



**Birmingham Women's
and Children's**
NHS Foundation Trust

An information leaflet for patients
and families

Von Hippel- Lindau Disease



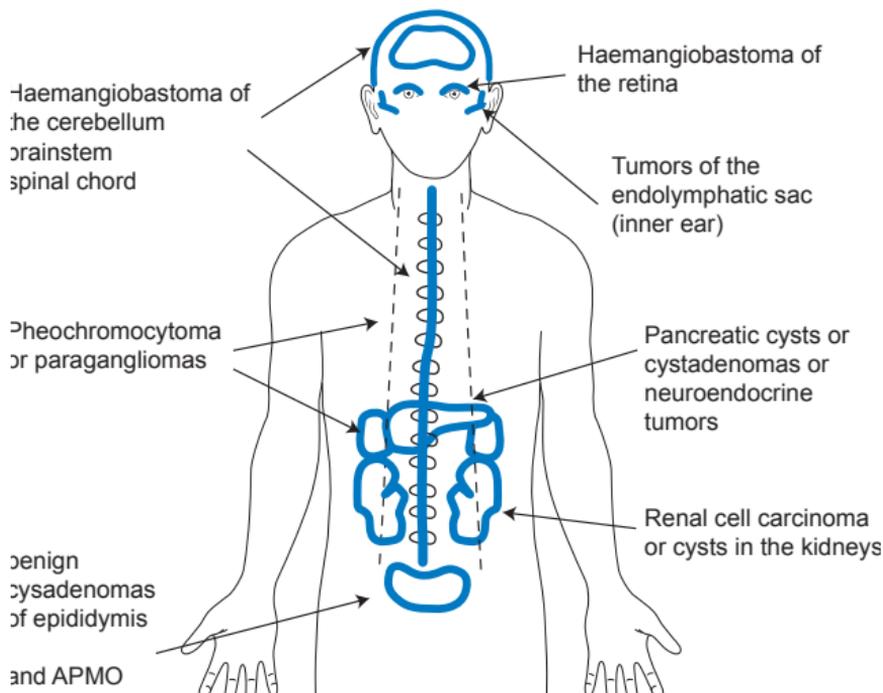
By your side

What is Von Hippel-Lindau disease?

Von Hippel-Lindau (VHL) disease is a rare inherited disorder caused by a genetic alteration (mutation) in the VHL gene. It is named after the two doctors who described it. Although VHL disease can have serious complications, if these are detected early they can usually be treated successfully.

What are these complications?

VHL disease can affect different parts of the body, most frequently the eyes, back of the brain (cerebellum), kidneys, spinal cord, adrenal gland or pancreas. (See diagram)



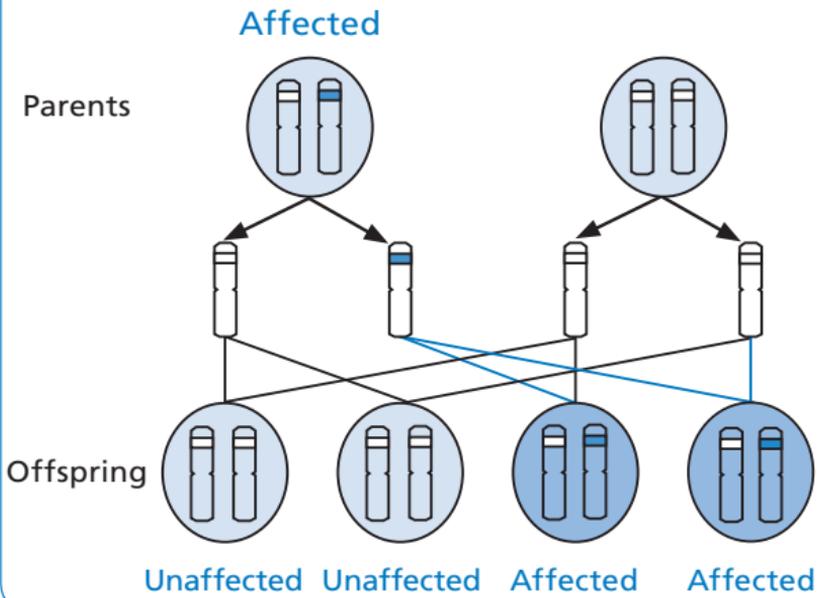
In the eye, enlarged blood vessels (angiomas) can occur on the retina (back of the eye). When small these do not cause any problems and can only be seen by an ophthalmologist (eye specialist). However, if an angioma is not detected and treated it may enlarge, damage the retina and eventually impair vision. Cysts or benign tumours called haemangioblastomas can occur in the cerebellum or spinal cord. These are benign and do not spread. If they occur in the cerebellum they usually cause a headache and unsteadiness on walking. Haemangioblastomas in the spinal cord can cause pain or numbness. These cysts can be detected by a

CT or MRI brain scan, or an MRI scan of the spine. Cysts in the kidney are frequent in VHL disease. They are benign and don't cause symptoms. However, in some patients a solid tumour may develop. If detected early these tumours can be easily removed and do not cause problems. If not detected and treated the tumour can become cancerous and eventually spread around the body. Cysts can also occur in the pancreas and infrequently tumours also develop. In some patients a benign tumour called a pheochromocytoma can develop in the adrenal gland. This produces adrenaline and causes high blood pressure. Rarely a small tumour may occur in the inner ear. This can be detected by a brain scan in patients with hearing problems. VHL disease is very variable, so that whereas one family member may develop an eye problem, another family member with the same genetic alteration may develop a kidney problem. Similarly although several members of the same family may develop complications at an early age, another may not develop a complication until they are much older. However there is a tendency for pheochromocytomas to run in particular families.

How is VHL disease inherited?

VHL disease is caused by a mutation (alteration) in one copy of the VHL gene. As genes come in pairs (one is inherited from each parent) a person with VHL disease has one altered VHL gene and one normal VHL gene. When he/she has children either the altered gene or the normal gene is passed on to each child. Each person with an affected parent therefore has a 50% (1 in 2) chance of inheriting the altered gene (see figure). This is a random event like tossing a coin, so although on average 50% of the children of a person with VHL disease will also inherit the disease, in some families a higher or a lower proportion of the children maybe affected. It is now possible to identify the gene alteration in most (but not all) VHL families. This enables family members to be tested to determine if they carry the altered gene. Not all patients with VHL disease will have inherited the altered gene from an affected parent. Sometimes, the altered gene may have started with that particular patient.

Autosomal dominant inheritance:



What age do complications develop?

This is very variable. Onset during childhood is uncommon. Occasionally retinal angiomas may occur during childhood but most patients have developed a complication by age 40, and often the disease starts in the late teens or 20's. However in some cases complications may only develop after 50 or even 60 years of age. This means that it is difficult to be sure that person with an affected parent has not inherited the altered gene until they are aged about 60. By then almost everybody who has inherited the altered gene can be detected if the appropriate screening tests are performed.

What treatment is available?

The complications of VHL disease are easier to treat if detected early. Retinal angiomas may be treated by laser or by freezing. Haemangioblastomas in the cerebellum or spine are usually removed surgically if they are causing symptoms. Renal cysts do not need treatment, but if a renal tumour or pheochromocytoma is detected it will be surgically removed.

Is any research being performed?

A research team is studying patients from all over Great Britain and Ireland. It is based in Cambridge and works closely with doctors from many centres. The main research projects are firstly to determine what and when complications

in VHL disease develop, so that better methods of detection and treatment can be developed. As they are investigating how the VHL gene works, it is hoped that this research will eventually lead to better testing and treatments for VHL disease. If you would like further information on research, please write to Professor E R Maher at Department of Medical Genetics, University of Cambridge, Box 238, Addenbrooke's Treatment Centre, Cambridge Biomedical Campus, Cambridge CB2 0QQ

What does screening involve?

The purpose of screening is to detect complications early when treatment is usually easier. The exact type and timing of investigations for screening will vary according to individual circumstances. A patient known to have VHL disease will usually have a check up by a doctor, an eye examination by an ophthalmologist, a scan of the kidneys and a urine test (for adrenaline levels) every year. A brain scan may be performed every few years. A person who has no symptoms but has a parent with VHL disease should also have regular checkups. Annual eye examinations are started during childhood (from about 2-3 years), urine tests at 11 years and kidney scans at about 16 years. Brain scans may also be performed every few years from 15 years, however a cerebellar haemangioblastoma will usually only be removed if it is causing symptoms. These investigations are usually continued until about 60 years, although with the advent of a direct test for the altered gene, the screening protocol can be modified according to an individual's risk. If a patient with VHL disease or a relative, develops symptoms they should seek medical advice sooner. A personal or family history of VHL disease should always be mentioned whenever you see a doctor, even if it does not appear to be relevant at the time.

For more information

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Further Information

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