Understanding the Problem of Angle-Closure Glaucoma

An overview of some major issues.

BY HARRY QUIGLEY, MD

By 2040, 32 million individuals will have angle-closure glaucoma (ACG), and half of those blind from glaucoma will have angle closure. Family members of patients with angle closure have a one-in-three chance of having angle closure themselves. Because this vision loss can be avoided through treatment with laser iridotomy, why are these people still suffering blindness from angle closure?

WHO NEEDS AN IRIDOTOMY?

We ophthalmologists must determine which eyes with shallow anterior chambers and narrow gonioscopic angles need iridotomy. Which in-office tests will help us decide? If most narrow-looking eyes needed an iridotomy, the answer would be simple, but it is not. At this time, the best estimate is that fewer than one in 20 gonioscopically narrow eyes will develop angle closure. The outcome of treating all narrow eyes would be 38 (out of 40) needless iridotomies. Because two-thirds of people with angle closure live in Asia, where care is less accessible, millions of unnecessary iridotomies would be performed in countries with limited health care resources and personnel. Unfortunately, chart review studies and Medicare billing data suggest that ophthalmologists are not performing gonioscopy enough and that many eyes with angle closure are missed or miscoded as open-angle glaucoma.

The currently accepted categories for angle-closure disease are (1) primary angle-closure suspect, (2) primary angle closure, and (3) ACG:

- An angle-closure suspect has an angle where the trabecular meshwork cannot be seen for half or more of the angle gonioscopically.
- In angle closure, the individual’s narrow angle has caused the IOP to rise above normal, the formation of peripheral anterior synechiae, or an overt acute attack.

• Patients with ACG have angle closure with actual damage to the nerve (disc or field abnormality).

THE IRIS IS A SPONGE

A better understanding of angle closure rests in recognizing that it is a disease caused by dynamic—not static—features of the eye. Single measurements at one point in time and at one state of illumination cannot separate eyes with angle closure from those without it. Recent evidence suggests that one anatomic...
There are many reports of this mechanism caused by topiramate therapy, which produces choroidal expansion and bilateral angle closure. Malignant glaucoma is also initiated by choroidal expansion, with poor fluid transfer through the vitreous gel causing the syndrome to be incorrectly called “misdirected aqueous.” Aqueous cannot be misdirected backward without being able to return forward, so this name should be changed to vitreous-block glaucoma.10

IS IRIDOPLASTY NEEDED?
Will the angles of eyes that look narrow after laser iridotomy creep closed? Is there a role for laser iridoplasty? In 1981, I published an extended follow-up of patients undergoing laser iridotomy. Although a minority of these individuals retained a narrow gonioscopic appearance despite patent iris holes, none of them subsequently developed acute attacks, and few experienced worsening over time. In fact, very few eyes of patients with acute-angle closure attacks, including those that remain narrow after laser iridotomy, will develop glaucoma or detectable progressive disease.11 Although it has been proposed that eyes still narrow after iridotomy have “plateau iris” and need to undergo iridoplasty, there is no evidence that this treatment is needed or that its benefits, if any, outweigh the risks.12

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