

Intraocular Pressure and Its Relation to Ocular Geometry: Results From the Gutenberg Health Study

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PURPOSE: The purpose of this study was to investigate the association between intraocular pressure (IOP) and ocular geometry.

METHODS: The Gutenberg Health Study is a population-based cohort study in Mainz, Germany. Study participants underwent a comprehensive ophthalmologic examination including noncontact tonometry, objective refraction, optical biometry, and Scheimpflug imaging of the anterior segment at the first 5-year follow-up examination (in 2012-2017) . Multivariable linear regression analysis was carried out to determine associations of IOP and geometric parameter of the human phakic eye, namely central corneal thickness (CCT) , corneal curvature, anterior chamber depth (ACD) , lens thickness, and axial length. In addition, the relationship of IOP and the anterior chamber angle (ACA) width was analyzed.

RESULTS: There were 6640 participants with phakia (age 57.3 ± 10.2 years, 49.1% women) that were included in this cross-sectional analysis. Mean IOP was 14.8 ± 2.9 mm Hg in the right eyes and 14.9 ± 2.9 mm Hg in the left eyes. IOP increased with higher CCT, greater posterior segment length, higher age (all P < 0.05).
CONCLUSIONS: IOP values are related to ocular geometry, as shown in this population-based study on Caucasian subjects. Thus, knowledge of the architecture of the eye is an important factor when measuring IOP. Longitudinal evaluation will analyze whether some of these parameters are also risk factors for the development of glaucoma.

