OPHTHALMOLOGY 21MMO Lyn.

About 2% of the population suffer with some form of Glaucoma in the UK and it is one of the leading causes of blindness in the world. Glaucoma is not curable, but blindness is preventable if glaucoma is diagnosed and treated early enough. While there are usually no warning signs, regular eye tests will help detect the onset of the disease.

What is glaucoma?

Glaucoma is an eye condition characterised by loss of vision due to damage of the optic nerve. The optic nerve carries sight images to the brain, and any damage to the nerve results in damage to sight. Usually, but not always, the damage occurs because pressure within the eye increases and presses on the nerve, which damages it.

The eye ball is filled with a fluid called aqueous humour, which produces a pressure gradient in the eye. The normal pressure range is between 10-21mmHg. If too much fluid is produced or not enough drains away the pressure in the eye can build up. The drainage can become blocked suddenly, as in closed angle glaucoma, or gradually over a long period of time, open angle glaucoma. Open angle glaucoma is by far the most common, and in England affects 1 in 50 of the over 40's and 1 in 10 of the over 75's, compared with closed angle-glaucoma which affects 1 in 1000 of the Caucasians and 1 in 100 Asians.

There is a third type of glaucoma, normal tension glaucoma that can develop despite the pressure in the eye being within the "normal" range. Various studies have shown that in all types of glaucoma, early detection and intervention by lowering the pressure within the eye can reduce visual loss.

How is Glaucoma diagnosed?

Glaucoma can have no symptoms until there is significant irreversible visual loss. This stresses the importance of regular eye checks which can detect the condition before it causes damage to the nerve.

Tonometry

This tests the pressure within both eyes. The eye is numbed using eye drops, and a pressure reading contact lens is advanced until it lightly touches the surface of the eye, and the pressure is recorded.

Ophthalmoscopy

The second test is to directly visualise the optic disc (nerve) to assess whether it has any damage or not. This test is carried out in a darkened room, with the pupils dilated using eye drops and a small light shone inside the eye.

If the optic disc (nerve) looks normal, and the pressure is within the normal range, no further tests are needed. However, if the result of either test is unusual, you may be invited for some further tests.

Perimetry

As the name suggests, this tests your perimeter of vision known as the visual field. Glaucoma affects peripheral vision first, which is why most people are unaware there is a problem until the damage extends more centrally.

This test allows the examiner to detect whether there is any loss of peripheral vision before you may become aware of it.

Gonioscopy

This is a painless test using a lens with a mirror that allows the examiner to visualise the angle where the fluid flow can become blocked. The aim is to identify if the angle is narrowed or closed, or if it is normal.

How is Glaucoma treated?

Glaucoma treatment can vary from one individual to another, but is always aimed at reducing visual loss, which is usually done by reducing the pressure within the eye. Glaucoma can't be cured, but early detection and treatment can prevent progression of visual loss. The treatment can be medical, laser or surgical. In the majority of cases, medical treatment can control the progression of glaucoma, and rarely is surgery required in the first instance.

Medical
A range of eye drops that lower the pressure within the eye. It is not unusual to be on more than one eye drop at a time.

Laser
In open angle glaucoma laser burns or holes can be made in the trabecular meshwork to increase drainage of fluid, or at the ciliary body to reduce production of fluid. In closed angle glaucoma the laser is aimed at the iris (the coloured part of the eye) to open the angle and improve the flow of fluid.

Surgery
This is often considered if medical or laser treatment has not succeeded in reducing the pressure within the eye. For open angle glaucoma a trabeculectomy can be preformed. This involved creating a passage way for the fluid to exit the eye by bypassing the drainage system (trabecular meshwork). In cases where despite surgery the pressure still needs to be reduced further, a drainage implant can be considered.