i.e. 5-10 years of age (n=139, 69.5%). This is comparable to the study done in Pakistan in the city of Peshawar by Iqbal and associates⁹ and by Bonini and associates² in Italy in which 61% and 65% patients were presented in their first decade of life respectively. One-hundred and eighty-four patients in our study were

TABLE II:
CORNEAL SIGNS/COMPLICATIONS (n=200)

Corneal Signs	No. of Patients (%)
Superficial Punctate Keratitis	92 (46)
Schild Ulcer	32 (16)
Keratoconus	26 (13)
Corneal Opacification	26 (13)
Plaque	16 (8)
Psuedogeron-tonxon	8 (4)

TABLE III:

VA IN THE WORSE AFFECTED EYE (n=200)

Visual Acuity	No. of Patients (%)
6/6 To 6/12	58 (29%)
6/18 To 6/36	52 (26)
6/60 To Cf 3m	10 (5)
< Cf 3m	24 (12)
Could not be recorded	56 (28)

males. This is also similar to the study done in Pakistan in region of Sawat by Shiekh and associates¹ in which 88% of their patients were males, and by Gormaz and associates¹⁰, which also showed similar male preponderance (90%) of this disease. Patients presented with the history of atopy were 32% which is in consistence with the study by Khan and associates¹¹, which shows 39% of their patients having family history of atopy and in the study done by Bonini and associates which reported 41% incidence of family history of atopy.² VKC is frequently complicated by keratopathy which may range from a relatively innocuous punctate keratitis to schield ulcer, which has potential to cause corneal scarring and thus severe visual impairment. Eosinophils are the main culprit for vernal keratopathy. They contain cytoplasmic granules filled with specific proteins, major basic protiens (MBP) and eosinophilic cationic proteins (ECP).^{6,7} These are cytotoxic to the corneal epithelium and inhibit epithelium migration and protein synthesis. Their levels are elevated both in tears and serum.⁸ Recently a family of chemoattractant peptides termed chemokines has been recognized to have an important role in normal leukocytes trafficking as well as in leucocytes recruitment during inflammation.^{6,7}

Superficial puntate keratitis was present in 46% of these cases. This common corneal complication was associated with varying severity of photophobia in the patients. Kertoconus was noted in 13% of cases, which is relatively a high figure. In another study conducted in Japan, 40% of keratoconus patients had allergic background. An association between VKC, atopy and keratoconus has been confirmed by many

authors.¹⁰ Children with VKC and keratoconus present earlier with visual disability than keratoconus alone. In children Schield ulcer and corneal plaques are severe forms of vernal kerpopathy. They are sight threatening due to their potential cause of corneal scarring and amblyopia in children. These patients are more prone to bacterial and fungal keartitis. Sixteen percent of our cases had Schield ulcer and 8% had corneal plaques. Thirteen percent had corneal opacities probably due to healed Schield ulcer, corneal plaques or acute hydrops.⁹ Corneal Schield ulcers and plaques are rare but serious complications of vernal keratoconjunctivitis.^{10, 12}

Ptosis was observed in 3% of our patients while in the study done by Iqbal and associates⁹ and in the study by Bonini and associates² it was observed in 22% and 5% patients respectively. In our study main cause of decreased vision were Schield ulcer, plaques, keratoconus, acute hydrops and corneal opacities. Patients having superficial punctate keratitis and psedogern-toxon were not associated with marked visual impairment.

VKC is a severe form of allergy and may result in permanent visual or cosmetic defect, which is usually due to corneal complications of the disease.⁹

CONCLUSION

Vernal keratopathy is a fairly common presentation in the practice of ophthalmology. Young males are more commonly affected than females. Superficial punctate keratitis was found to be the most common corneal complication of VKC. Main causes of decreased vision were keratoconus, Schield ulcer and corneal plaques.

REFERENCES

1. Shaikh A, Ovais SM. The morbidity of vernal kerato-conjunctivitis. Pak J Ophthalmol 2001; 3(17):86-9.
2. Bonini S, Bonini S, Lambiase A. Vernal keratoconjunctivitis. Case series of 195 patients with long term follow up. Ophthalmology 2000; 107:1157-63.
3. Smith JS, editor. Eye diseases in hot climates. 3rd edition. Oxford: Butterworth-Hienemann; 1997.
4. Kanski JJ, editor. Clinical Ophthalmology. 6th edition. Oxford: Butterworth-Hienemann; 2007.
5. Leonardi A. VKC: Pathogenesis and treatment. Prog Retin Eye Res. 2002; 21(3):319-39.
6. Anwar MS. The role of aspirin in Vernal keratoconjunctivitis. J Coll Physician Surg Pak 2003; 13:178-9.
7. Trocme SD, Kephart GM, Bourne WN, Buckley RJ, Gleich GJ. Eosinophil granule major bsic protein deposition in corneal ulcers associated with vernal keratoconjunctivitis. Am J Ophthalmol. 1993; 115:640-3.
8. Leonardi A, Borhesan F, Faggin D, Deopoli M, Secchi AG, Plebani M. Tear and serum soluble leucocyte activation markers in conjuntival allergic disease. Am J Ophthalmol. 2000; 129:151-8.
9. Iqbal A, Jan S, Babar TF, Khan MD. Corneal complications of Vernal Catarrh. J Coll Physician Surg Pak 2003;13(7):394-7.
10. Gormaz A, Eggers C. Vernal kerato-conjunctivitis and keratoconus. Am J Ophthalmol.1984; 96:555-6.
11. Khan MD, Kundi N, Saeed N, Gulab A, Nazeer AF. Incidence of keratoconus in spring catarrh. Br J Ophthalmol 1998; 72:86-9.
12. Ozbek Z, Burakqazi AZ, Rapuano CJ. Rapid healing of vernal Schield ulcer after surgical debridment. A case report. Cornea 2006; 25



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