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Comparison of the corneal densitometry using Pentacam in individuals with healthy, subclinical and early keratoconus eyes

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Keratoconus is a type of ectatic corneal disorder that affects the central and paracentral region of the cornea and as a result, causes visual impairment due to astigmatism. This non-inflammatory disease progressively affects eyes bilaterally. Investigating the corneal layers is an essential factor in the diagnosis of keratoconus. Corneal topography is a non-invasive method for evaluating the corneal morphology, which can reveal the malformations of the corneal surface before the demonstration of clinical symptoms of ectatic corneal disorders. This study aimed to compare the corneal densitometry using Pentacam in individuals with healthy, subclinical and early keratoconus eyes.

Materials and methods: The epidemiologic survey was conducted on patients who were refractive surgery candidates. Also, we obtained corneal, stromal, epithelial thickness mapping using SPECTRALIS OCT. According to the Amsler-Krumeich classification, patients were classified as normal, subclinical and early stage of keratoconus.

Results: In the early keratoconus group, the anterior layer at the 0-2 mm and 2-6 mm zones had higher values compared to the subclinical keratoconus and control groups ($P < 0.001$ and $P < 0.001$, respectively). At the 2-6 mm zone, the early keratoconus group had higher values compared to the control group ($P < 0.001$). In the central layer at the 0-2 mm and 2-6 mm zones, the early keratoconus group revealed higher densitometry values compared to the control group ($P < 0.001$ and $P = 0.01$, respectively). In the total corneal thickness at the 0-2 mm zone, densitometry values in the early keratoconus group was more than control group ($P = 0.01$).

Conclusion: Densitometry with Pentacam could be useful in discriminating early keratoconus from subclinical keratoconus and normal individuals.

Biography

Mohammad Sadegh Mirdehghan has his expertise in ocular surface, corneal disorders and electrophysiology research. He was in cooperation with biophysics department (IAUTM, Iran) from 2005 to 2010 and during that time he attended several international conferences to present their researches specially in the field of electrophysiology study. At the Johann Wolfgang Goethe University of Frankfurt he underwent one year fellowship research in interventional radiology during 2011-2012. He joined the ophthalmology department of Vydehi hospital, RGUHS, Bangalore, India on 2012 to 2016 and during that time he has done several researches and publications with his colleagues, specially in ocular surface disorder. From 2016 he is doing completion course and research at AJUMS, Iran, his recent focus of research is on corneal disorders and methods to improve the diagnosis and management of the same. Eventually, his goal is to improve the quality and quantity of researches from ophthalmologic departments which will lead to helping patients have better quality of vision/quality of life.

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