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Service (sector) Glaucoma N° CEP 0605/06

**The influence of corneal properties on intraocular pressure**

**measurements** A.C.V. Oshima, L.M. Doi, S.K. Hossaka, E.T. Sato, L. Pereira, A. Paranhos Jr., L.A.S. Melo Jr.

**Purpose:** To evaluate the influence of corneal curvature, central corneal thickness, and corneal hysteresis on intraocular pressure (IOP) measurements. **Methods:** A cross-sectional study including 179 eyes of 93 healthy volunteers was performed. The mean and astigmatic keratometry readings based on the corneal topography, central corneal thickness based on ultrasonic pachymetry, corneal hysteresis obtained using the ocular response analyzer (ORA), and IOP measurements obtained by Goldmann applanation tonometry (GAT), dynamic contour tonometry (DCT), and ORA were recorded. For all IOP measurements, which were taken in a random order among the tonometers, the median of three readings for each tonometer made by the same examiner was used for analysis. **Results:** The mean keratometric reading was correlated with GAT ( $P=0.001$ ), DCT ( $P<0.001$ ), and ORA Goldmann-correlated IOP ( $P=0.001$ ). On the other hand, astigmatic keratometric reading was not correlated with any tonometry. The central corneal thickness was positively correlated with GAT ( $P=0.001$ ), ORA Goldmann-correlated IOP ( $P<0.001$ ), and ORA corneal-compensated IOP ( $P=0.03$ ), but not with DCT ( $P=0.40$ ). The corneal hysteresis was correlated only with ORA corneal-compensated IOP ( $P<0.001$ ).

**Conclusions:** The mean keratometry and central corneal thickness are the main corneal factors related to IOP readings. These factors should be taken into consideration if one needs a better estimate of the actual IOP