

Causes of Glaucoma

In most types of glaucoma, the eye's drainage system becomes clogged so the intraocular fluid cannot drain. The fluid builds up thereby causing the pressure to build inside the eye. High pressure damages the sensitive optic nerve ultimately resulting in loss of vision.

There are millions of nerve fibers that run from the retina to the optic nerve. These fibers meet at the optic disc. Fluid pressure within the eye increases damaging the sensitive nerve fibers which begin to die. As they die, the optic disc begins to hollow and pushes the optic nerve into a cupped or curved shape. When the pressure remains too high for too long, the extra pressure damages the optic nerve resulting in loss of vision.

At one time it was thought that high intraocular pressure (IOP) was the main cause of damage to the optic nerve. It is now known that although intraocular pressure is clearly a risk factor, other factors must also be involved because people with "normal" IOP can experience vision loss from glaucoma.

Different Types of Glaucoma

There are two main types of glaucoma: open angle glaucoma (or primary open angle glaucoma) and angle closure glaucoma.

Primary Open Angle Glaucoma

This is the most common form of glaucoma, affecting about three million Americans. It happens when the eye's drainage canals become clogged over time. The inner eye pressure (also called intraocular pressure or IOP) rises because the correct amount of fluid can't drain out of the eye. With open angle glaucoma, the entrances to the drainage canals are clear and should be working correctly. The clogging problem occurs inside the drainage canals, like the clogging that can occur inside the pipe below the drain in a sink.

This type of glaucoma develops slowly and sometimes without noticeable sight loss for many years. Most people have no symptoms and no early warning signs. If open angle glaucoma is not diagnosed and treated, it can cause a gradual loss of vision. The good news is that it usually responds well to medication, especially if it is caught early and treated.

Angle Closure Glaucoma

This type of glaucoma is also known as acute glaucoma or narrow angle glaucoma. It is much more rare and is very different from open angle glaucoma in that the eye pressure usually goes up very fast. This happens when the drainage canals get blocked or covered over, like the clog in a sink when something is covering the drain. With angle closure glaucoma, the iris and cornea is not as wide and open as it should be. The outer edge of the iris bunches up over the drainage canals, when the pupil enlarges too much or too quickly. This can happen when entering a dark room.

A simple test can be used to see if your angle is normal and wide or abnormal and narrow. Treatment of angle closure glaucoma usually involves surgery to remove a small portion of the outer edge of the iris. This helps unblock the drainage canals so that the extra fluid can drain. Usually surgery is successful and long lasting. However, you should still receive regular check-ups. Symptoms of angle closure glaucoma may include headaches, eye pain, nausea, rainbows around lights at night, and very blurred vision.

Secondary Glaucoma

Glaucoma can occur as the result of an eye injury, inflammation, tumor or in advanced cases of cataract or diabetes. It can also be caused by certain drugs such as steroids. This form of glaucoma may be mild or severe. The type of treatment will depend on whether it is open angle or angle closure glaucoma.

Normal Tension Glaucoma (NTG)

Normal tension glaucoma is also known as low tension glaucoma or normal pressure glaucoma. In this type of glaucoma, the optic nerve is damaged even though intraocular pressure (IOP) is not very high. Doctors do not know why some people's optic nerves are damaged even though they have what is considered to be "normal" (between 12-22 mm Hg) pressure levels.

Those at higher risk for this form of glaucoma are people with a family history of normal tension glaucoma, people of Japanese ancestry, and people with a history of systemic heart disease, such as irregular heart rhythm. Normal tension glaucoma is usually detected after an examination of the optic nerve.

The Glaucoma Research Foundation sponsored an international study to help determine the best treatment for this type of glaucoma. The study concluded eye drops that lower IOP were effective even in cases of normal tension glaucoma. Currently, most doctors treat normal tension glaucoma by keeping normal eye pressures as low as possible with medicines, laser surgery, or filtering surgery.

Pigmentary Glaucoma

This is a form of secondary open angle glaucoma. It occurs when the pigment granules in the back of the iris (the colored part of the eye) break into the clear fluid produced inside the eye. These tiny pigment granules flow toward the drainage canals in the eye and slowly clog them, causing eye pressure to rise. Treatment usually includes medications or surgery.

Cataracts and Glaucoma

Both cataracts and glaucoma can be a natural part of the aging process. Many people over 60 may have both. Otherwise, the two are not associated. With the exception of glaucoma due to secondary causes such as trauma or steroids, glaucoma does not cause cataracts and cataracts do not cause glaucoma. While glaucoma is most often a problem with drainage, a cataract is a clouding of the eye's lens allowing less light to pass through.

Both cataracts and glaucoma are serious conditions that can cause you to lose vision. However, loss of vision due to cataracts can be reversed with surgery. Loss of vision from glaucoma is, as yet, irreversible.

If your vision begins to change

Some people with glaucoma have "low vision." Low vision means there may be problems doing daily, routine things even if using corrective lenses. With glaucoma, this can include loss of contrast sensitivity (the ability to see shades of the same color), problems with glare, light sensitivity, and reduced visual acuity (the ability to see fine details). A variety of products and resources are available to help people who have low vision. Examples include magnifiers, colored lenses, and computer text-enlargers.

Working with your Doctors

As a newly diagnosed person with glaucoma, you may need to have your eye pressure checked every week or month until it is under control. Even when your eye pressure is at a safe level, you may need to see your doctor several times a year for check-ups.

It is important that your doctor listens and responds to your concerns and questions, is willing to explain your treatment options, and is available for calls and check-ups. If you do not feel confident and comfortable with your doctor, remember, you always have the right to seek a second opinion.

What can you do to manage your glaucoma?

Know and keep track of your medications

- It may take some time to find the right medication for you. Some medications may cause you to experience strong side effects. Be sure to tell your doctor about any side effects that you may experience once you have started your medication. The intensity of your side effects may mean you need a different type of medication.
- Make your medications part of your daily routine, perhaps by taking them when you get up, at mealtimes, and/or at bedtime. Use an alarm watch to remind you when to take your medication.
- If you forget to take your prescribed medication, take your medication when you remember, then get back on your regular schedule.
- Get an extra supply of medication in case you misplace a bottle of eye drops or pills. Take an extra prescription along with you on trips away from home.
- Find out about possible side effects. This will take some of the mystery out of your medication routine. But remember, if your side effects are severe, the medication may not be right for you. Talk to your doctor about any side effects.
- It's important that you tell everyone on your healthcare team -- including your family doctor and any other specialists -- that you have glaucoma and what medications you are taking. This will help them in prescribing

- treatments that won't interfere with your glaucoma medications. Be especially careful about using any medication that contains cortisone.
- Let your doctor know if, for any reason, your medications are not working for you, or if your daily routine has changed. Your doctor may be able to solve such problems by changing the type or timing of your medications.
 - Report any changes to your doctor, especially eye irritation, watering, blurring or scratchiness, unusual discharge in the corner of your eye, temporarily cloudy vision, or rainbows around lights at night.

Stay organized

- Keep a record of each medication you are taking. Write down the name, the dosage, and the number of times it should be taken each day. Keep it in your purse or wallet. This reminder can help you remember how often to use your medications.
- Schedule your next check-up before you leave the doctor's office, and put your appointment on your calendar.
- Go for a check-up before you go on a long trip or start a long-term demanding project.
- Write down any questions you have about your eyes, vision, or medications before you see your doctor. During your check-up, bring this list of questions, and write down your doctor's answers. That way, you won't have to call in later or wonder about your unanswered questions until your next check-up.

Your life style counts

- Try to keep your eyes clear and free of irritants. Women might want to be careful about eye cosmetics, by using non-allergenic brands and by replacing them often.
- Don't rub your eyes, even though some glaucoma medications might make them feel itchy or blurry.
- If you have had eye surgery, it's a good idea to wear goggles when swimming and protective glasses when doing yard work or when playing contact sports.
- Take care of the rest of your body. Keeping in good general health is just as important as taking care of your eyes.
- Eating healthy, getting enough exercise, not smoking, not ingesting too much caffeine, and staying at a healthy weight are important. Be sure to check with your doctor before you start any strenuous exercise program.
- Space out your fluid intake. This will help prevent fluid retention.
- Lower your salt intake to prevent fluid retention.
- Try to reduce the day-to-day stress in your life. Be sure to make time for fun and relaxation.

Teach your friends and family

As a glaucoma patient, you have the chance to teach your friends and relatives about this disease. Many people are unaware of the importance of eye check-ups and do not know that individuals with glaucoma may have some symptoms. You can help protect their eye health by encouraging them to have their eye pressure and optic nerves checked regularly.