

Pituitary adenoma

This factsheet provides information about tumours of the pituitary gland found at the base of the skull. If you would like further information, please ask a nurse, doctor, or other healthcare professional involved in your care.

What is the pituitary gland?

The pituitary gland is a small oval-shaped gland found at the base of the brain behind the eyes. It makes hormones, which in turn control and regulate the other hormone glands in the body. These hormones are responsible for the body's growth, metabolism and fertility. The pituitary gland is divided into two parts: the anterior and posterior pituitary.

The **anterior pituitary** secretes six hormones:

- Growth hormone – regulates growth and metabolism
- ACTH (Adrenocorticotrophic hormone) – stimulates production of steroid hormones from the adrenal glands. Cortisol regulates carbohydrate, fat, protein metabolism and blood pressure and is important in regulating the body's fight or flight response
- Prolactin – stimulates production of milk after childbirth
- TSH (Thyroid Stimulating Hormone) – stimulates production of thyroid hormones from the thyroid gland. This controls the body's metabolic rate and plays an important role in growth and maturation
- FSH (Follicle Stimulating Hormone) – stimulates activity of the ovaries in women and the activity of testes in men
- LH (Luteinising Hormones) - essential for reproduction. In males, stimulates testosterone production and in females, stimulates ovulation.

The **posterior pituitary** also secretes hormones, including:

- ADH (Anti-Diuretic Hormone) – controls the concentration of urine which helps regulate the concentration of blood.
- Oxytocin – stimulates contraction of the womb during childbirth and the secretion of milk for breastfeeding.

What is a pituitary tumour?

Almost all tumours of the pituitary gland are benign, that is, they are non-cancerous and do not spread. These tumours are called pituitary adenomas and are classed as either secreting or non-secreting tumours. Secreting tumours release excess amounts of one or more of the pituitary hormones. Pituitary tumours are most commonly found in young or middle-aged adults (30-50



years old). They make up nearly 10% (10 people in 100) of all brain tumours. The cause of pituitary tumours is unknown; research continues into finding possible causes.

A small number of these tumours are **not** adenomas - if you would like further information on these, please ask a nurse, doctor, or other healthcare professional involved in your care.

What are the signs and symptoms of pituitary tumours?

Pituitary tumours may cause no symptoms and can be detected on a scan performed for another reason.

If symptoms occur, they may be caused by direct pressure from the tumour itself or by a change in normal hormone levels. As the tumour grows, it may put pressure on the optic nerves (nerves going to the eyes) which may affect vision and cause headaches. Symptoms caused by a change in hormone levels may take a long time to become apparent and will depend on the hormones released.

- Prolactin secreting tumours (prolactinoma) are the most common type of secreting tumour. Women with this type of tumour may notice their monthly periods stop and may also produce small amounts of breast milk. Symptoms in men may include impotence. Infertility is common (in both men and women) and the tumour may be discovered during routine tests for infertility.
- Growth hormone secreting tumours can lead to abnormal growth with enlargement of the hands, feet and facial structures (acromegaly) and can also lead to high blood pressure and diabetes.
- ACTH secreting tumours are characterised by a round or moon face, weight gain, increased facial hair, diabetes and mental changes such as depression. This is known as Cushing's Disease.
- TSH secreting tumours can cause excess production of thyroxine. This is characterised by anxiety, mood swings, sensitivity to heat, diarrhoea and itchiness. However, these tumours are very rare (accounting for less than 1-2% of all pituitary tumours).
- FSH or LH secreting tumours are very rare and are likely to cause infertility.

What tests and investigations will I need?

It is important to find out as much as possible about the type, position and size of your tumour. You will have blood tests to check the hormone levels, a CT (computerised tomography) scan or MRI (magnetic resonance imaging) scan to see the size and position of the pituitary tumour and an eye examination to detect pressure on the optic nerves. A simple test is done to check visual fields and/or visual acuity (how well you see).

Treatment options

Surgery

Surgery is the most common treatment for pituitary tumours. The aim of surgery is to remove the tumour and leave at least some of the normal pituitary gland behind. This is not always possible



and sometimes the entire gland needs to be removed. The tumour is usually removed through the nose or by a small opening under the lip. This is called a transphenoidal resection. Recovery from this type of surgery is usually quick (a few weeks). Occasionally it is necessary to approach the pituitary gland through the brain. Your surgeon will explain the operation to you in more detail, if relevant.

Medical treatment

Some hormone secreting tumours can be controlled with medication - this will be done under the care of the endocrine doctors.

If the whole pituitary gland is removed, medication will have to be taken to replace the missing hormones and this is likely to be lifelong.

Radiotherapy

Radiotherapy may be advised for people with pituitary tumours which are not completely removed by an operation, or where there is still excessive hormone produced despite surgery.

There are two different ways of giving radiotherapy for a pituitary tumour:

1. **Fractionated stereotactic radiotherapy** is given in small doses over five to six weeks and is given daily, Monday to Friday. A specially fitted face mask is used which is necessary for accurate planning of treatment and to keep the head still during the delivery of each treatment.
2. **Stereotactic radiosurgery** is delivered using the cyberknife (a radiotherapy machine mounted on a robotic arm) and is usually given in a single dose on a single day. A specially fitted face mask is used which is necessary for accurate planning of treatment and to keep the head still during the delivery of treatment.

Your doctor will discuss with you the method most suitable for you.

How effective is radiotherapy?

The aim of radiotherapy is to stop the tumour from growing. The success of radiotherapy treatment is described in terms of tumour control. A tumour is controlled if it remains the same size and does not need further treatment.

Following radiotherapy, tumour control is in the region of 90% at 10 to 20 years. This means there is approximately a 10% chance of needing further treatment over 10 to 20 years. Hormone control is achieved in the majority of people, but it may take some years for the level to fall to normal and is dependent on the level of hormone imbalance at the start.

What are the side effects of radiotherapy?

Short term side effects (during and for a few weeks after treatment)

Having daily treatment usually makes people feel tired. Towards the end of treatment there may be small patches of hair loss. After treatment the hair should grow back normally.



Late side effects (appearing months or years later)

There is concern that radiation may cause damage to parts of the brain surrounding the pituitary adenoma.

- Vision – There is a very small risk that the nerves to the eyes may be affected. In 1- 2% of patients (1 or 2 people in 100) this may lead to worsening of vision months to years after treatment.
- Hormones – Radiation may cause damage to the nearby hormone-producing glands including the remaining normal pituitary gland and the hypothalamus. This needs to be monitored in an endocrine clinic once or twice a year and will require blood tests to monitor hormone levels. The risk of being deficient in some hormones is relatively high (20-60%) and increases with time, but can be easily treated by taking the necessary hormone replacement medication.
- Other tumours – After radiotherapy or radiosurgery there is a small risk of developing another tumour in the brain and this is approximately 1% at 10 years and 2% at 20 years. These are usually benign tumours (non-cancerous) called meningiomas.
- Vascular risk – People with pituitary adenoma have a higher risk of having a stroke. There is ongoing research to check how much radiotherapy may contribute to this risk. Your doctor can recommend how reduce the risk as much as possible.

The advice to have radiotherapy is based on the balance of risk and benefit on present evidence. Radiotherapy is considered relatively safe compared to the risks involved with not having treatment and the adenoma growing back; overall it results in a very good chance of never needing further treatment.

Contact details

Neuro-Oncology Clinical Nurse Specialist (CNS)

Tel: 020 8915 6011

The Royal Marsden Macmillan Hotline: 020 8915 6899
(available 24 hours a day, 7 days a week)

Further information

The Pituitary Foundation

A national organisation offering support and information for pituitary patients, their families, friends and carers.

Website: www.pituitary.org.uk/

Support helpline: 0117 370 1320

