

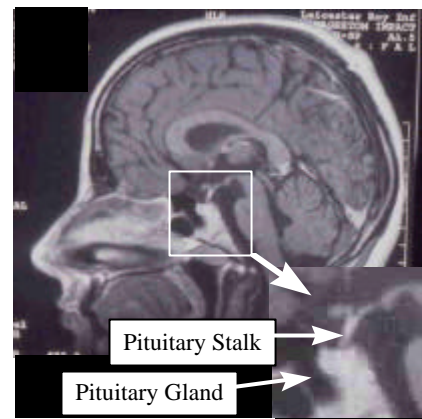
# The Pituitary Gland

The pituitary gland is a small hormone gland, about the size of a pea, which controls the activity of a large number of other hormone glands in the body.

It is situated in a bony hollow in the middle of the head, behind the eyes and the top of the nose. It is connected to the underside of the brain, which controls it, by a small stalk.

Amongst other things the pituitary is responsible for the control of the following:

- The **Thyroid gland**, which produces thyroid hormone and keeps all parts of the body 'ticking over' at the right rate.
- The **Adrenal glands**, which make the body's natural steroid hormones, essential for normal health and for coping with stresses and diseases.
- The **Ovaries** in a woman, or **Testes** in a man, which produce the normal female or male sex hormones and are also responsible for fertility.
- **Growth hormone**, responsible for growth in childhood.
- **Prolactin**, responsible for the production of breast milk after pregnancy.
- **Control of the amount of urine** passed, in response to the amount of fluid taken in. If this hormone is not made properly then people produce a very large amount of urine.



## Hypopituitarism

'Hypopituitarism' means that the pituitary is not producing enough of the hormones and is common in pituitary diseases. Symptoms and treatment are described in detail on the other side of this sheet.

## A 'Pituitary Tumour'

A common type of pituitary disease is the presence of a small **benign** tumour of the pituitary gland.

- 'Tumour' is a medical word which simply means abnormal swelling, and tumours of the pituitary gland are virtually never malignant or cancerous.

Pituitary tumours can, however, cause illness if they interfere with the normal function of the pituitary gland, or enlarge to press on important nearby structures, or if they make too much of a particular pituitary hormone.

## Symptoms of Enlargement of a Pituitary Tumour

Many pituitary tumours are small and cause no other problems, but if your pituitary has become large it may cause the following problems:

- \* Headache, severe and/or increasing
- \* Pain in the eye or face
- \* Double vision
- \* Problems with eyesight, due to pressure of the pituitary on the eye nerves. This usually causes loss of vision in the outer part of the eye.
- \* *If you develop any of these symptoms during follow up, then please arrange to see us as soon as possible.*

# Deficiency of Pituitary Hormones

All of the hormones of the pituitary may become deficient, but all can be replaced by medicines (usually identical to the natural hormone) to return the patient to normal:

- **Thyroid hormone (Thyroxine):** lack of this hormone makes people tired and lacking in energy, and may make you gain in weight, feel the cold unusually, or give you dry skin or constipation. The replacement is a tablet taken once a day.
- **Adrenal steroid hormone (Hydrocortisone or Cortisol):** lack of this hormone makes people feel generally tired and unwell, and become seriously ill if stressed by another illness or accident. The replacement is a tablet taken 2 or 3 times a day.
- **Oestrogen (female sex hormone)\*:** if you lack this hormone then the periods will stop and you may suffer from loss of libido and 'hot flushes' and sweats. Replacement is with oestrogen which may be given as the 'Pill', as 'H.R.T' tablets, or as skin patches.
- **Testosterone (male sex hormone)\*:** if you lack this hormone you may notice loss of libido, reduction in shaving or body hair, and ultimately impotence. Replacement is usually by an injection given every 3-4 weeks. Tablets and patches are also available.
- **Growth hormone:** this can be given as daily injections, but is currently only used routinely in children who still need to grow. In adults, growth hormone deficiency causes a slight increase in body fat and decrease in muscle and makes *some* people feel generally unwell and lacking in energy. If these symptoms are severe it can be replaced by daily injections.
- **Desmopressin:** is a drug similar to the hormone which controls the concentration of urine. If you need it, then it is given as a nasal spray last thing at night, and in the morning if required.

\* *It is worth replacing sex-hormone deficiency whether you are male or female, even if you think you don't need it, since lack of these hormones can result in very thin bones as you get older (osteoporosis) and also affect your general health.*

## You need the following replacement treatment: *(Doctors: indicate with a tick)*

- Hydrocortisone:** ..... mg morning, ..... mg lunchtime, ..... mg evening
- Thyroxine:** ..... micrograms (..... tablets), taken once a day
- Oestrogen ('HRT'):**
- Testosterone:** Testosterone (enanthate) injection ..... mg, every ..... weeks
- Desmopressin:** ..... spray (.....mcg) at night, ..... spray (.....mcg) morning.
- We have tested the pituitary function and no replacement is needed
- Tests are incomplete or borderline – and will need regular monitoring

### More Information:

Pituitary Foundation, PO Box 1944, Bristol, BS99 2UB - (0117) 9273355  
*(Information Booklets and Membership application forms are available in the clinic - please ask)*



### Internet:

[www.pituitary.org.uk](http://www.pituitary.org.uk)

[www.tahowlett.yourmd.com](http://www.tahowlett.yourmd.com)

# Testing the Pituitary

Since the function of the pituitary is complex, we often need to perform a large number of tests to find out what is going on, and we may need to repeat these tests from time to time since the situation may change.

- \* **MRI scan:** this gives us a picture of the pituitary gland and lets us see its size. You will need to lie on the scanner table which moves into the machine. During the scan you will be given an injection into one of the veins of the arm. This may make you feel rather hot and flushed, but gives us a very much better picture. The machine is very noisy!
- \* **Blood tests:** We can learn quite a lot from simple blood tests in the clinic, and in some cases no more information will be needed. Often bloods need to be taken at 9am in the morning.
- \* **Complex blood tests:** Many patients need to come to the Clinic or Ward for a morning, or a whole day. A small flexible needle is placed in one of the veins in the arm, and several samples are taken during the day. To test out how the gland works we might need to give you insulin (the insulin stress test - which makes you feel faint and sweaty and ensures that you can respond to serious illness), glucose, or injections of other substances which stimulate the gland (Synacthen, CRF, TRH, LHRH), or we may simply need to measure levels of hormones through the day after various tablets. Each test should be explained fully to you, none are very unpleasant, and most cause no symptoms at all.

# Transsphenoidal Surgery

While many pituitary tumours can be managed medically with tablets, some require an operation to deal with the problem. If this is the case we will explain the reasons for surgery to you, and meet you together in the clinic with the surgeon.

- \* The operation would be performed in Nottingham by Mr Iain Robertson, a neurosurgeon. A small cut is made inside the nose, and a special instrument is passed behind the nose, through one of the sinuses (the sphenoid sinus) to reach the pituitary from below. The abnormal parts of the gland are removed with tiny instruments with the aid of a microscope. This is not a brain operation and does not require opening the head. A small cut is usually also made on the leg to take a little bit of muscle or gristle to fill the hole in the bottom of the pituitary. The operation is a very skilled one, but does not cause a great deal of upset or discomfort for the patient. After the operation you may feel groggy for a day or two, and may need injections to control the passing of large volumes of urine. In just under a week you will be transferred back to one of my beds at the Leicester Royal Infirmary, so that we can recheck the function of your normal pituitary gland and work out what replacement, if any, you need. You will usually be able to leave hospital at the end of the week following the operation.
- \* All operations carry a small risk; side effects of this operation are unusual but include: loss of the sense of smell, which occurs in most people but is usually temporary (lasting a few months); in 10-20%: Damage to function of normal pituitary gland (although in some cases normal function improves); in 2-3%: leakage of brain fluid (CSF) through the nose; infection spreading up from the nose to the brain – a form of ‘meningitis’ but easily treatable and *much* less severe than the type you may have read about; damage to nerves and blood vessels beside the pituitary – leading to double vision; bleeding from blood vessels beside the pituitary which may cause the operation to be stopped; in 1% or less: damage to the eye nerves leading to loss of vision; bleeding from, or damage to, the main blood vessels supplying the brain leading to a form of ‘stroke’. The most severe complications extremely rarely lead to loss of life. Almost all these problems are completely treatable and in all cases where we recommend an operation we believe that the risks of surgery are much less than leaving your pituitary untreated. All risks are more common with larger tumours - but so are the risks of harm from the same tumour left untreated.

# Pituitary Radiotherapy

A few patients with pituitary tumours need radiotherapy, to stop the tumour from growing larger, or from regrowing after surgery. This does **not** mean that the tumour is malignant, it is benign but simply very difficult to get at in any other way.

- \* Treatment is planned very carefully, and given over a period of 5 weeks in small, accurate daily doses. If you ever need this treatment we will discuss it in more detail.
- \* After radiotherapy there is an increased risk of pituitary hormone deficiencies, and we will arrange to screen levels of relevant hormones from time to time