Association between Myopia and Glaucoma in the United States Population

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PURPOSE: To investigate the association between myopia and the prevalence of glaucoma.

METHODS: This cross-sectional study included 5277 participants from the 2005-2008 National Health and Nutrition Examination Survey, ≥40 years old, without history of cataract or refractive surgery, who underwent auto-refraction measurement. The predictor was refractive status; emmetropia (-0.99 to +0.99D), mild myopia (-1.00 to -2.99D), moderate myopia (-3.00 to -5.99D), severe myopia (>6.00D), and hyperopia (>1.00D). The outcomes were self-reported glaucoma, vertical cup-to-disc ratio and visual field defects as found on FDT testing.

RESULTS: Odds of self-reported glaucoma were not significantly increased in mild (OR 0.90, CI 0.56-1.45), moderate (OR 1.40, CI 0.62-3.16), or severe (OR 0.26, CI 0.08-0.80) myopes compared to emmetropes. Odds of vertical cup-to-disc ratio were not significantly increased in mild (OR 0.84, CI 0.31-2.25), moderate (OR 0.37, CI 0.04-3.57), or severe (OR 0.85, CI 0.09-8.42) myopes compared to emmetropes. Odds of any visual field defects were significantly increased in mild (OR 2.02, CI 1.28-3.19), moderate (OR 3.09, CI 1.42-6.72), and severe (OR 14.43, CI 5.13-40.61) myopes compared to emmetropes. The χ² test indicated a significant difference (p=0.001) in the distribution of subjects with each category of visual field status across subjects with each refractive status; the proportion of subjects with worse visual field defects increased with worsening myopia severity.

CONCLUSIONS: The association between myopia and visual field defects may represent an increased risk of glaucoma among myopes, and the lack of association with self-reported glaucoma may suggest a need for greater glaucoma surveillance in this population.


PMID: 23299483