Are we treating the effect and neglecting the cause of keratoconus?

Dear Editor:

Are we really treating keratoconus correctly? What are the implications of the new concepts about our understanding of the disease?

Keratoconus is the most common primary ectasia usually occurring in the second decade of life. Early forms may go unnoticed but progressive forms can cause decrease in visual acuity not correctable with glasses.

It is suggested that Bowman’s membrane might be the strongest biomechanical element of the human cornea followed by the anterior third of the corneal stroma.[1] New reports of Bowman’s layer transplantation have shown evidence of reducing progression in cases with advanced keratoconus and have also shown to decrease keratometry values of bent cornea due to high tensile strength of the transplanted layer.[2,3]

I wonder if keratoconus is a pathology of Bowman’s layer and bending of corneal stroma is secondary to this pathology. Are we treating the effect of the disease and ignoring the cause? Corneal collagen cross-linkage with riboflavin increases cross-linkage in stroma and prevents it from further bending. Should our treatment be focused on corneal stroma or Bowman’s layer?

This challenges even the diagnostic tools, which focus only on corneal topography. There are evidences of breaks in Bowman’s layer in cases of keratoconus.[4] This highlights the need to shift our diagnostic strategy looking at other layers of cornea, rather than just looking at the final topographic changes.[5]

These made me think of another potential usefulness of this concept. Although most important factor deciding post-refractive surgery ectasia is residual stromal bed thickness, minimal alteration of Bowman’s membrane in procedure such as SMILE can be an added advantage of this new emerging procedure.

I wanted to share my thoughts as I am still trying to figure out where exactly we stand in our understanding of “keratoconus.”

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Conflicts of interest
There are no conflicts of interest.

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References
1. Marshall J. The 2014 Bowman Lecture-Bowman’s and Bruch’s: A tale of two membranes during the laser revolution. Eye (Lond) 2015;29:46-64.
2. VanDijk K, Liarakos VS, Parker J, Ham L, Lie JT, Groeneveld-van Beek EA, et al. Bowman layer transplantation to reduce and stabilize progressive, advanced keratoconus. Ophthalmology 2015;122:909-17.
3. Parker JS, Birbal RS, van Dijk K, Tong M, Ambati B, Baydoun L, et al. Bowman layer transplantation for advanced keratoconus. In: Adel Barbara, editor. Controversies in the Management of Keratoconus. Cham: Springer; 2019. p. 317-25.
4. Chi HH, Katzin HM, Teng CC. Histopathology of keratoconus. Am J Ophthalmol 1956;42:847-60.
5. Pahuja N, Shroff R, Pahanpate P, Francis M, Veeboy L, Shetty R, et al. Application of high resolution OCT to evaluate irregularity of Bowman’s layer in asymmetric keratoconus. J Biophotonics 2017;10:701-7.

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### Table 1: Demographic parameters of the patients (n=120)

| Occupation     | Agriculture | Rural |
|----------------|-------------|-------|
| Number (% of cases) | 34 (28%) | 64 (53%) |

 Demographic parameters of the patients enrolled in the study and predisposing factors associated are shown in Table 1. The age, sex, occupation, and various predisposing factors for the suspected cases of MK were recorded for epidemiological risk factors. Hence, this study was undertaken to determine the etiology of MK at a tertiary health care institute and to explore the identical terms.

Microbial keratitis (MK) is known to be one of the most significant causes of monocular blindness in developing countries. Therefore, the knowledge of etiology in a specific region is crucial for the optimal management of these infections. Hence, this study was undertaken to determine the etiology of MK at a tertiary health care institute and to explore the identical terms.

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