

# Longitudinal Macular Ganglion Cell-Inner Plexiform Layer Measurements to Detect Glaucoma Progression in High Myopia

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**PURPOSE:** To investigate whether progressive macular ganglion cell-inner plexiform layer (GCIPL) and peripapillary retinal nerve fiber layer (RNFL) thinning are predictive for detecting visual field (VF) progression in eyes with high myopia.

**DESIGN:** Cohort study.

**METHODS:** A total of 104 primary open-angle glaucoma (POAG) eyes with high myopia and 104 age- and VF severity-matched POAG eyes without high myopia (mean follow-up, 5.4 years) were included. High myopia was defined as a spherical equivalent  $\geq 26.5$  mm. Progressive GCIPL, RNFL, and VF deterioration were determined by Guided Progression Analysis (GPA) in optical coherence tomography and standard automated perimetry. The risk of VF progression was evaluated using Cox proportional hazard models.

**RESULTS:** Highly myopic eyes with progressive GCIPL thinning had a significantly higher risk of developing VF progression after adjusting for the baseline intraocular pressure (HR, 4.00;  $P = 0.001$ ) or peak intraocular pressure (HR, 3.11;  $P = 0.011$ ) in the multivariable Cox proportional hazard model, whereas highly myopic eyes with progressive RNFL thinning were not significantly associated with VF progression. In eyes without high myopia, both progressive GCIPL (HRs, 4.67 or 3.62;  $P = 0.008$  or 0.037, respectively) and RNFL (HRs, 6.60 or 3.97;  $P = 0.001$  or 0.016, respectively) thinning were associated with a significantly higher risk of developing VF progression after adjusting for the baseline or peak intraocular pressure.

**CONCLUSIONS:** Monitoring macular GCIPL thickness was effective for predicting glaucoma progression regardless of the presence of high myopia.

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