

The Key Elements of a Glaucoma History and Workup

These steps are imperative to accurate diagnosis and treatment.

BY YARA P. CATOIRA-BOYLE, MD

Like other chronic asymptomatic diseases, glaucoma is often diagnosed during a routine eye examination. Patients with the most prevalent form of glaucoma in the Western world, primary open-angle glaucoma, are basically free of symptoms until very late in the course of the disease.

Primary eye care providers should suspect glaucoma when the optic nerve has a cup-to-disc ratio larger than 0.6 or if there is asymmetrical cupping of more than 0.2. In the office of the glaucomatologist, where patients present with a diagnosis of glaucoma due to high IOP, visual field loss, or optic nerve cupping, a directed history will uncover information that is important to the diagnosis, treatment, and patient's prognosis.

HISTORY

Visual Complaints

As one patient taught me, there are usually no visual complaints in glaucoma. This African American woman was in her 40s and worked as a legal assistant. She was referred to me after presenting to her primary eye care provider with a request for new glasses. She was found to have a visual acuity of hand motions in one eye, IOPs in the 30s in both eyes, and cupped-out optic nerves. Visual field testing of her better-seeing eye revealed a very small island.

In cases of early glaucoma, practitioners must separate patients' complaints of visual disturbances from the more common presentations of dry eye disease (DED), cataract, retinal disease, or refractive error. In advanced glaucoma, personality type and occupation

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may affect a patient's awareness of his or her vision. For example, engineers can generally map out their scotomata. When a patient's central vision has declined from 20/20, the subjective assessment of his or her vision is important. The sensitivity is low, but the specificity is high and may indicate the need for repeat visual field testing and subsequent lowering of target pressures.

Ocular Symptoms

Ocular symptoms such as pain, redness, and irritation are more likely due to DED, allergies, or both than to glaucoma. A careful examination of the conjunctiva and cornea using fluorescein staining is necessary to identify the typical signs of DED or allergies. If those episodes are associated with changes in vision, a narrow angle and pigmentary glaucoma must be excluded. Naturally, irritation of the ocular surface is quite common among glaucoma patients on topical therapy. Practitioners should assess patients' eyelids, because any sign of thickening, redness, or scaling may represent contact dermatitis from eye drops or other topical medications used around the eye.

Past Ocular History

Previous incisional or laser surgeries, prior trauma, and the presence of concomitant eye disease such as uveitis, age-related macular degeneration, and cataract are important to the initial evaluation of patients. Pseudophakia will likely have an open angle if the cataract surgery was uncomplicated. In these cases, it is important to obtain operative reports and information on the IOL implanted. If there is an unclear history of laser surgery, practitioners should look for evidence of a laser iridotomy, iridoplasty, or capsulotomy. If none is found, the procedure was likely a laser trabeculoplasty. Argon laser trabeculoplasty often causes the formation of fine peripheral anterior synechiae, whereas selective laser trabeculoplasty does not.

If the patient is young and has highly asymmetrical glaucoma, the practitioner should determine if there is a history of trauma. Concomitant retinal pathology and cataract must be taken into account when interpreting visual fields. For example, a patient with age-related macular degeneration and poor central vision in both eyes counts on his or her peripheral vision. Treatment in such cases may need to be as aggressive as for patients with good central vision.

Past Medical History

The presence of cardiac, pulmonary, and neurological disease requires consideration. Timolol and brimonidine can both negatively affect those systems, especially in frail, elderly patients. If the patient has a diagnosis of a congenital syndrome, the clinician should communicate with the primary care doctors. If the patient

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has kidney disease, the eye care practitioner should not prescribe acetazolamide without first consulting the nephrologist involved.

Also important are the patient's blood pressure status (could it be too low?), a chronic history of rhinitis or asthma treated with nasal or inhaled steroids or decongestants, sleep apnea and the use of continuous positive airway pressure, migraines, and diabetes mellitus.

Current Topical Medications and Prior Medication History

It is ideal to receive a summary of all medications tried and the patient's reactions or history of IOP response. Investigating this information is worthwhile to avoid wasting the physician's and the patient's time or causing unnecessary side effects (Figure 1).

Family History

Family history often is not contributory. Nevertheless, a family history of neurological events and glaucoma itself is an important factor to consider when treating normal-pressure glaucoma.

Allergies to Medications

Carbonic anhydrase inhibitors should be avoided as first-line agents in patients with a sulfa allergy. I am willing to prescribe these drugs if my investigation determines that the response was not a real allergic reaction, but I will ask the patient to stop using the medication upon any minor sign of problems and to call me.

Systemic Medications

Most important are blood pressure medications, blood thinners, and steroids. I have seen aggressive open-angle glaucoma develop after spinal steroid injections.



Figure 1. This patient had a prior history of allergy to brimonidine but agreed to try the same medication again, leading to severe contact dermatitis that fortunately resolved in a few days.

PHYSICAL EXAMINATION

The physical examination begins with the measurement of the patient's BCVA at distance and near. When evaluating the eyelids, eyelashes, and periocular tissues, practitioners should look for signs of side effects from current therapy. Next comes an assessment of the size of both pupils in light and dark conditions. An afferent pupillary defect is common with even mild asymmetrical glaucoma.

For IOP measurements, Goldmann applanation tonometry continues to be the gold standard. Until a new technology becomes well accepted, every patient should undergo Goldmann applanation tonometry unless impossible. It is unacceptable to follow glaucoma with tonopen-derived IOPs. In patients with narrow angles, the practitioner should recheck the IOP after dilating the pupils.

I cannot overemphasize the importance of gonioscopy. This part of the examination is essential to the diagnosis and treatment of glaucoma. A patient with an open angle is a candidate for laser trabeculoplasty. In contrast, selective laser trabeculoplasty (400- μ m spot size) is likely to be ineffective on a patient with a narrow angle, whereas argon laser trabeculoplasty will lead to the formation of peripheral anterior synechiae, further close the angle, and worsen the disease. Practitioners should note the presence of extra lines of pigment indicating pigment dispersion and the black pigment seen with pseudoexfoliation glaucoma. Blood or membranes will be typical of certain pathologies such as neovascular glaucoma or iridocorneal endothelial syndrome.

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Practitioners should inspect the conjunctiva for redness from a distance. During the slit-lamp examination, they should evert the eyelids to look for follicles/papillae, evaluate the eye for meibomian gland dysfunction, and test for DED with corneal staining. The cornea should also be checked for Krukenberg spindles. It is important to assess the depth of the anterior chamber. Shallow chambers or hyperopia higher than +2.00 D requires gonioscopy. Undilated pupils should be inspected for the visual impact of any opacity.

The dilated fundus examination must assess the shape, depth, and centration of the cup. What is the cup-to-disc ratio? Are the vessels bending in a bean pot configuration? Is there peripapillary atrophy or pallor? Are there disc hemorrhages (Figure 2)? The cup-to-disc ratio must be judged by the location of the most anterior rim edge, not by the color of the cup, which leads to underestimation. Finally, practitioners should examine the macula for causes of a visual decrease and evaluate the impact of a cataract on the patient's visual acuity.

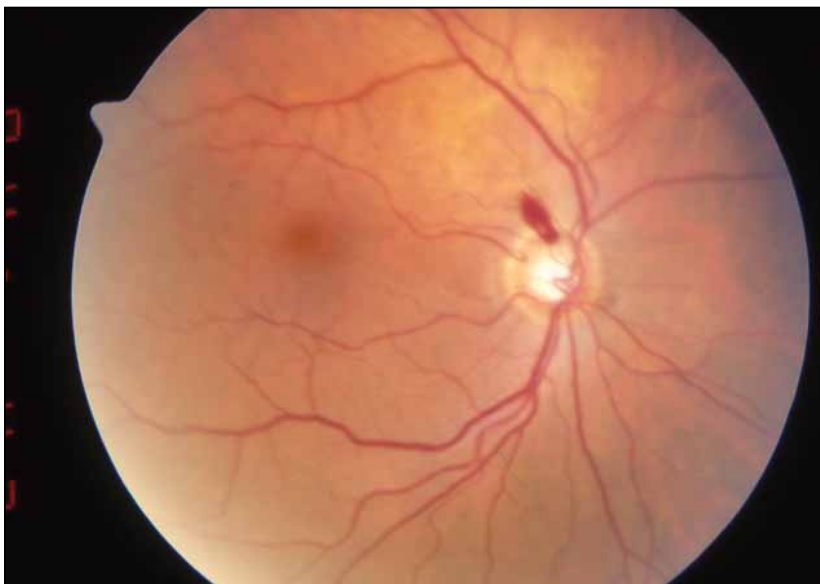


Figure 2. Disc hemorrhage in a patient with progressive visual field loss and IOPs in the low teens.

CONCLUSION

The history and examination of a patient with glaucoma are necessary for an accurate diagnosis and treatment plan. In a world where the time eye care providers are allowed to talk to their patients continues to shrink, practitioners must become proficient at these fundamentals in order to maintain the quality of care. ■

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