

Rate and Pattern of Rim Area Loss in Healthy and Progressing Glaucoma Eyes

Hammel N (1) , Belghith A (1) , Bowd C (1) , Medeiros FA (1) , Sharpsten L (1) , Mendoza N (1) , Tatham AJ (1) , Khachatryan N (1) , Liebmann JM (2) , Girkin CA (3) , Weinreb RN (1) , Zangwill LM (4)

1 Hamilton Glaucoma Center, Shiley Eye Institute, and Department of Ophthalmology, University of California, San Diego, La Jolla, California.

2 Harkness Eye Institute, Columbia University Medical Center, New York, New York.

3 School of Medicine, University of Alabama, Birmingham, Alabama.

4 Hamilton Glaucoma Center, Shiley Eye Institute, and Department of Ophthalmology, University of California, San Diego, La Jolla, California. Electronic address: lzangwill@ucsd.edu.

PURPOSE: To characterize the rate and pattern of age-related and glaucomatous neuroretinal rim area changes in subjects of African and European descent.

DESIGN: Prospective longitudinal study.

PARTICIPANTS: Two hundred ninety-six eyes of 157 healthy subjects (88 patients of African descent and 69 of European descent) and 73 progressing glaucoma eyes of 67 subjects (24 patients of African descent and 43 of European descent) from the Diagnostic Innovations in Glaucoma Study and the African Descent and Glaucoma Evaluation Study were included.

METHODS: Global and sectoral rim areas were measured using confocal laser scanning ophthalmoscopy. Masked stereophotograph review determined progression of glaucomatous optic disc damage. The rates of absolute rim area loss and percentage rim area loss in healthy and progressing glaucomatous eyes were compared using multivariate, nested, mixed-effects models.

MAIN OUTCOME MEASURES: Rate of rim area loss over time.

RESULTS: The median follow-up time was 5.0 years (interquartile range, 2.0-7.4 years) for healthy eyes and 8.3 years (interquartile range, 7.5-9.9 years) for progressing glaucoma eyes. The mean rate of global rim area loss was significantly faster in progressing glaucomatous eyes compared with healthy eyes for both rim area loss (-10.2×10^{-3} vs. -2.8×10^{-3} mm²/year, respectively; $P < 0.001$). **CONCLUSIONS:** Compared with healthy eyes, the mean rate of global rim area loss was 3.7 times faster and the mean rate of global percentage rim area loss was 5.4 times faster in progressing glaucoma eyes. A reference database of healthy eyes can be used to help clinicians distinguish age-related rim area loss from rim area loss resulting from glaucoma.

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