

Hypopituitarism and pituitary replacement hormones

What is the pituitary gland?

It is a small pea-sized gland situated in a hollow bony pouch, at the base of the brain, at the back of the bridge of the nose. It is the master gland of the endocrine system and controls the functions of most of the other endocrine glands.

What hormones does the pituitary produce or release?

- *Thyroid stimulating Hormone (TSH)*: This hormone circulates to the thyroid gland in the neck, stimulating it to make and release thyroid hormones, Thyroxine and Tri-iodothyronine.
- *Adrenocorticotrophic hormone (ACTH)*: This hormone stimulates the adrenal glands (small endocrine glands situated on the top of your kidneys) to produce cortisol. This is a steroid hormone which is essential for everyday activities and health. Lack of cortisol causes severe fatigue and lack of appetite with weight loss.
- *Growth Hormone (GH)*: This has effects on the various tissue of the body. In children, it is essential to reach normal growth. In adults, it appears to maintain normal energy levels and to keep muscles and bones strong and healthy.
- *Gonadotrophins* - Follicular Stimulating Hormone (FSH) and Luteinising Hormone (LH): These hormones regulate and control the male and female hormones, menstrual cycles, ovulation, sperm production and fertility.
- *Prolactin (PL)*: This hormone stimulates the breasts and regulates milk production. It is normally produced in very high levels during pregnancy and breast-feeding. This hormone can be responsible for irregular or absent menstrual periods and lack of libido.
- *Antidiuretic hormone (ADH)*: This hormone circulates to the kidneys where it regulates the amount of urine produced. Too little ADH causes continual thirst and copious output of urine day and night.

What causes hypopituitarism?

- A pituitary tumour (called an adenoma).
- Surgery in the region of the pituitary.
- Radiotherapy to the pituitary gland itself or part of the brain close to the pituitary gland eventually damages normal pituitary tissue.
- Damage of the pituitary by trauma such as road accidents.
- Damage to the pituitary gland by the blocked blood supply, bleeding, inflammation or infiltrations.

- Auto-immune attack on the pituitary gland.
- Damage of the pituitary by infection, e.g. meningitis.
- Isolated deficiency of one of the hormones, which can be since birth.

What are the symptoms of hypopituitarism?

It will depend on the type of the hormone(s) involved and degree of the impairment. All the features you will notice with low hormone levels are usually very vague and it is important not to jump to conclusions. We will perform the necessary tests to find out which hormones are not being produced.

- Low cortisol level can cause weight loss, loose stool, low blood pressure, blackout and undue tiredness.
- Low GH will cause failure of growth and undue tiredness and weakness in adults.
- Low sex hormone level will cause impotence, irregular or absent menstrual cycles. Lethargy and sweating may also be a feature.
- Low thyroid hormone will cause dry skin, weight gain, constipation, cold intolerance, and undue tiredness.
- Lack of ADH causes severe thirst and copious amounts of urine.

What tests will be required?

- Blood tests to check basic hormone levels.
- You will need a special test to measure some of the pituitary hormones before and after stimulation to find out which are working normally and which are not.
- Visual field check. The optic nerve which relays images from your eye to your brain passes very close to the pituitary gland. Tumours of the pituitary gland can expand causing pressure on this nerve and this will cause impaired vision initially involving the periphery of the vision. This is checked by a special computerised light screen. Dots of light appear on the screen and the patient has to identify when they are seen.
- MRI of the pituitary and surrounding structures.

What is the treatment for hypopituitarism?

The treatment is to replace deficient hormones:

- ACTH and Cortisol are replaced by Hydrocortisone taken orally three times daily.
- TSH and Thyroid Hormones are replaced by taking Thyroxine orally daily.
- Sex hormones are replaced in women by the contraceptive pill or HRT. For fertility, special hormones are required given by injection. In males, testosterone, the male hormone, can be given by injections or topical gels. In some clinics pellets of hormone may be implanted below the skin every six months. For fertility, males require regular injections of special hormones.
- Growth Hormone may be replaced in some people by daily injection.
- ADH is replaced by the medicine Desmopressin (DDAVP) given as nasal spray or tablets.

Where can I learn more?

Pituitary Foundation

PO Box 1944

Bristol BS99 2UB

Tel: 0845 450 0375

e-mail: helpline@pituitary.org.uk

Websites: www.pituitary.org.uk

More information is available on the Trust website www.royalberkshire.nhs.uk

This document can be made available in other languages and formats upon request.

Centre for Diabetes and Endocrinology, July 2003

Reviewed: January 2019

Review due: January 2021