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Pentacam and vector analysis to evaluate longitudinal corneal tomographical changes in non-progressive keratoconus eyes

Dear Editor,

We were really interested in the remarkable paper by Kosekahya et al. dealing with corneal tomographical changes in patients with non-progressive keratoconus [1].

We congratulate the authors for their original article, but we would like to comment some aspects of their study.

The authors used Pentacam HR to evaluate corneal thickness. In our opinion, this was a good choice since the ultrasound pachymetry, currently considered the gold standard for these measurements, has indeed several pitfalls: the exact axial placement of the probe at the corneal center and the reproducibility of measurements are strongly associated with the examiner's expertise [2,3] and can be influenced by the anaesthetic drops [4–7].

Moreover, ultrasound pachymetric measurements are related to the different amount of corneal water, as in case of corneal edema or corneal stiffness. This happens because ultrasound measurements are related to the sound speed, that is lower in case of edematous tissues, making such measurements even larger, and higher in case of stiff tissues, making them even smaller [8–10].

Furthermore, Pentacam HR is able to measure both the thinnest corneal thickness point and the corneal volume which are, in our opinion, much more sensitive in evaluating keratoconus progression. In fact, further ectasias and thinning could involve corneal regions different from the thinnest one, and they could be overlooked if the thinnest corneal thickness point alone is evaluated [11–13].

Lastly, according to the published data, it seems that astigmatic correction has been assessed without taking into account the vector analysis, which in these cases cannot be avoided, as eventual axis changes should be considered to evaluate the changes in the astigmatic power. Indeed, a shift of the astigmatic axis could affect both astigmatic and spherical changes, and the only way to detect such influence is the vector analysis [14,15].

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Conflict of interest

The authors report no conflicts of interest and have no proprietary interest in any of the materials mentioned in this article.

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