

# The Relationship Between Statin Use and Open-Angle Glaucoma

Stein JD, Newman-Casey PA, Talwar N, Nan B, Richards JE, Musch DC.

Department of Ophthalmology and Visual Sciences, University of Michigan Medical School, Ann Arbor, Michigan.

**PURPOSE:** To determine whether 3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitors (statins) affect the risk of developing open-angle glaucoma (OAG) in persons with hyperlipidemia.

**DESIGN:** Retrospective, longitudinal cohort analysis.

**PARTICIPANTS:** Individuals aged  $\geq 60$  years with hyperlipidemia enrolled in a national United States managed care network between 2001 and 2009.

**METHODS:** Multivariable Cox regression analyses were performed to assess the relationship between statin use and the development of OAG (from no prior OAG diagnosis), progression from a prior diagnosis of glaucoma suspect to a diagnosis of OAG, and need for medical or operative interventions for OAG. Regression models were adjusted for sociodemographic factors and medical and ocular comorbidities.

**MAIN OUTCOME MEASURES:** Hazard ratios (HRs) with 95% confidence intervals (CIs).

**RESULTS:** Of the 524 109 individuals with hyperlipidemia, 316 182 (60%) had  $\geq 1$  outpatient prescription for statins. The hazard of developing OAG decreased 0.3% (adjusted HR, 0.997; 95% CI 0.994-0.999) for every additional month of statin consumption. Individuals with hyperlipidemia who took statins continuously for 2 years had an 8% (adjusted HR, 0.922; 95% CI, 0.870-0.976) decreased OAG risk relative to those who received no statin therapy. The hazard of progressing from a diagnosis of glaucoma suspect to OAG decreased 0.4% (adjusted HR, 0.996; 95% CI, 0.993-0.999) for every additional month of statin exposure. Individuals who took statins continuously for 2 years had a 9% (adjusted HR, 0.907; 95% CI, 0.846-0.973) decreased risk of progressing from glaucoma suspect to OAG relative to those who received no statin therapy. The hazard of requiring medical treatment for OAG decreased 0.4% (adjusted HR, 0.996; 95% CI, 0.993-0.998) for every additional month of statin exposure. No differences in need for glaucoma surgery were noted among those with OAG who were and were not taking statins (adjusted HR, 1.002; 95% CI, 0.994-1.010).

**CONCLUSIONS:** Statin use was associated with a significant reduction in the risk of OAG among persons with hyperlipidemia. Given the mounting evidence of statin protection against OAG including both basic science and observational clinical studies, an interventional prospective study might provide additional insights into the role of statins in the prevention of early OAG.

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