

LIFESTYLE RECOMMENDATIONS

What advice can we give?

BY CYNTHIA MATTOX, MD



In the moments after people hear that they have or are suspected to have glaucoma, their minds fill with questions. One of these is often, “What can I do in my daily life to reduce my risk of losing vision?”

Fortunately, several recent publications provide supportive or suggestive evidence for common-sense recommendations that we clinicians can discuss with our patients.



EXERCISE

Passo and colleagues found that mean IOP decreased by 20% when previously sedentary people were “treated” with vigorous aerobic exercise on a stationary bike four times per week for 12 weeks.¹ Their pressure levels reverted to baseline,

however, once exercise ceased.

Anecdotally, we see active patients who exhibit slightly worse IOP control when sidelined by an injury, and certainly, regular exercise is beneficial for patients’ well-being. That said, individuals with glaucoma should avoid exercise that produces prolonged Valsalva responses or positional engorgement of the choroid, as can occur with isometric heavy weight lifting, long-lasting inverted yoga poses, or tilt tables for the back.



SLEEP POSITION

Researchers in South Korea, Canada, and the United States have presented solid evidence on sleep position, IOP, and glaucoma. The eye with worse visual field damage from glaucoma correlates with the preferred sleeping side in patients who self-reported a primary sleep position. An eye’s compression against a pillow or arm raises the IOP, and the lateral decubitus position produces a greater elevation in pressure in the eye with worse glaucomatous damage than in the healthier eye.²

Malihi and Sit found that neck flexion or extension aggravated supine IOP elevation and should be avoided.³ Buys and colleagues reported that a head-up position via a 15° wedge pillow could mitigate supine IOP elevation.⁴

Based on existing evidence, we clinicians can recommend that patients try to avoid a single side for sleeping preference or that they use a wedge pillow.



NUTRITION

Diet

Nitric oxide plays an important role in aqueous outflow dynamics, and dietary nitrates and nitrites are precursors of nitric oxide. Using the Nurses’ Health

Study and Health Professionals Follow-up Study databases, Kang and colleagues found that people who consumed the highest amounts of dietary nitrates in the form of dark green leafy vegetables had a 30% lower risk of developing glaucoma overall and that those with glaucoma had a 50% reduction in risk of developing paracentral visual field damage.⁵ Similarly, other researchers have found that dark leafy greens in the form of kale and collards were associated with a lower risk of glaucoma in African American women⁶ and in women aged 65 years and older.⁷ A lower risk of glaucoma was also associated with a high intake of fresh oranges and peaches⁶ as well as β -carotene and other retinol-enhancing nutrients.⁷

Given the evidence supporting the benefits of fresh whole fruits and dark green vegetables for patients who have glaucoma or are at risk of developing the disease, along with obvious global health benefits of a balanced diet, it should be easy for us to share these dietary recommendations with these individuals in addition to encouraging them to maintain a healthy body weight.⁸

Supplements

Many people take dietary and mineral supplements, but only limited information is available to guide our recommendations to patients. Studies have shown that high doses



AT A GLANCE

- The effects of many supplements and lifestyle modifications on patients’ susceptibility to glaucoma and its progression are investigational or not well studied.
- Even so, several recent publications provide supportive or suggestive evidence for common-sense recommendations that clinicians can discuss with their patients, including in the areas of exercise, sleep position, diet, and estrogen associations.





of iron,⁹ magnesium,⁸ and calcium⁹ increase the risk of glaucoma in various populations.

In an excellent review article of the known literature, Anand and colleagues explained how herbal supplements such as allium, bilberry, wolfberry, crocetin in saffron, gardenia fruit, and resveratrol may confer theoretical benefits by reducing oxidative stress, but they have not been proven to reduce risk or slow disease progression.¹⁰ The researchers reported that supplements such as ginkgo, quercetin, and curcumin have other effects that could be beneficial but again have no proven benefit. Small studies have found slight reductions in IOP with astragalus, *Foeniculum*, and brown algae seaweed in animals.¹⁰

Based on current evidence, it is reasonable for us to advise glaucoma patients and suspects to avoid mineral supplements unless they have a true deficiency.



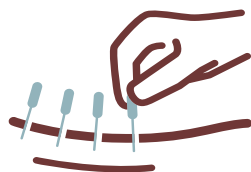
ESTROGEN

Retinal ganglion cells (RGCs) have estrogen receptors, and estrogen treatment protected rat RGCs in an ischemia model. When looking at estrogen status, however, studies have varied, and estrogen relationships to glaucoma patients are still incompletely understood.

Several studies have found an increased risk of glaucoma in women with early menopause. Women who underwent oophorectomy before age 43 also had an elevated risk, and replacement estrogen was not found to be protective, although only 11% of patients received this treatment.¹¹ In the Nurses' Health Study, more than 5 years of oral contraceptive use conferred a higher risk of developing glaucoma.¹²

Conversely, two studies that investigated associations in women taking postmenopausal estrogen replacement in two large databases found a reduced risk of developing glaucoma.^{13,14} In addition, investigators using data from the National Health and Nutrition Examination Survey (NHANES) reported that "women who took estrogen-only hormone replacement therapy after ovary removal had a lower risk of developing glaucoma."¹⁵

For now, we may want to discuss the latest information on estrogen associations with female patients at high risk of developing glaucoma.



ACUPUNCTURE

Acupuncture stimulates the release of neurochemicals such as endogenous opioids, serotonin, catecholamines, and nitric oxide, but small studies have not been

able to show any long-term benefit of the treatment for glaucoma patients. Law and colleagues performed a randomized study using a crossover design of 12 weeks of

acupuncture treatment in glaucoma patients.¹⁶ The investigators found no long-term effect on IOP or visual acuity. The researchers were not able to study factors specific to the optic nerve or RGCs such as blood flow or multifocal electroretinography, and they stated that other parameters might be useful to investigate in future studies.

Given the inconclusive nature of the evidence, we can counsel glaucoma patients that acupuncture is not likely to be helpful in their treatment.

CONCLUSION

The effects of many supplements and lifestyle modifications on patients' susceptibility to glaucoma and its progression are investigational or not well studied. We can, however, draw on recent findings to make some recommendations that are likely to benefit our patients' overall health and that will allow them some personal control over their disease. ■

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