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GLAUCOMA - a patient's guide
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Overview

Glaucoma is a pressure build up in the eye which damages the optic nerve

The nerve damage creates blind areas in the peripheral vision

The condition can lead to tunnel vision and eventually blindness

Glaucoma mainly affects older people over the age of 40

Afro-Americans and people who are short-sighted are at higher risk

People over the age of 40 should have their vision checked every three years

Glaucoma can not be cured but treatment can stop its progression to blindness

Treatment includes eye drops, medication, and surgery

What is Glaucoma?

The front part of the eye is filled with a fluid called aqueous humor. Its production and drainage out of the eye are controlled so the eye is maintained within a normal pressure range (the intra-ocular pressure). If the aqueous is prevented from draining properly the pressure builds up in the eye and this can damage the optic nerve. This is known as glaucoma.

The optic nerve carries the images we see from the retina to the brain and is like an electric cable containing about one million wires. When these nerves become damaged in glaucoma, blind areas in our peripheral vision are created and if the damage continues the visual field becomes smaller leading to tunnel vision and eventually blindness.

Types of Glaucoma

Primary open angle glaucoma (POAG):

This is by far the most common type of glaucoma affecting 1-2% of the population. The following discussion all relates to this type of glaucoma.

Acute closed angle glaucoma:

This occurs when there is sudden blockage of the drainage canal resulting in a rapid pressure build-up, halos around lights and a very severe headache.

Normal or low tension glaucoma:

Some people can experience visual loss from glaucoma despite having a normal intraocular pressure. It is felt that this is due to poor blood supply to the optic nerve at the back of the eye and indeed this may play a part in POAG as well.

Ocular hypertension:

Some people with high intraocular pressure never develop the optic nerve damage of glaucoma. These people still need to be followed carefully by an ophthalmologist.

Congenital glaucoma:

Very rarely glaucoma occurs within the first few years of life.

Secondary glaucoma:

The high intraocular pressure may be due to some process going on inside the eye such as inflammation, injury etc.

Who is at risk?

POAG very rarely comes on under the age of 40 and becomes more frequent with increasing age. If there is a family history of this condition, there is a 10% increased risk for other members of the family. Afro-Americans have a higher risk than Caucasians. Myopic or short-sighted people also tend to have a slightly higher incidence.

What are the symptoms?

There are none. This is why glaucoma is so nasty in that it is a silent disease. By the time a person notices their peripheral vision has been affected, the disease is already at a very advanced stage. Because glaucoma affects the peripheral vision, a patient with glaucoma will have normal sight (even with tunnel vision) until just before they go blind. POAG does not give rise to headaches, "pressure around the eyes", red eyes, irritation and soreness etc.

How is it diagnosed?

Every person over the age of 40 should have their eyes checked about every three years. During this process the intraocular pressure is measured to see that it is within normal limits and the optic nerve at the back of the eye is examined for any evidence of damage. If there is any suspicion, the patient's visual field is examined on an instrument called a perimeter. This involves sitting in front of a bowl shaped screen looking straight ahead and pushing a button whenever pinpoints of light are shown into their visual field above, below and to the side.

Monitoring glaucoma

Usually the intraocular pressures are measured every six months and the visual fields tested annually, but obviously this may vary with each individual case.

Can glaucoma be cured?

No. But it can be controlled so that further damage to the optic disc and visual field does not occur. For POAG this means a lifelong commitment to treatment and regular checks.

Treatment of glaucoma

There are many treatment options for glaucoma including eyedrops, tablets, laser treatment and drainage filtering surgery.

Glaucoma eye drops:

This is the first line of treatment as it is the safest and easiest option. But they must be taken regularly and probably for the rest of the patient's life. Until three years ago there were only three types of drops available in New Zealand, but more recently three other types of drops have also become available. Some of these drops work by decreasing the production of aqueous humor and others increase the outflow. Some of the drops need only be used once a day while others may need to be used two or four times daily. Initially a patient is put on one type of drop which will bring the intraocular pressure down. Over a period of time however the pressure may creep up again and additional types of drops may have to be used as well. However, if the glaucoma worsens despite using drops, then surgery may be needed. Like all medication, the drops have certain side effects and some may be contraindicated in some people. Asthma is a contraindication to one type of anti-glaucoma drops.

Tablets:

These are very rarely used these days because the drops are more efficient and the tablets tend to have unpleasant side effects.

Laser treatment:

In simple terms, a trabeculoplasty opens the clogged drainage holes with a laser. This treatment is not commonly done and not every case of POAG is suitable. Overseas studies also show that any pressure drop achieved is not long lasting.

Glaucoma surgery:

This involves creating a new channel for the fluid to drain out of the eye and is known as a trabeculectomy.

When is surgery indicated?

Surgery for glaucoma is indicated if the pressure is not under adequate control and the visual field is getting progressively worse despite all the drops being taken.

How is the surgery done?

Nowadays surgery is most commonly done under local anaesthesia and on an outpatient basis. Under the upper lid a small flap is made in the sclera or white part of the eye. A small hole is made underneath this flap and the aqueous humor diffuses out underneath the conjunctiva to form a small blister or bleb.

What are the risks of surgery?

Like all operative procedures, there is a risk of infection, but this is extremely rare and usually quite treatable. Successful surgery requires just the correct amount of fluid draining out of the eye and this can be difficult to achieve. In the immediate post-operative period, too much fluid may drain out and this can lead to problems. In the longer term the body's healing processes may scar over the drainage site and the operation may ultimately fail. The patient then has to go back on drops but the procedure can be repeated. Also in the long term, there is a higher incidence of cataracts (clouding of the lens) occurring in patients who have had trabeculectomies.

Management after surgery

Depending on how successful the drainage procedure has been, drops may or may not be still required. No matter how successful the surgery may be, ongoing regular checks are still required for the rest of the patient's life.

Other surgical procedures

In advanced complicated glaucoma there is a procedure whereby a little plastic tube is put into the front of the eye to drain the fluid out. This is a technically difficult and complicated procedure and rarely done. Just recently a new drainage procedure has been developed that is less invasive than a trabeculectomy. This is known as a canalicular viscocanulostomy. The early results look promising but only time will tell whether this takes over as the procedure of choice.

The use of marijuana in the treatment of glaucoma

There is evidence that the use of marijuana (or its components) taken orally or by inhalation can lower the intraocular pressure. There are however no conclusive studies to date to indicate that marijuana can safely and effectively lower intraocular pressure enough to prevent optic nerve damage. A long-term clinical study is required to test the safety and efficacy of marijuana.