Title: Relationship between corneal biomechanical properties and structural biomarkers in patients with normal-tension glaucoma: a retrospective study

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Reviewer: Giovanni Milano

Reviewer's report:

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BOPH-D-17-00102

The authors present a study pointing out correlation between corneal biomechanical properties, with particular emphasis to corneal hysteresis (CH) and corneal resistant factor (CRF), and structural characteristics of the optic nerve head studied with the help of the HRT-III in a group of newly diagnosed normal tension glaucoma (NTG), before treatment, as compared to an age-matched normal control group. Lower CH seems to be related to smaller rim, larger c/d ratio, thinner RNFL in newly diagnosed NTG, independently of disc size, IOP, age, central corneal thickness (CCT). CCT is a commonly accepted risk factor for development and progression of POAG but in literature we can find evidence that also CH could provide precious information about the complex pathophysiological events leading to a glaucoma neuropathy and about the modifications induced by hypotensive therapy in the eye-bulb. Even though CH is not recognized as a well defined risk factor it is accepted from literature that the biomechanical, dynamic corneal behavior called CH is strongly associated to glaucoma development and progression and to efficacy of treatment.

In literature we do not have many papers related to CH in NTG and those papers do not give an homogeneous evaluation of the CH in that type of disease.

In the present study CH and CRF measured with the help of the ocular response analyzer (ORA) are significantly reduced in NTG as compared to normal subjects and also significantly reduced in advanced as compared to early NTGs. CH and CRF are also related to morphometric parameters of glaucomatous damage provided by HRT. These parameters are within normal limits in the normal control group.
The limitations of the study are clearly exposed. The fact that the study population is of Asian origin can be considered a further element of interest because of the well-known difference in biomechanical corneal characteristic by ethnicity.

In conclusion: as far as I concerned the study can offer more useful information about biomechanical characteristic of the cornea in NTG in an Asian population

Please note:

abstract, line 26: the word worse is written twice

pag. 5, line 9: the factors adjusted for……

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

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