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Racial differences in rate of change of spectral domain OCT-measured minimum rim width and retinal nerve fiber layer thickness

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Purpose: To compare race-related differences in estimated rate of change of Bruch's membrane opening-minimum rim width (BMO-MRW) and circumpapillary retinal nerve fiber layer thickness (RNFLT) in healthy, glaucoma suspect and glaucoma eyes of individuals of European (ED) and African descent (AD).

Design: Prospective cohort study.

Methods: This study investigated rate of change of BMO-MRW and RNFLT in 124 healthy, 227 glaucoma suspect and 177 glaucoma eyes followed for approximately 3 years and tested with optical coherence tomography every 6 months. Suspect eyes had a history of untreated IOP \geq 22 mmHg or suspicion of glaucoma by optic disc photograph assessment without repeatable abnormal standard automated perimetry (SAP) results. Glaucoma eyes had repeatable abnormal SAP results (GHT ONL or PSD \leq 5%). Mixed effects models were used to estimate the rate of change after controlling for age, mean follow-up IOP, central corneal thickness, axial length, and BMO area.

Results: A race-related difference in rate of change of global BMO-MRW but not average RNFLT in suspect eyes was observed. Rate of change of BMO-MRW was $-1.82 \mu\text{m}/\text{year}$ and $-2.20 \mu\text{m}/\text{year}$ in ED and AD suspect eyes, respectively ($p=0.03$). Rate of change of RNFLT was $-0.64 \mu\text{m}/\text{year}$ and $-0.75 \mu\text{m}/\text{year}$ in ED and AD suspect eyes, respectively ($p=0.75$). No race-related differences in change rate were found in healthy or glaucoma eyes.

Conclusion: Race is an important consideration when assessing structural change, particularly minimum rim width, in glaucoma suspect eyes. Differences in rate of structural change may help explain racial disparities in glaucoma susceptibility.

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