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BASELINE OCULAR FACTORS THAT PREDICT THE DEVELOPMENT OF VISUAL FIELD DAMAGE IN GLAUCOMA SUSPECT EYES

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Purpose: To identify baseline ocular factors, including Heidelberg Retina Tomograph topographic optic disc parameters, visual field indices, intraocular pressure, and qualitative assessment of stereophotographs that predict the development of visual field damage in glaucoma suspect eyes.

Design: Prospective observational case series

Participants: 228 glaucoma suspect eyes over 40 years old from the longitudinal UCSD Diagnostic Innovations in Glaucoma Study with normal standard automated perimetry (SAP) at baseline

Main Outcome Measure: Development of repeatable visual field damage (GHT outside normal limits or pattern standard deviation (PSD) < 5%)

Methods/Testing: All eyes had at least 1 HRT and at least 2 SAP tests. Mean follow-up time was 4.1 + 2.6 years. Proportional-hazards univariate and multivariate models were used to estimate the association between development of SAP damage and baseline values of 6 individual HRT parameters [disc area, rim-to-disc ratio, cup volume, rim volume, mean cup depth, cup shape, and RNFL thickness], baseline age, IOP, SAP mean deviation (MD), and PSD, stereophotograph assessment as glaucomatous or not, and stereophotograph based vertical and horizontal cup disc ratio.

Results: 47 (20%) of eyes developed repeatable visual field damage. With univariate analysis, all investigated measurements except baseline IOP were significant predictors of development of visual field damage. In stepwise multivariate models, baseline factors that predicted the development of visual field damage included older age, larger cup volume, and worse SAP MD. Similar results were found when stereophotograph assessment replaced cup volume in the model.

Conclusion: Baseline HRT parameters and stereophotograph based assessment were predictive of development of repeatable visual field damage in glaucoma suspect eyes.

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