

Assessment Of Association Of Advanced Keratoconus With Atopy And Family History In Patients Attending To Benghazi Teaching Eye Hospital

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Abstract – Introduction: Keratoconus is defined as an asymmetrical and worsening disease with severe effects on the acuity of vision as well as the life quality of the cases. Aim of the study was to highlight the association between keratoconus with the atopy and family history in patients attending Benghazi teaching Eye Hospital.

Material and Methods: A cross-sectional study was conducted among patient with keratoconus attending ophthalmology clinics at Benghazi teaching eye hospital, regardless of their sex. Data were collected via a questionnaire-based interview. The data collected were analyzed using SPSS software version 26. Results The study included 100 patients with advanced keratoconus their mean age was 28.7±8.9 years, with age range 13- 55 years, and 89% of them aged < 40 years. Male: female ratio was 1.04: 1.

Family history recorded in 35% of patients. No difference in family history between males and female p value was 0 .950 History of allergy(atopy) was positive in 69% of patients.

Thus, this study emphasises the necessity to discourage the children from rubbing eyes and screening of persons with positive family history to identify early. ,

Keywords – Keratoconus, atopy, rubbing eye, family history.

I. INTRODUCTION

Today, keratoconus is considered a bilateral and asymmetric ocular disease which results in progressive thinning and steepening of the cornea leading to irregular astigmatism and decreased visual acuity ^{1,2,3}. Corneal thinning occurs in the central or paracentral cornea, most commonly infero-temporally ⁴. Traditionally, keratoconus has been described as a non-inflammatory disease ^{5,6}.

Atopy is described as a hereditary propensity to form immunoglobulin E antibodies (IgE) as a reaction to minute amounts of certain environmental factors, including house dust mites, pollen, or even food allergens.⁷ Allergies are the clinical expression of atopic diseases; nevertheless, not all allergies are atopic diseases.⁸ The most common characteristic of all atopic diseases is hypersensitivity of the skin and mucous membranes, and this hypersensitivity often runs in families. ⁹ Several risk factors have been identified for atopic diseases. Risk and triggering factors such as allergens, tobacco smoke, and occupational factors are the causative agents of allergic reactions or acute asthma in atopic patients. People with atopic dermatitis have a greater propensity to respond to specific antigens in the environment.¹⁰

The most recognized environmental risk factor is eye rubbing ¹¹⁻¹³. e repeated mechanical pressure on the cornea causes structural modifications of the collagen, leading to ectasia ¹⁴. The prevalence of the disease in the general population varies considerably among different regions of the world from as low as 0.0003%.^{15,16}. The disease can have a significant impact on

quality of life¹⁷ and treatment modalities to halt its progression (such as corneal collagen cross-linking) or to improve vision (such as specially designed contact lenses, intra-corneal ring implantation or keratoplasty), although have shown good result, but are not free of risks and financial burdens. Patient education about the risk factors for this disease may aid in its prevention thereby reducing its overall impact.¹⁸⁻²⁰

II. AIM

To highlight the association between keratoconus with the atopy and family history in patients attending Benghazi teaching Eye Hospital

III. MATERIAL AND METHODS

A cross- sectional study was conducted among patient with **keratoconus** attending *ophthalmology clinics* at Benghazi teaching eye hospital, *regardless of their sex*. Data collection started in 1st of October2023 and finished in 15th of January 2024,all patients with keratoconus attended during the mentioned period were included in the study .

Inclusion criteria: Encompassed patients who visited and had files in cornea clinic during study period

Exclusion criteria: Corneal pathology other than keratoconus and other ocular problems also Patients underwent keratoplasty and intrastromal corneal ring.*Data were collected via a questionnaire-based interview. The data collected were analyzed using SPSS software version 26.*

IV. RESULTS

Table 1: Distribution of patients according to demographic data

Age /year*	No.	%
<20	15	15
20 – 29	44	44
30 – 39	30	30
40 – 49	8	8
≥50	3	3
Sex		
Male	51	51
Female	49	49
Male: Female ratio	1.04:1	
Family history of keratoconus		
Male	18	35.3**
Female	17	34.7

*Mean age =28.7years. Std.Deviation 8.9 years.Median= 28years. Minimum age=13years. Maximum =55 years.

** p value was 0 .950 (Not significant)

Table 2: Distribution of patients according to allergy

History of allergy	No.	%
Yes	69	69
No	31	31
Type of allergy		
Rubbing eyes	42	60.9
Asthma	14	20.3
Eczema	13	18.8

Table 3: Association of family history with history allergy

Family history of <i>keratoconus</i>	History of allergy			
	Yes		No	
	No.	%	No.	%
Yes	31	88.6	4	11.4
No	38	58.5	27	41.5
Total	69	100	31	100

$X^2 = 9.642$, $df = 1$ $p = 0.002$ (Significant)

Table 4: Association of family history with rubbing eyes

Family history of <i>keratoconus</i>	Rubbing eyes			
	Yes		No	
	No.	%	No.	%
Yes	20	57.1	15	42.9
No	22	33.8	43	66.2
Total	42	42	58	58

$X^2 = 5.069$, $df = 1$ $p = 0.024$ (Significant)

V. DISCUSSION

The study included 100 patients with advanced keratoconus their mean age was 28.7 ± 8.9 years, with age range 13- 55 years, and 89% of them aged < 40 years.

In other study recorded that the mean age of patients was 22.58 ± 6.5 years.²¹

Keratoconus affects both genders, although it is unclear whether significant differences between males and females exist. In this study male: female ratio was 1.04: 1, Others found a greater prevalence in males as in study found 73 % of the patients were males, 27% were females.²² While other investigators have found a greater prevalence in females were in study found that female to male ratio 1.52:1.²¹ Family history recorded in 35% of patients. In other study family history of KC was present in 292 (19.5%) patients²³. No difference in family history between males and female p value was 0.950 History of allergy(atopy) was positive in 69% of patients, eyes rubbing were recorded in 60.9%, asthma in 20.3% and eczema in 18.8% of patients with history of allergy. In other study recorded that the commonest allergic disorder was hay fever followed by asthma an eczema and the definite history of atopy was found in 35% of patients²⁴ Majority of patients (88.6%) with family history had in the same time history of allergy , while only 58.5% of patients with negative family history had positive history of allergy, this difference was statistically significant p value was 0.002 The association of family history with rubbing of eyes was statistically significant p value was 0.024, were 57.1% of patients with family history of *keratoconus* had history of eye rubbing. Other study show in the univariate associations, there was an association between keratoconus and atopy as well as eye rubbing and family history of keratoconus.²⁵

VI. CONCLUSION

The accurate cause of keratoconus remnants uncertain. A mixture of environmental and genetic factors plays an important role in its occurrence among a lot of individuals. Family history emerges as the most important factor, with individuals having a relative diagnosed with keratoconus being at a higher risk of developing the condition also history of allergy play a role in developing the keratoconus.

RECOMMENDATION

1. Children that rubbing the eyes should be discouraged and managed early.
2. Screening of persons with positive family history to identify early.
3. Discourage consanguineous marriage especially in affected families

DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper. No funds, grants, or other support were received.

ACKNOWLEDGMENT

Authors express their sincere thanks to all the colleagues in *Benghazi teaching eye hospital*, Libya for all support.

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