

THE ROLE OF STATINS IN GLAUCOMA TREATMENT



Evidence is mounting that these agents may be protective.

BY AHMAD A. AREF, MD, MBA

THE INFLUENCE OF ORAL STATIN MEDICATIONS ON PROGRESSION OF GLAUCOMATOUS VISUAL FIELD LOSS: A PROPENSITY SCORE ANALYSIS

Whigham B, Oddone EZ, Woolson S, et al¹

ABSTRACT SUMMARY

This retrospective cohort study investigated the possible impact of oral statin therapy on glaucomatous visual field progression in US veterans. As Whigham and colleagues point out in the study, prior research has suggested a protective role for statin therapy with regard to retinal ganglion cell survival in animals. Human clinical studies have also suggested a beneficial impact on incident glaucoma and glaucomatous progression.

The matched cohort study population for this investigation consisted of 196 statin users and 196 nonusers receiving glaucoma care at the Durham Veterans Administration Medical Center. Participants in this study were matched using a propensity score model based on demographics, baseline glaucoma severity, and systemic medical conditions. A diagnosis of glaucoma was based on billing record diagnosis in individuals receiving glaucoma medical treatment. Patients who had undergone incisional glaucoma surgery or a cyclodestructive procedure were excluded.

STUDY IN BRIEF

- In a retrospective cohort study of US veterans, individuals treated with oral statins exhibited a decreased rate of glaucomatous visual field progression compared to those not treated with these agents.

WHY IT MATTERS

- The aim of current glaucoma therapy is to lower IOP. An agent with the potential for neuroprotection would directly target the optic nerve and complement existing therapies.

Documentation of a filled prescription for a statin before the patient's last visual field test led to inclusion in the statin group.

All patients had undergone at least two reliable visual field tests separated by more than 3 months. A single masked investigator determined visual field progression based on predefined and accepted criteria. The researchers used McNemar's statistical test to compare rates of progression in statin users and nonusers.

The study included 847 patients, 74% of whom used statins. The mean length of observation was $1,324 \pm 464$ days. The number of visual field tests conducted during the observation period was similar for statin users and nonusers. Propensity-based matching led to a final sample of 196 matched pairs.

Rates of glaucomatous progression were lower for statin users than nonusers in both the propensity score-matched analysis (34.9% vs 56.6%; $P < .001$) and the full sample (32.9% vs 54.4%; $P < .001$).

DISCUSSION

Why might oral statin therapy decrease the risk of glaucomatous progression?

The potential mechanism of action for the beneficial effect of statin therapy on glaucomatous progression has not been elucidated and remains unknown. Earlier studies have suggested a neuroprotective role. Specific potential neuroprotective mechanisms include suppression of neuroinflammation,² suppression of ischemia-induced cortical activity changes,³ and increases in retinal blood flow.⁴

Can the beneficial effects of statin therapy be generalized across patient populations?

The current study investigated a US veteran population composed mostly of white and black men. An earlier study found similarly beneficial results in a Chinese population.⁵ Thus far, the beneficial effects of statin therapy do not seem to be limited to a particular race, ethnic group, or sex.

Should oral statin therapy be recommended to patients at risk of glaucomatous progression?

Growing evidence supports a possible role for statin therapy in glaucoma treatment. A randomized controlled clinical trial will ultimately be required to make a conclusive statement.

ASSOCIATION OF STATIN USE AND HIGH SERUM CHOLESTEROL LEVELS WITH RISK OF PRIMARY OPEN-ANGLE GLAUCOMA

Kang JH, Boumenna T, Stein JD, et al⁶

ABSTRACT SUMMARY

Investigators conducted a population-based cohort study to assess associations of high serum cholesterol levels and long-term statin therapy with the risk of developing primary open-angle glaucoma (POAG).

The study cohorts were derived from the Nurses' Health Study, the Nurses' Health Study 2, and the Health Professionals Follow-up Study. Self-reported information on cholesterol status, serum cholesterol levels, and duration of statin use was collected. The investigators reviewed medical records to confirm a diagnosis of incident POAG.

Of the 136,782 individuals without glaucoma at baseline and observed for 15 or more years, 886 developed POAG. A multivariate analysis of pooled data demonstrated an association between any history of elevated cholesterol and a risk of developing POAG (relative risk [RR], 1.17; 95% CI, 1.00–1.37; $P = .004$). The risk of developing POAG increased by 7% for every 20-mg/dL increase in total serum cholesterol (RR, 1.06; 95% CI, 1.00–1.12; $P = .04$). Overall, statin therapy was associated with a 15% lower risk of developing POAG (RR, 0.85; 95% CI, 0.73–0.99). A longer duration of statin therapy (> 5 years) was associated with a 21% lower risk

STUDY IN BRIEF

- In a large population-based cohort study, elevated serum cholesterol was associated with an increased risk of developing primary open-angle glaucoma. The use of oral statins was associated with a decreased risk of developing the disease, and this effect was more pronounced when the duration of treatment was at least 5 years.

WHY IT MATTERS

- Results from this study reinforce findings from prior investigations that suggested a link between oral statin therapy and decreased glaucoma risk. The finding that higher serum cholesterol levels were independently associated with increased glaucoma risk further supports an association.

of developing POAG (RR, 0.79; 95% CI, 0.65–0.97). This inverse association with a longer duration of statin use was not affected by family history of glaucoma, sex, or statin type.

DISCUSSION

Does the possible association between high serum cholesterol levels and risk of developing POAG affect daily practice?

Individuals at increased risk for glaucomatous optic neuropathy often seek counseling about lifestyle measures that may decrease their risk of disease. Eye care providers can consider this possible association to provide general counseling with regard to cholesterol monitoring and control. ■

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