INCIDENCE OF DRY EYE DISEASE IN KERATOCONUS PATIENTS

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INTRODUCTION

Keratoconus (KC) refers to a non-inflammatory disease affecting the cornea that is characterized by severe conical ectasia in addition to protrusion of the thinned stromal part. Increased degree of myopia and irregular astigmatism resulting in slightly or severely impaired vision. Advanced KC can be easily demonstrated via the distinct clinical criteria including scissoring reflex by retinoscopy, thin corneal Fleischer's ring, Vogt's striae, Munson's sign, Rizzutti's sign, as well as easily visible corneal nerves & the keratometry readings. Recently, computerized corneal topography has been considered one of the most sensitive diagnostic methods that can determine early KC prior to the appearance of classic manifestations. Also, OCT is used now to assess the anterior ocular structures like the cornea, limbus, and tear film. The association between tear function changes in keratoconus is still controversial, the possibility of abnormal tear circulation due to altered surface topography of the cornea in keratoconus patients.

AIM OF THE WORK

The aim of the study was to compare dry eye symptoms and signs in KC patients and get comparison about dry eye disease in KC group and healthy group.

PATIENTS AND METHODS

This is case control study enrolled 40 patients(80 eyes) age from(15-40y) diagnosed with keratoconus and 40 control (80 eyes) keratoconus free and recruited in an ophthalmologic center (ELNOUR center) from the period (may 2021 to august 2022) All subjects underwent complete eye examination, all keratoconus patients and control get measurement of DED by shrimer test and OSDI and TBUT and tear film analysis(NIKBUT) by PS-39(AS-OCT) and the results will be recorded and tabulated.

Demographic Data	Cases (n = 40) (80 eyes)		Control (n = 40) (80 eyes)	
	No.	%	No.	%
Sex				
Male	21	52.5	25	62.5
Female	19	47.5	15	37.5

RESULTS

Results from this study showed insignificant difference in Schirmer test values between keratoconus patients and controls. The results with TBUT and tear film analysis however demonstrated different pattern between the two study groups. In our study Mean TBUT of keratoconus patient was 8.35 ± 2.42 seconds and for control subjects was 11.15 ± 2.39 seconds. The tear film analysis results (NIkBUT) the mean of KC patients show 9.13 ± 3.51 seconds Compared to control 11.28 ± 3.11 seconds Almost 67% of the keratoconus patients have poor TBUT and tear film analysis (NIKBUT) values. It was hypothesized that the decreased in TBUT and tear film analysis scores was probably due to steepening of the cornea that alters the quality and / or quantity of the mucin secretion by the diseased corneal epithelium. OSDI also show abnormal score in KC group compared to normal group.

Table :

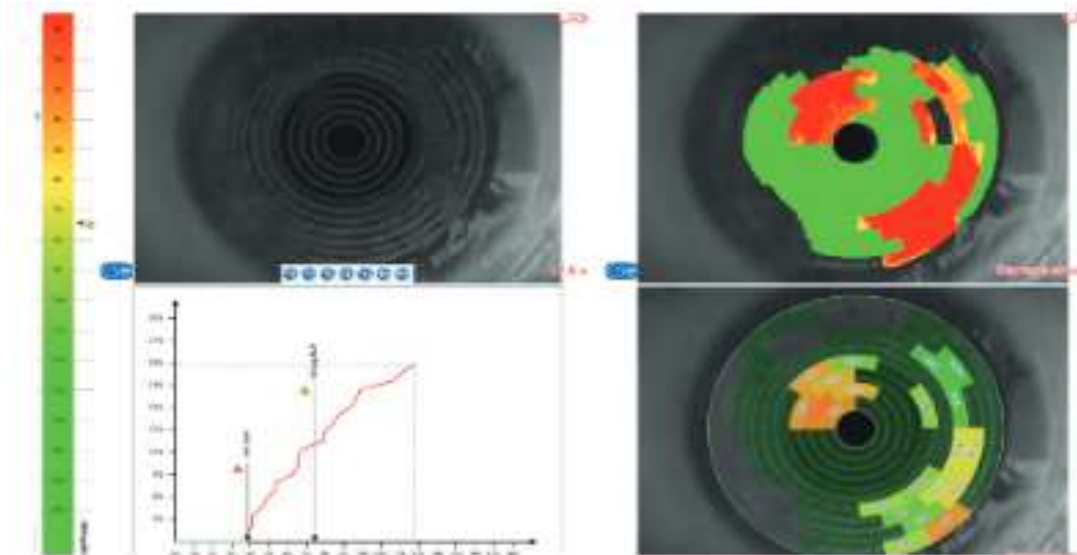| Test	Shrimer	TBUT	NIKBUT (tear film analysis	OSDI (score)
KC (mean)	13.15 ± 4.65	8.45 ± 2.42 s	9.13 ± 3.51s	39.25 ± 17.99
Control (mean)	15.94 ± 3.96	11.15 ± 2.39s	11.28 ± 3.11s	19.34 ± 9.91

Figure: Tear film analysis (NIKBUT)

CONCLUSION

In this study the tears quality in keratoconus patients are affected mainly in TBUT and NIBUT but were normal in Schirmer test. Such condition need to be considered during management of keratoconus patients especially when treating them with contact lenses. The association between alterations in tear function changes in keratoconus and the possibility of abnormal tear circulation due to altered surface topography of the cornea in keratoconus patients, dry eye disease is considered one of the most combined diseases of keratoconus disease.