

Chronic Allergic Conjunctivitis: An Evaluation of the Role of Family History and Atopy

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SUMMARY

The aim of study was to investigate some of the risk factors in patients presenting with Vernal keratoconjunctivitis (VKC) or Atopic keratoconjunctivitis (AKC) at the University College Hospital, Ibadan, Nigeria. This case-control study was conducted on 28 patients with VKC/ AKC who were studied and compared with 28 age and sex matched healthy subjects. The result revealed that the majority (50%) were aged 10 years and below. Male to female ratio was 1.8: 1. Seventy-three point six percent (73.6%) of subjects with a family history of allergy had VKC/AKC compared with 37.8% of those without a family history (Odds Ratio OR-1.9; $p < 0.05$). All the subjects with a history of atopy had VKC/AKC compared with 33.3% of those without a history of atopy (OR-3.0; $p < 0.05$). Thirty-one point six percent (31.6%) of the subjects with a family history of allergy also had a personal history of atopy while 21.6% of those without a family history had a history of atopy (OR-1.5). Only eight (28.6%) of those with features of VKC/AKC had knowledge of the allergen. In conclusion, family history of allergy and personal history of atopy are strong risk factors for VKC/AKC. Poor knowledge about responsible allergens necessitates health education, allergen sensitivity testing and patient counselling on the various allergens associated with these diseases.

Keywords: *Vernal, keratoconjunctivitis, risk factors, family history, atopy*

INTRODUCTION

Chronic allergic conjunctivitis (CAC) is known to occur in 3 forms. These are vernal keratoconjunctivitis (VKC), atopic keratoconjunctivitis (AKC) and giant papillary conjunctivitis (GPC)[1]. Vernal keratoconjunctivitis (VKC) is a recurrent, bilateral, interstitial inflammation of the conjunctiva occurring in children and young adults, resolving spontaneously after a course of several years[2]. Atopic keratoconjunctivitis (AKC) is characterized by severe, chronic external ocular inflammation associated with atopic dermatitis[3], while giant papillary conjunctivitis (GPC) is an external ocular inflammatory disorder associated with contact lens wear[4]. Vernal conjunctivitis is the most common of the three forms and is consequently the most studied. VKC has a global distribution with a widely varying incidence. In Nigeria, it has been reported to be a very common conjunctival disease[5, 6, 7, 8, 9, 10].

Males are said to be more affected than females and majority of the patients are in the first decade of life[11]. Patients with VKC frequently have a family or medical history of atopic diseases, such as asthma, rhinitis, and eczema[12, 13]. AKC is generally less common than VKC and tends to occur in adults. GPC is not common in the tropics and developing countries because contact lens wear is not common. AKC is similar in presentation to VKC and at times it is difficult to distinguish between them[14, 15].

The cause of inflammation in VKC and AKC has been identified as allergic type 1 hypersensitivity reaction to external allergens such as pollen, dust, excessive sunlight (photosensitization), animal hairs, grass, feathers and others[16]. It is generally accepted that geographical, genetic and environmental factors are influential in the disease [17].

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Treatment involves allergen avoidance and use of pharmacological agents to achieve symptomatic relief. Allergen avoidance can reduce the need for pharmacological treatment [18].

VKC is an important cause of ocular morbidity among children in Nigeria causing much distress and discomfort to the patients and is responsible for much absenteeism from school [6]. In addition; it can be frustrating and challenging to treat the disease [17].

Not much literature exists on the pattern of risk factors for VKC or AKC in Nigeria. The aim of this study is therefore to identify the pattern of familial and atopic risk factors in patients presenting at the University College Hospital, Ibadan with a view to making recommendations for better management of the disease.

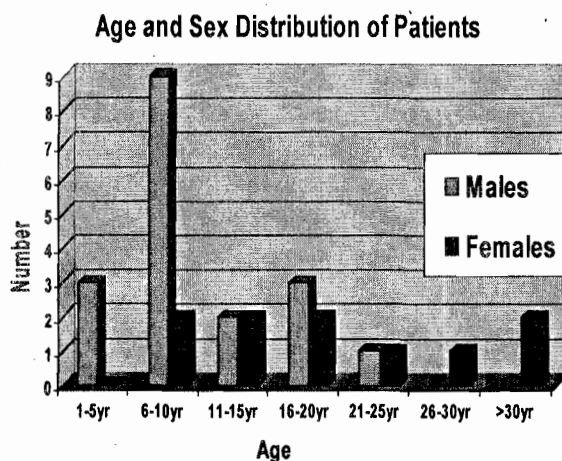
PATIENTS AND METHODS

This was a case- control study carried out at the Eye Clinic University College Hospital, Ibadan between July 2002 and June 2004. 28 patients with clinical features suggestive of vernal keratoconjunctivitis or atopic keratoconjunctivitis were selected and compared with 28 age and sex matched healthy controls. The 28 patients were all new patients seen by the principal investigator. Ethical approval was obtained from the UI/UCH IRB. Informed consent was obtained before administration of a structured questionnaire. Information obtained included demographic data, location of domicile, type of accommodation, main cooking fuel, location of cooking area, presence of domestic animals, pattern of home furnishings, personal and family history of allergy and atopy. The data collected was analyzed using SPSS version 13 software. Statistical analysis consisted of frequency distributions, odds ratios, and 95% confidence intervals. Statistical significance was $p < 0.05$. Some of the findings of this study have been reported in an earlier report (in print).

RESULTS

A total of 56 subjects comprising 28 cases and 28 matched controls were studied. The ages of the subjects ranged from 1 to 32 years with a mean of 13.5 years. Majority of the patients (50%) were aged 10 years and below. Male to female ratio was

1.8: 1. Figure 1 shows the age and sex distribution of the patients.



The commonest symptom in the patients was itching in 27 patients (96.4%). Photophobia occurred in 9 patients (32.1%), while discharge was reported by 1 patient (3.6%). (Table1)

Table 1: Frequency of ocular symptoms

SYMPTOM	NUMBER	PERCENT
Itching	27	96.4%
Photophobia	9	32.1%
Grittiness	2	7.1%
Pain	1	3.6%
Discharge	1	3.6%

Nineteen subjects (33.9%) had a family history of allergy while 37 (66.1%) did not have such a history. Fourteen subjects had a family history of allergic eye disease; five had family history of allergic rhinitis, while two had a family history of asthma. Two subjects had a family history of both allergic eye disease and rhinitis.

Fourteen (50%) of patients with features of Chronic allergic conjunctivitis (CAC) had a positive family history of allergy and 12 (85.7%) of these cases had a family history of allergic eye problems. Fourteen subjects (25%) had a personal history of atopy with 42 (75%) subjects without a history of atopy. All 14 subjects had features of CAC. Thirteen of them (92.9%) had a history of allergic rhinitis;

4% had a history of asthma, while 1% had a history of eczema.

Further analysis showed that 73.7% of subjects with a positive family history of allergy had CAC, compared with 37.8% of those without a family history of allergy (Odds Ratio OR – 1.9; 95% Confidence Interval = 1.2 – 3.2; $P < 0.05$).

All (100%) of the subjects with a personal history of atopy had features of CAC compared with 33.3% of those without a history of atopy (OR – 3.0; 95% Confidence Interval = 2.0 – 4.6; $P < 0.05$). Six (31.6%) of the subjects with a positive family history of allergy also had a personal history of atopy while 8 (21.6%) of those without a family history had a personal history of atopy (OR – 1.5; 95% Confidence Interval = 0.6 – 3.6; $p = 0.4$). Only 8 (28.6%) of those with features of CAC had knowledge of the allergen, while the other 20 (71.4%) had no idea of the allergen responsible for their disease. The allergens reported included smoke, dust, hot weather and exercise.

Seven (50%) of the patients with features of CAC who had a family history of allergy had a knowledge of the allergen responsible, compared with 1 (7.1%) patient without a family history who knew about the allergen. (OR – 7.0; 95% Confidence Interval = 1.0 – 49.7; $P < 0.05$). Six (42.9%) of the patients with features of CAC who had a personal history of atopy had a knowledge of the allergen responsible, compared with two (14.3%) patients without a family history who knew about the allergen. (OR – 3.0; 95% Confidence Interval = 0.7 – 12.4; $P = 0.1$)

DISCUSSION

The age and sex distribution of the patients with VKC/AKC in this study compares well with the pattern described in previous studies [4, 8]. The peak age is between 6 and 10 years with males being more affected, but with increasing age, there is a definite female preponderance. This has also been documented by previous studies [8].

The pattern of ocular symptoms is similar to that described in previous studies, with itching being the predominant symptom [19]. However, discharge was not common in this group of patients.

This study showed that positive family history of allergy and personal history of atopy are strong risk factors for developing VKC/ AKC. This has been well documented by previous studies [12, 13, 20, 21, 22, 23, 24].

Fifty percent of the subjects had a family history of allergy. This compares favourably with figures obtained in other series (48.7% [25], 67% [13], and 66% [21]).

In addition, majority of these patients had a family history of allergic eye disease. This strongly suggests that there are genetic factors involved in the development of the disease. This has also been reported by other studies [17, 26]. Nishimura and co-workers, in their study, obtained evidence for genetic linkage of allergic conjunctivitis with chromosomes 5, 16 and 17 [26].

In our study, majority of the patients with features of CAC who had a personal history of atopy had allergic rhinitis; this simply reinforces previous documentation that allergic eye disease and allergic rhinitis are closely linked [21, 23, 27].

Our study also suggests that having a positive family history of allergy increases the risk of having a personal history of atopy. This finding, though not statistically significant, is probably not surprising because of the genetic factors involved in atopic disease.

We also found out that knowledge of the allergen responsible for the disease was low among the patients studied. Lack of knowledge about possible allergens precludes allergen avoidance and environmental control in the management of the disease. This results in frequent recurrences and clinic visits as well as frustration for both the patient and the doctor.

Therefore health education for patients with allergic eye disease cannot be overemphasized, because it improves patients' awareness about the disease and the environmental factors involved. This helps the patients to cope better with the disease as well as achieve less dependence on pharmacological agents.

This study also suggests that positive family history of allergy and a personal history of atopy increase the chances of knowing about the allergen.

This is probably because the presence of allergic disease in other family members or of other allergic disease in the individual increases the patient's contact with information about the disease and as a result the patient is more likely to be aware that environmental factors are involved in its development. This may simply confirm the important role of allergen testing and health education for families with history of allergic disease.

CONCLUSION

This study showed that family history of allergy and personal history of atopy are strong risk factors for developing VKC/AKC. It also suggests that having a positive family history increases the risk of having a personal history of atopy. In addition, knowledge of the allergen responsible was low among the subjects with VKC/AKC. Health education is necessary for families with history of allergy and patients with VKC/AKC need to be counselled on the various types of allergens that have been identified with the disease. More studies are advocated to further establish the association of these and other risk factors with the development of chronic allergic conjunctivitis.

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