

PEDIATRIC KERATOCONUS: CROSS SECTIONAL STUDY

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Introduction

The word keratoconus (KC) originates from the Greek words kerato (cornea) and konos (cone). Keratoconus is an ectatic corneal disease that causes increasing stromal thinning, irregular astigmatism, and progressive diminution of vision.

It begins during puberty with 75% of cases diagnosed before the age of 25 years and either rapidly progresses to an advanced stage or in case of delayed onset and slow advancement, stops. Keratoconus prevalence varies by population, with an estimated disease prevalence of 1/2000 people. Since 2009, Videokeratography has been utilized in recent research in the Middle East and Asia to determine the prevalence of keratoconus, which ranges from 0.9 to 3.3 percent.

To halt the worsening, early diagnosis, detection of progression, and prompt intervention with collagen CXL are all essential.

Aim of the work

The aim of this study was to study the main characteristics of pediatric keratoconus patients.

Patients and Methods

PATIENTS: The study was an observational non-randomized non-interventional study which included 50 patients diagnosed with keratoconus, 18 years of age or less.

METHODS: Demographic data: Presenting children were subjected to data collection about demographic characteristics including; child age at time of diagnosis, gender, family history, medical & surgical history.

Clinical ocular examination: All cases received a standardized ophthalmologic examination comprising visual acuity and slit lamp biomicroscopy to detect any ocular conditions as VKC that may be related to KC.

Retinoscopy & indirect ophthalmoscope were used to detect clinical signs of keratoconus especially in mild cases with no significant clinical symptoms.

The objective monocular refractive condition was measured before and after the treatment technique, using Auto-Refractometer, manifest refraction was detected {uncorrected visual acuity (UCVA), best-corrected visual acuity (BCVA)}, and the final refractive measures were represented by dioptric value.

Systemic examination: Also systemic examination was done to determine syndromes or systemic diseases that may be related to KC as Down syndrome, asthma or atopy.

Investigations: Pentacam was the main tool for diagnosis & follow up of all cases either before or after any treatment procedure {Allegro Oculyzer II (WaveLight GmbH, Erlangen, Germany)}.

Results

Demographics:

- Age & Gender:

The mean age of the patients was 14.64 ± 3.28 years (range: 6–18 years).

6 cases (12%) were between 6 to 10 years while 19 cases (38%) were between 11 to 15 years & 25 cases (50%) were between 16 to 18 years.

The disease occurred equally in males & females. 25 (50%) of the patients were males and 25 (50%) of the patients were females.

Ninety six percent of cases (48 cases) were bilateral while only 4% was unilateral (2 cases) at time of diagnosis.

- Family members affected :

At time of diagnosis 74% (37 cases) of the studied cases have no family members affected, 20% (10 cases) with 1 family member affected and 6.0% (3 cases) with 2 family members affected.

- VKC and systemic findings:

Vernal keratoconjunctivitis (VKC) was recorded in 30 cases, which represent (60%) of total cases. While systemic diseases were recorded in only 10 cases (20%); 3 cases were associated with albinism, 2 cases with Down syndrome, 1 case with asthma, 1 case with celiac disease, 1 case with asthma and atopic dermatitis, 1 case with asthma and allergic rhinitis and 1 case with asthma and albinism. **Table (2)**

Table 1: Distribution of the participants in the study by demographic data (n = 50).

	No.	%
Gender		
Male	25	50.0
Female	25	50.0
Laterality		
Unilateral	2	4.0
Bilateral	48	96.0
Age at time of diagnosis		
6 – 10 years	6	12
11 – 15 years	19	38
16 – 18 years	25	50
Range	6.0 – 18.0	
Mean \pm SD.	14.64 \pm 3.28	
Median (IQR)	15.50 (13.0 – 17.0)	
Family members affected		
0	37	74.0
1	10	20.0
2	3	6.0

Table 2: Distribution of the participants in the study by VKC and systemic findings

	No.	%
VKC		
No	20	40.0
Yes	30	60.0
Systemic findings		
No	40	80.0
Yes	10	20.0
Asthma	1	2.0
Albinism	3	6.0
Down syndrome	2	4.0
Celiac disease	1	2.0
Asthma + atopic dermatitis	1	2.0
Asthma + allergic rhinitis	1	2.0
Asthma + albinism	1	2.0

- Symptoms & complaint :

The clinical presentation of studied cases is displayed in Figure (1). Decreased visual acuity was the most common complaint of the studied cases (76% = 38 cases) followed by frequent change glasses (30% = 15 cases). 22% of cases (11 cases) complained with itching, 18% (9 cases) with headache, 12% (6 cases) corneal white lesion (scar).

- Staging at time of diagnosis :

There were 35 eyes (35%) categorized into stage I; 33 eyes (33%) categorized into stage II; 28 eyes (28%) categorized into stage IV.

Distribution of the studied cases according to Symptoms / complaint

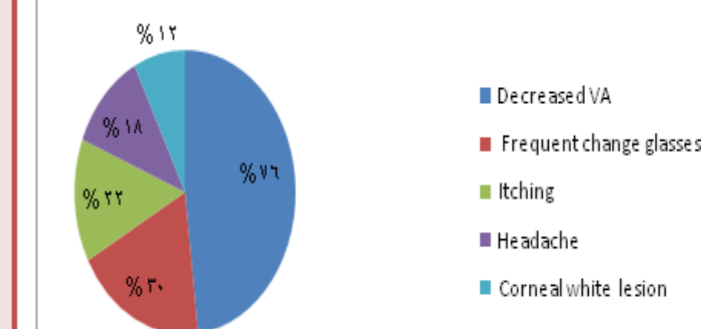


Figure 1: Distribution of the participants in the study by Symptoms / complaint.

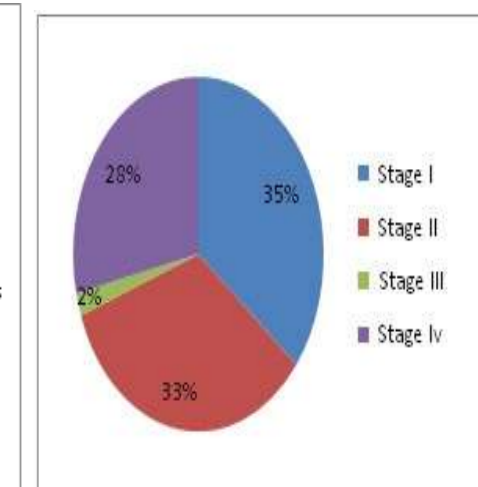


Figure 2: Distribution of the participants in the study by staging at time of diagnosis.

Conclusion

- We can conclude that, males and females are equally affected with KP, also right and left eyes are nearly equally affected and most of the cases are bilaterally affected
- The rate of family history (26%) was significant enough to be counted as a risk factor for KC.
- A direct link between pediatric KC and VKC was identified in more than half of the cases.