



Understanding Glaucoma



For more information, please contact

T 0116 249 8839

E info@vistablind.org.uk

W www.vistablind.org.uk

Contents

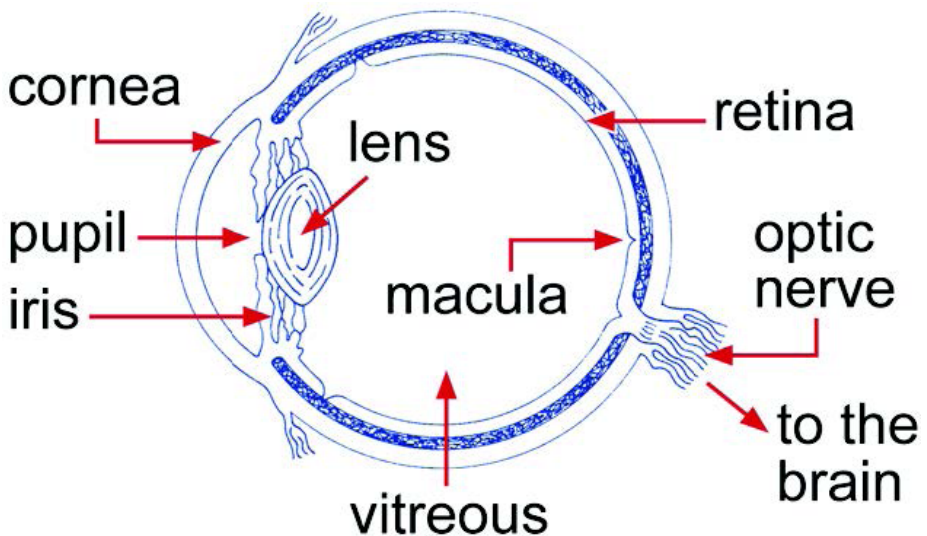
- 3** About glaucoma
- 4** Causes
- 5** Different types of glaucoma
- 6** Primary open angle glaucoma
- 13** Acute angle closure glaucoma
- 16** Ocular hypertension
- 17** Low tension glaucoma
- 18** Secondary glaucoma
- 18** Developmental glaucoma
- 18** Monitoring glaucoma and hospital visits
- 20** Changes in your glaucoma
- 20** Coping
- 23** Useful contacts
- 23** About Vista

About glaucoma

Glaucoma is the name given to a group of eye conditions, which cause optic nerve damage and can affect your vision. Glaucoma damages the optic nerve at the point where it leaves your eye.

How your eye works

When you look at something, light passes through the front of your eye and is focused by the lens onto your retina. The retina is a delicate tissue that is sensitive to light and it converts the light into electrical signals. A delicate network of nerves delivers these signals from the different parts of the retina to the optic nerve and then onto the brain. Your brain interprets these signals to “see” the world around us. The point at which the nerves leave the eye is called the optic disc.



Causes

Glaucoma damage may be caused by raised eye pressure or because there is a weakness in the optic nerve. In most cases, high pressure and weakness in the optic nerve are both involved to a varying extent. Eye pressure is not connected to your blood pressure.

Your eye needs a certain amount of pressure to keep the eyeball in shape so that it works properly. However, if the optic nerve comes under too much pressure then it can be damaged.

The amount of damage depends on how high the pressure is and how long it lasts, and whether there is a poor blood supply or other weakness of the optic nerve. A really high eye pressure can damage the optic nerve immediately.

A lower level of pressure can cause damage more slowly, and then you would gradually lose your sight if it is not treated.

How eye pressure can rise

A layer of cells behind the iris produce a watery fluid called aqueous. The aqueous fluid passes through the hole in the centre of the iris (called the pupil) into the space in front of the iris (called the anterior chamber), and leaves the eye through tiny drainage channels called the trabecular meshwork.

These drainage channels are in the space between the front of the eye (the cornea) and the iris, and they return the fluid to the blood stream. Normally, the amount of fluid produced is balanced by the fluid draining out, but if it cannot drain properly, or if too much is produced, then your eye pressure will rise.

Different types of glaucoma

There are four main types of glaucoma:

- Primary open angle glaucoma (POAG) also known as chronic glaucoma
- Acute angle closure glaucoma
- Secondary glaucoma
- Developmental glaucoma.

Primary open angle glaucoma

Primary open angle glaucoma (POAG) or chronic glaucoma is the most common type of glaucoma. As a chronic condition, its effects occur slowly over time. In POAG, the drainage of the aqueous fluid from your eye doesn't happen as well as it should and this causes the pressure to rise. Your eye may seem perfectly normal and your eyesight will seem to be unchanged. When the pressure starts to build up it doesn't cause you any pain, but your vision is still being damaged.

If you have POAG, your peripheral vision (which is the vision you have around the edge of what you are looking directly at) gradually gets worse. As your side vision is not as sensitive as your reading vision, you may not notice any changes in your sight. The early loss of peripheral vision is usually in the shape of an arc a little above and/or below the centre of your vision when you look "straight ahead". This blank area, if the glaucoma is untreated, spreads both outwards and inwards.

The centre of the vision field is affected last, meaning that you may find it is like looking through a long tube ("tunnel vision"). If this rise in pressure and glaucoma is left untreated, you will gradually lose the ability to see things at the side, above and below where you are looking.

Risk factors

Several things increase your risk of developing POAG:

- **Your age:** POAG becomes much more common as we get older. It is uncommon below the age of 40, but this type of glaucoma affects one percent of people aged over 40. About five percent of people over the age of 65 have primary open angle glaucoma.
- **Your race:** if you are of African origin you are more at risk of POAG. It is also more likely to develop at an earlier age and be more severe.
- **Family:** you are at a higher risk of developing glaucoma if you have a close relative who has chronic glaucoma.
- **Short sight:** if you are very short sighted you have a higher risk of developing chronic glaucoma.
- **Diabetes:** if you have diabetes you have an increased risk of developing POAG.

Detecting POAG

Most people should have their eyes tested at least every two years. It is even more important to have a regular eye test if you are in one of the groups at greater risk of developing glaucoma.

Glaucoma becomes more common over the age of 40. Also, if you know a member of your family has POAG, it is a good idea for everyone in your family to have a full eye test. Usually POAG is detected in an eye test carried out by an optometrist (optician) in the high street. Glaucoma is one of the reasons why regular eye tests, every two years, are so important.

If you are over 40 years old and one of your parents, children, brothers or sisters have been diagnosed with glaucoma, then you are entitled to a free NHS sight test. When you book your eye test, discuss with your optometrist which glaucoma tests they think you may need. There are three common tests an optometrist may use and having all three tests together will give a rounded picture of the health of your eye.

Depending on your circumstances, your optometrist may not think you need all three of these tests. If this is the case, they should explain why they have decided that not all tests are necessary.

The three tests are very straightforward – they don't hurt and can be done by most high street optometrists. They:

- Examine the back of the eye (retina), especially the area where the optic nerve leaves your eye (optic disc). This is done by shining a bright light into your eye from either a slit lamp, into which you place your chin, or a hand-held ophthalmoscope.
- Measure the pressure in your eye, using a special instrument called a tonometer. This may involve a machine that uses a few puffs of air in each eye to record the pressure. Eye pressure can also be tested using eye drops and another instrument, which touches the front of the eye. This method is most often used by the hospital clinic.
- Test your visual field. This involves being shown a sequence of spots of light on a screen and you say which ones you can see.

If the optometrist finds that the combination of your test results suggests you have or may have glaucoma, they usually refer you to a hospital eye consultant (ophthalmologist) who can then diagnose your glaucoma and start any treatment you may need.

Treating POAG

All glaucoma treatments aim to prevent further damage to your sight. However, treatment cannot repair or improve damage that may have already been caused by high pressure before it was found.

The main treatment for POAG aims to reduce the pressure in your eye. Some treatments also aim to improve the blood supply to the optic nerve. You need to see an ophthalmologist to start any treatment and you will have regular check-ups to make sure the treatment is working.

Treatment to lower your eye pressure usually starts with eye drops. These act by reducing the amount of fluid produced in the eye or by opening up the drainage channels, so that excess liquid can drain away. In the majority of cases, the drops lower your eye pressure and keep pressure stable, which protects your eye against further damage and prevents sight loss. In some cases, the first drops you use may not work or might cause side effects, but if this happens your ophthalmologist would explore alternative drops with you.

Using your eye drops as your ophthalmologist recommends is very important in stopping you losing sight to your glaucoma.

Although you will not notice any difference in your vision when you use the drops, they will prevent you losing your sight. Like all medications, some drops do have side effects, but usually only a small number of people experience these and the risk of these side effects is small compared to the risk of losing vision if you do not use the drops as prescribed.

If you experience any difficulties using the drops then you should let your ophthalmologist know as soon as possible, as alternative drops may be available to you.

Some people may find using the drops difficult because of problems with movement of their hands, such as arthritis. Most drops can be used with gadgets that make the bottles easier to handle. If you think you will have serious problems using the drops then you should let your GP know, as they may be able to arrange help for you.

Very occasionally, the drops do not lower eye pressure quickly enough or do not work as well as your ophthalmologist would like. If this is the case, your ophthalmologist may suggest either laser treatment or an operation called a trabeculectomy to improve the drainage of aqueous fluid from your eye.

Laser treatment

There are two main types of laser surgery that can be used to control eye pressure, laser trabeculoplasty and laser iridotomy.

Laser treatments are very successful. Laser trabeculoplasty helps to improve the drainage of aqueous fluid by stimulating the trabecular meshwork to work more efficiently. Laser trabeculoplasty is the more common laser treatment for people with POAG.

The alternative is laser iridotomy, which creates a new drainage channel at the front of your eye. This new channel is usually made through the top of your iris, to allow aqueous fluid to drain through this channel as well. Laser iridotomy can sometimes be used for POAG, but is more commonly used to prevent someone having closed angle glaucoma.

Both types of laser treatment reduce pressure and will usually only need to be done once. They are minor surgical procedures which you recover from very quickly. Normally they are performed under local anaesthetic as an outpatient (meaning you wouldn't stay in hospital). You would normally use glaucoma drops in the long-term after laser treatment to continue to keep eye pressure stable.

Trabeculectomy surgery

If eye drops and laser treatment cannot lower your eye pressure and keep it stable, then trabeculectomy surgery may be considered. Only five per cent of people with glaucoma require trabeculectomy surgery. This surgery creates a new, permanent drainage channel in the eye and lowers pressure. The new channel is made on the white part of your eye (the sclera), underneath your upper eye lid. Continued use of glaucoma drops is not normally needed following this surgery, but your ophthalmologist will let you know what would be best for you. Your specialist will discuss with you which is the best method (drops, laser treatment or surgery) to reduce your pressure and keep it stable.

There are other types of surgery available for glaucoma. Your ophthalmologist will be able to discuss with you whether or not they are appropriate.

Acute angle closure glaucoma

Acute glaucoma is much less common than POAG. Acute angle closure glaucoma happens when there is a sudden and more complete blockage to the flow of aqueous fluid from the eye. This is nearly always very painful and causes permanent damage to your sight if not treated promptly.

In acute angle closure glaucoma, the pressure in the eye rises rapidly. This is because the outer edge of the iris and the front of the eye (cornea) come into contact, which stops the aqueous fluid from draining away through the trabecular meshwork as normal. This can happen in one or both eyes, but it is rare for both eyes to have an attack at the same time.

Symptoms of acute glaucoma

In the early stages you may see misty rainbow-coloured rings around white lights. But for most people, a sudden increase in eye pressure is very painful. The affected eye becomes red, the sight deteriorates and you may even black out. You may also feel nauseous and be sick. Acute glaucoma is an emergency and needs to be treated quickly if sight is to be saved.

Some people can experience a series of mild attacks, often in the evening. Vision may seem “misty” with coloured rings seen around white lights and there may be some discomfort in the eye. If you think you are having mild attacks, you should have your eyes tested as soon as possible and let the optometrist know that you are having these symptoms.

In some people, the angle between the cornea and the iris is narrow, meaning there could be more risk of developing closed angle glaucoma. Your optometrist may notice this during your eye test and may refer you to the hospital for further tests and treatment, even if you have no symptoms of acute glaucoma.

Treating acute glaucoma

If you are diagnosed and treated promptly, there may be almost complete and permanent recovery of vision. Delay in treatment may cause a permanent loss of sight in the affected eye. If you have an acute attack you need to go into hospital immediately, so that the pain and the pressure in the eye can be relieved. You will be given medication, which makes your eye produce less aqueous fluid and also improves its drainage to help relieve the pain.

An acute attack, if treated early, can usually be brought under control in a few hours. Your eye will become more comfortable and sight will start to return. Your surgeon will probably suggest a procedure to make a small hole in the outer border of your iris to allow the fluid to drain away. This is usually done by laser iridotomy or by a small operation. Usually, the surgeon also advises you to have the laser iridotomy on your other eye because there is a high risk that it will develop the same problem.

This treatment is not painful. Depending on the circumstances and the response to treatment, you probably won't need to stay in hospital. Occasionally, the eye pressure remains a little raised and treatment is required as for chronic glaucoma (there is more information in the earlier section on POAG). Even though treatment brings the pressure down to near normal, you may also need to continue using eye drops to keep the glaucoma under control.

Can acute glaucoma be prevented?

Some people may have very mild or no symptoms of acute glaucoma, but when their eyes are examined their angles may be very narrow. In these cases, an ophthalmologist may recommend surgery to prevent an acute attack. If you have had an acute glaucoma attack in one eye, usually surgery will also be performed on the other eye to avoid problems in the future.

Ocular hypertension

Ocular hypertension means high eye pressure. We all have eye pressure as it keeps the eye healthy and helps to maintain the shape of the eye. Most people's eye pressure is between 16-21mmHg. Sometimes eye pressure can be a bit below or above this range, which may be completely normal for your eye and not need any treatment.

Eye pressure can go up and down slightly quite naturally, but it does not go up with your blood pressure. Therefore, stress does not cause high eye pressure or glaucoma. If your eye pressure is above 22mmHg, you will generally be told that you have ocular hypertension. This is not the same as having glaucoma. A diagnosis of glaucoma means that the pressure in the eye has caused some damage to the optic nerve, but a diagnosis of ocular hypertension may mean your pressure is high, but there is no damage to your optic nerve.

Due to a change in NHS referral guidelines used by optometrists, more people are being seen at hospital with suspected ocular hypertension. Not everyone with ocular hypertension will develop glaucoma or need treatment but some will. Ocular hypertension is treated with drops in the same way as chronic glaucoma (POAG) and your eye health should be monitored regularly at a hospital.

Low tension glaucoma

Low tension glaucoma means that your optic nerve is damaged like it is in other types of glaucoma, but your eye pressure is well within normal ranges. If you have low tension glaucoma, your eye pressure will need to be reduced to keep your sight safe. Low tension glaucoma is treated in the same way as glaucoma caused by high eye pressure.

Secondary glaucoma

An increase in ocular pressure can also occur as a secondary effect of other eye conditions, operations, injuries or medications. This can lead to damaging your vision, and when this happens it is called secondary glaucoma. The treatment in each case is always aimed at reducing the pressure as well as treating the cause. If this is the type of glaucoma you have, your specialist will talk to you about the planned treatment.

Developmental glaucoma

Developmental or congenital glaucoma is a very rare condition, which affects young babies. It is usually identified in the early years and managed by specialist clinics.

Monitoring glaucoma and hospital visits

If you are diagnosed with glaucoma, you may need to visit the hospital frequently to start with. This is because your ophthalmologist will want to make sure you are responding to treatment and that your eye pressure is in the right range for you and it is stable.

If your eye pressure continues to be stable and you are not having any problems with treatment, then you will be able to go for check-ups less often.

With time, you may only need to be seen every six or twelve months. However, it is very important that you attend these appointments to make sure your eye pressure continues to be stable, as you will not be aware of any changes to the pressure, and you could permanently lose more sight if your current treatment becomes ineffective.

On each visit, you will have the pressure measured in the eye, your visual field tested and the back of your eye examined using drops to dilate your pupil. The effects of the drops usually wear off in about six hours, although sometimes it will happen overnight. It is not safe to drive until the effects of these drops have worn off.

The visual field test used in monitoring glaucoma is much more detailed than the screening tests used by your optometrist. Some of the tests can take ten minutes per eye and this can get boring. It is important to be prepared for this, as accurate testing allows the specialist to make the right decisions about your treatment.

Changes in your glaucoma

Most people with glaucoma use drops for many years or for life. Using your drops regularly can help to keep your eye pressure under control and minimise the damage to your sight. Not using your drops could, in the long term, make your glaucoma unstable and lead to permanent sight loss, as sight loss in glaucoma is not reversible. When you have been on drops for a long time they may not be as effective as they were before, or you might develop sensitivity to them. The hospital will monitor you at your regular appointments and suggest different eye drops, or other treatment, if needed.

Coping

Being diagnosed with an eye condition can be very upsetting. You may find that you are worried about the future and how you will manage with a change in your vision. All these feelings are natural.

Some people may want to talk over some of these feelings with someone outside their circle of friends or family. Vista can help you with our telephone helpline and our emotional support service. Your GP or social worker may also be able to help you find a counsellor if you think this would help you.

Help to see things better

Early detection and treatment of glaucoma usually prevents or slows down any further damage. People with glaucoma can carry on with everyday activities such as reading, watching television and using their computer.

You should ask your ophthalmologist, optometrist or GP about low vision aids and whether you are eligible to register as sight impaired (partially sighted) or severely sight impaired (blind). Registration can act as your “passport” to expert help and sometimes to financial concessions. Even if you are not registered, a lot of this support is still available to you.

Local social services should be able to offer you information on staying safe in your home and getting out and about safely. They should also be able to offer you some practical mobility training to give you more confidence when you are out.

Our helpline can provide you with information about low vision clinics and the help available from social services. They can also offer advice if you have any difficulties accessing these services.

Driving

Most people with glaucoma carry on driving in the long term if the loss of visual field is not advanced, but you are required by law to report a condition which might affect sight. You only need to inform the Driver and Vehicle Licensing Authority (DVLA) if you are diagnosed with glaucoma in both eyes. The DVLA may carry out regular tests to assess if it is safe for you to drive.

To assess possible damage to your peripheral vision, you will need a special test to see whether your sight meets the standards of the DVLA. Ask your specialist about this.

You may like to obtain a leaflet about driving published by the International Glaucoma Association (IGA). The IGA supports patients by providing information, so they can cooperate fully in their treatment and prevent sight loss. It also promotes awareness and early detection of glaucoma, and supports and carries out research.

Useful contacts

The Royal College of Ophthalmologists

T 020 7935 0702

W www.rcophth.ac.uk

Royal National Institute of Blind People (RNIB)

T 0303 123 9999

W www.rnib.org.uk

Driver and Vehicle Licensing Agency (DVLA)

T 0300 790 6801

W www.gov.uk/contact-the-dvla

International Glaucoma Association (IGA)

T 01233 64 81 70

W www.glaucoma-association.com

About Vista

Vista is the leading local charity working with children and adults with sight loss in Leicester, Leicestershire and Rutland. Whether someone is newly diagnosed or has lived their whole life with reduced sight, Vista's specialist staff provide a vital lifeline to local people.

T 0116 249 8839

E info@vistablind.org.uk

W www.vistablind.org.uk

The information in this leaflet has been reproduced from the booklet "Understanding Glaucoma" with kind permission of the Royal College of Ophthalmologists and RNIB.

If you require the information in this booklet in an alternative format (e.g. large print, audio or Braille) or in an alternative language, please contact Vista on **0116 249 0909.**



**INVESTORS
IN PEOPLE**

For more information, please contact

Vista

16 New Walk
Leicester
LE1 6UB

T 0116 249 8839

E info@vistablind.org.uk

www.vistablind.org.uk

Registered charity number 218992