CONDITION

Hypopituitarism

Hypopituitarism is a shortage of one or more hormones normally controlled by the pituitary gland.

WHAT IT IS
Deficiency of one or more pituitary hormones

BODY SYSTEM
Hormone system

MAIN SYMPTOMS
Fatigue, weakness, sexual changes, poor growth

WHAT CAUSES IT
Pituitary damage, tumours, inherited changes, or unknown

HOW IT IS DIAGNOSED
Hormone blood tests, stimulation tests, and pituitary MRI

MAIN TREATMENT
Hormone replacement and treatment of the underlying cause

CAN IT BE CURED?
Sometimes - temporary pituitary damage can recover

IS IT AN EMERGENCY?
Sometimes - adrenal crisis or pituitary apoplexy

LONG-TERM OUTLOOK
Usually manageable with lifelong monitoring and replacement hormones

Overview

Hypopituitarism means that the pituitary gland does not make enough of one or more hormones. The pituitary is a pea-sized gland at the base of the brain. It helps control the thyroid gland, adrenal glands, ovaries, testicles, growth, and water balance.

Some people lack only one pituitary hormone. Others lack several or nearly all of them. The effects depend on which hormones are affected, how severe the shortage is, and whether it developed suddenly or gradually.

The condition matters because pituitary hormones help regulate essential body functions. A shortage of the hormone that controls cortisol can become dangerous during illness or injury. Other deficiencies may affect energy, growth, body temperature, sexual function, fertility, bones, and general well-being.

Hypopituitarism may be present from birth or develop later. It can follow a pituitary tumour, brain surgery, radiation treatment, head injury, inflammation, or bleeding around the pituitary. Sometimes no cause is found.

Symptoms

Symptoms may appear slowly over months or years. They can be mistaken for stress, ageing, menopause, or another health problem. A sudden loss of pituitary function usually causes more obvious symptoms.

Low adrenocorticotropic hormone, or ACTH, reduces the adrenal glands' production of cortisol. Cortisol helps maintain blood pressure, blood sugar, and the body's response to physical stress. Symptoms may include:

Unlike some conditions that directly damage the adrenal glands, ACTH deficiency usually does not cause darkening of the skin.

Low thyroid-stimulating hormone, or TSH, causes the thyroid gland to make too little thyroid hormone. This may lead to feeling cold, constipation, dry skin, slower thinking, tiredness, or weight gain.

Low luteinising hormone and follicle-stimulating hormone affect the ovaries or testicles. Periods may become irregular or stop. Other possible effects include reduced sexual interest, erection difficulties, vaginal dryness, loss of body hair, infertility, and weaker bones.

Growth hormone deficiency can slow a child's growth. In adults, it may be linked with reduced muscle strength, increased body fat, low energy, and lower bone density. These symptoms have many other possible causes.

Low prolactin may make it difficult to produce breast milk after childbirth.

Damage involving the nearby hypothalamus or the back of the pituitary can also affect vasopressin, sometimes called antidiuretic hormone. This causes intense thirst and frequent passing of large amounts of pale urine. It is now called arginine vasopressin deficiency and was previously known as diabetes insipidus.

A pituitary tumour or other growth may also cause headaches, reduced side vision, double vision, or drooping of an eyelid.

- Severe or persistent tiredness
- Muscle weakness
- Loss of appetite or weight

- Nausea, dizziness, or low blood pressure
- Low blood sodium or low blood sugar

Causes and risk factors

Hypopituitarism results from a problem in the pituitary gland or the hypothalamus, the part of the brain that directs it.

Possible causes include:

A pituitary tumour can cause hormone deficiency by pressing on healthy tissue. Treatment for the tumour may also affect pituitary function. Most pituitary tumours are not cancerous.

Hypopituitarism after severe bleeding during or after childbirth is called Sheehan syndrome. Symptoms may begin soon after delivery or may not be recognised until later.

Some people develop hypopituitarism without a clear explanation. Having a risk factor does not mean that pituitary failure will occur.

- Pituitary or nearby brain tumours
- Surgery or radiation treatment near the pituitary
- A serious head injury
- Bleeding into the pituitary, called pituitary apoplexy
- Reduced blood flow to the pituitary, including after major bleeding during childbirth
- Autoimmune inflammation of the pituitary, called hypophysitis
- Infections or conditions that cause abnormal tissue deposits
- Developmental or inherited changes affecting hormone production

Diagnosis

Diagnosis begins with your symptoms, medical history, and an examination. Relevant history may include changes in periods or sexual function, childbirth complications, head injuries, and previous brain surgery or radiation.

Blood tests measure pituitary hormones and the hormones made by the glands they control. Testing may include morning cortisol, free thyroxine, sex hormones, and insulin-like growth factor 1.

A TSH result by itself cannot reliably rule out pituitary-related thyroid deficiency. The free

thyroxine level is important because TSH may be low, normal, or only slightly raised when the pituitary is the source of the problem.

Some deficiencies cannot be confirmed with a single blood sample. A stimulation test checks whether hormone levels rise appropriately after a medicine or other controlled stimulus. These tests require monitoring in a specialist setting.

An MRI scan can show the pituitary and nearby structures. It may identify a tumour, inflammation, bleeding, or changes from previous treatment. If a growth is close to the nerves serving the eyes, formal visual-field testing may be needed.

In children, growth records and the pattern of puberty are important parts of the assessment. Genetic testing may be considered when hypopituitarism began early or occurs with other developmental differences.

Treatment and management

Treatment replaces the hormones that are missing and addresses the underlying cause when possible. Not everyone needs every type of replacement.

Cortisol is replaced with a glucocorticoid medicine. If cortisol and thyroid hormones are both low, cortisol replacement is generally addressed before thyroid hormone is started. Beginning thyroid hormone first can place extra demand on the body when cortisol levels are inadequate.

Thyroid hormone replacement treats pituitary-related hypothyroidism. Blood tests are used to monitor the circulating thyroid hormone level rather than relying on TSH alone.

Oestrogen or testosterone replacement may be considered when sex hormones are low. The choice takes account of age, symptoms, bone health, fertility plans, and individual risks. Fertility treatment uses different hormones to stimulate the ovaries or testicles and usually involves a specialist fertility service.

Growth hormone may be offered to children and selected adults after careful testing. Treatment is monitored for benefits and side effects.

Arginine vasopressin deficiency may be treated with desmopressin, which reduces excessive urine production. Fluid balance and blood sodium need appropriate monitoring.

A pituitary tumour may require observation, medicine, surgery, radiation, or a combination. Treatment depends on its type, size, growth, hormone activity, and effect on vision.

People taking cortisol replacement usually receive instructions for illness, injury, surgery, and vomiting. These are often called sick-day rules. You may be advised to carry a steroid like prednisone or hydrocortisone emergency card or medical identification and, in some cases, an

emergency injection kit. Follow the plan provided by your endocrine team rather than changing treatment on your own.

Complications

Untreated ACTH deficiency can lead to an adrenal crisis. This is a severe shortage of cortisol that may cause vomiting, marked weakness, confusion, very low blood pressure, low blood sugar, or collapse. Infection, injury, surgery, or being unable to keep steroid medicine down can trigger it.

Long-term hormone shortages may contribute to reduced bone strength, changes in body composition and cholesterol, infertility, and poorer physical well-being. Children may have lasting effects on growth or puberty if treatment is delayed.

A pituitary mass can press on the nerves carrying visual information from the eyes. This may cause loss of side vision or, less often, more severe visual problems.

Treatment also requires monitoring. Too much or too little replacement hormone can cause symptoms and affect long-term health. Regular review helps keep replacement matched to your needs.

Prevention

Most cases of hypopituitarism cannot be prevented. There is no lifestyle change known to prevent inherited pituitary differences, autoimmune inflammation, or an unexpected pituitary tumour.

Using appropriate protective equipment may reduce the risk of serious head injury, although it cannot remove the risk completely.

If you have pituitary surgery, radiation treatment, a pituitary tumour, or a significant head injury, planned hormone follow-up can find deficiencies earlier. This does not prevent them, but it can reduce the chance of complications from delayed treatment.

Living with it and what to expect

Some pituitary deficiencies are temporary, particularly when inflammation or short-term compression improves. Many are permanent and require lifelong hormone replacement. Recovery is assessed with planned testing; medicines should not be stopped simply because

you feel well.

Follow-up usually includes symptom review, blood tests, and checks of weight, blood pressure, bone health, growth, or sexual health as relevant. MRI scans and vision tests may continue if there is a pituitary tumour or another structural problem.

Hormone needs can change during pregnancy, major illness, surgery, weight changes, and different stages of life. Children need ongoing review of growth and puberty. Young people moving to adult care may have some hormone tests repeated.

Daily life is often active and independent when deficiencies are recognised and replacement is well matched. However, some people continue to experience fatigue, changes in body composition, fertility difficulties, or effects from the original tumour or brain injury.

If you take cortisol replacement, emergency planning remains important even when you feel well. Keep your steroid information accessible and make sure people close to you know where emergency supplies are kept if these have been prescribed.

When to get medical help

Arrange a routine medical appointment if you have persistent unexplained fatigue together with symptoms such as missed periods, sexual changes, unusual thirst, frequent urination, reduced growth, or a history of pituitary disease, brain treatment, or serious head injury.

If you already have hypopituitarism, contact your care team for new symptoms, repeated dizziness, changes in vision, pregnancy planning, or concerns that replacement treatment is too strong or not strong enough.

Seek urgent medical advice if you take cortisol replacement and develop an illness, fever, injury, or vomiting that affects your usual medicine plan. Follow your sick-day instructions if you have them.

Call emergency services for:

Sudden headache and visual or neurological symptoms may indicate pituitary apoplexy. Severe illness with cortisol deficiency may indicate adrenal crisis. Both need emergency assessment.

- Sudden severe headache with vision loss, double vision, vomiting, confusion, or collapse
- Severe weakness, repeated vomiting, marked drowsiness, confusion, or fainting when cortisol deficiency is possible
- Inability to keep steroid medicine down with worsening illness
- Signs of very low blood pressure, such as collapse or reduced consciousness

Common questions

Is hypopituitarism curable?

Sometimes. Pituitary function may recover after temporary inflammation or treatment of a reversible cause. Permanent damage usually cannot be cured, but the missing hormones can often be replaced.

Can I live a normal life with hypopituitarism?

Many people work, exercise, travel, and have families. Ongoing monitoring and taking replacement hormones correctly are important. Your experience may also be affected by the original cause, such as a tumour, head injury, or previous treatment.

Does hypopituitarism cause weight gain?

It can contribute to weight gain or changes in body fat, especially when thyroid, sex, or growth hormones are low. Weight changes also have many other causes, so they do not confirm a pituitary problem.

Can hypopituitarism affect fertility?

Yes. Low pituitary signals to the ovaries or testicles can reduce fertility. Pregnancy may still be possible naturally in some cases, while others need specialist hormone treatment. Existing hormone replacement usually needs review before and during pregnancy.

Is hypopituitarism the same as having a pituitary tumour?

No. A tumour is one possible cause of hypopituitarism. Some pituitary tumours do not cause hormone deficiency, and many people with hypopituitarism do not have a tumour.

Will I need hormone treatment forever?

Many people do, but not everyone. The answer depends on the cause and whether pituitary function recovers. Repeat testing can help determine this, but replacement hormones should only be changed under medical guidance.

Sources

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