

Lifestyle Changes and Glaucoma

Counseling patients on how these alterations may affect glaucomatous disease.

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Although the mainstay of glaucoma therapy remains lowering IOP with medication, laser treatment, or surgery, other controllable risk factors and practices may have a significant impact on the course of the disease. Some patients and physicians may not consider the effects that certain changes in lifestyle or habits could have on ocular health. Moreover, patients' sources of information are various and not always reliable. Physicians therefore must be able to discuss the potential effect of certain activities on the ocular health of patients with glaucoma or ocular hypertension (OHT). This article focuses on the proven and unproven risks and benefits of lifestyle modification and Eastern medical practices.

EXERCISE

IOP typically rises for the first 5 minutes of physical activity and begins to decrease shortly thereafter. Studies have shown that IOP decreases shortly after weight lifting and jogging. Chromiak et al¹ demonstrated a pressure reduction of approximately 14% after three sets of leg or

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chest presses, but IOP began to rise 5 minutes later. Karabatakis et al² showed that jogging for 20 minutes lowered IOP by 1 to 8 mm Hg.

The changes in IOP are independent of blood pressure and heart rate, because autoregulatory changes maintain optic nerve perfusion. The decrease in IOP typically lasts for 60 to 80 minutes after exercise stops.

In sedentary patients with OHT, Passo et al³ found that 3 months of moderate exercise decreased mean IOP by 4.6 mm Hg (20%). The beneficial effect appeared to be consistent if patients complied with their treatment regimen, but it disappeared after 3 weeks of deconditioning. The main message for patients is that regular (not inconsistent) exercise may help control their IOP. According to some anecdotal reports, certain forms of exercise lead to a Valsalva effect due to straining or a lowered head position and therefore decrease the activity's beneficial effect on IOP.

YOGA

This practice has recently experienced a surge of popularity in the US. In addition to its spiritual appeal for many people, yoga is also appreciated as a means of managing stress, improving posture, and toning the body. Reducing stress has no effect on IOP levels, however, and no studies have supported the theory that yoga increases oxygen delivery to tissues. Due to evi-



dence that inverted postures increase IOP,⁴ glaucoma patients and suspects may want to avoid these positions. Additionally, the literature contains a case report of acute glaucoma during yoga that may have been due to choroidal expansion,⁵ as seen in other Valsalva maneuvers.

“Playing high-resistance wind instruments such as the oboe, bassoon, French horn, and trumpet appears to increase IOP.”

WIND INSTRUMENTS

Playing high-resistance wind instruments such as the oboe, bassoon, French horn, and trumpet appears to increase IOP. Schuman et al⁶ found that hitting high-pitched, high-volume notes caused a rise of 1.7 mm Hg/sec. Using ultrasound biomicroscopy, the investigators demonstrated uveal engorgement similar to a Valsalva maneuver. The greater the life hours of playing one of these instruments, the significantly higher the incidence of visual field loss in patients with glaucoma, according to this study.

Aydin et al⁷ showed that IOP increased by 10% in individuals without glaucoma. Based on these studies, physicians should counsel patients who have glaucoma or are at risk of developing the disease regarding the effect of playing high-resistance wind instruments. At-risk individuals may desire prophylactic treatment.

ACUPUNCTURE

The chemical model for biological functions used in Western science no longer seems sufficient. In the Eastern medical practice of acupuncture, needles stimulate the junctures of meridians that carry Qi and thereby trigger electrical changes, the release of endorphins, and increased blood flow. Qi may be defined as vitality, energy, or life force. Gong translates as practice, cultivate, or refine, and qigong means to cultivate and refine through practice one's vitality or life force.

One emerging model to characterize the immune system is that of the *swarm*. A swarm is composed of individuals that can act independently, can communicate with each other, and have no single controlling entity. Disease begins with a disruption in qi through the meridian system, and qigong is designed to normalize that energy flow. Specifically, qigong herds the swarm and provides an organizing influence on the immune system, which has more

connections and cells than the human brain. In this model, the mind/body connection cultivated with qigong could be considered the mind/immune system connection. Qigong is thousands of years old and is the needle-free predecessor of acupuncture.

The literature contains conflicting reports regarding the effectiveness of acupuncture. A small case series found that acupuncture produced no change in either IOP or visual fields among subjects with glaucoma, although some patients experienced increased visual acuity.⁸ Another study found a significant reduction in IOP 15 minutes and 24 hours after therapy.⁹ Based on current research, acupuncture carries no apparent risks, but its benefit to patients with glaucoma or OHT remains unclear.

CLOSING THOUGHTS

Physicians should emphasize the benefits of regular exercise for patients' general and ocular health. Regular, moderate exercise of various types can have a positive influence on glaucoma and OHT. Individuals at risk for glaucomatous progression or development of the disease should understand that activities such as assuming inverted yoga positions or playing high-resistance wind instruments (when pursued long-term) can increase IOP and lead to visual field loss. There is mixed evidence regarding the role of acupuncture in reducing IOP and improving central vision in patients with glaucoma. Whether or not they choose to make recommendations about lifestyle activities, physicians should be aware that many patients with glaucoma or OHT are engaged in exercises that may have both positive and negative effects on their ocular health. □

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