CONDITION

Pituitary apoplexy

Pituitary apoplexy is sudden bleeding or loss of blood flow in the pituitary gland, often within a pituitary tumour.

WHAT IT IS
Sudden bleeding or tissue damage in the pituitary gland

BODY SYSTEM
Hormone and nervous systems

MAIN SYMPTOMS
Sudden headache, vision changes, vomiting, reduced alertness

WHAT CAUSES IT
Bleeding or blocked blood flow, usually within a tumour

HOW IT IS DIAGNOSED
Pituitary MRI and urgent hormone blood tests

MAIN TREATMENT
Emergency steroids, supportive care, sometimes surgery

CAN IT BE CURED?
Sometimes - bleeding resolves, hormone problems may remain

IS IT AN EMERGENCY?
Yes - especially with headache or vision loss

LONG-TERM OUTLOOK
Often good with prompt treatment and hormone follow-up

Overview

Pituitary apoplexy is a rare but serious condition caused by sudden bleeding or loss of blood flow in the pituitary gland. It most often happens within a pituitary adenoma, a usually noncancerous tumour of the gland.

The pituitary is a pea-sized gland beneath the brain, behind the eyes. It controls several hormones involved in stress response, thyroid function, reproduction, growth and water balance.

Bleeding or swelling can make the gland expand quickly. This may press on the nerves that carry information from the eyes or on nerves that control eye movement. Damage to the pituitary can also cause a sudden shortage of essential hormones.

A lack of adrenocorticotropic hormone, or ACTH, is particularly important. ACTH tells the adrenal glands to make cortisol, a hormone that helps maintain blood pressure and respond to physical stress. A severe cortisol shortage can become life-threatening without urgent treatment.

Pituitary apoplexy is a medical emergency. Prompt steroid treatment, imaging and specialist assessment can protect vision and support the body while the cause is investigated.

Symptoms

Symptoms usually begin suddenly, although some develop over several hours or days. The pattern can resemble migraine, meningitis or bleeding around the brain.

A sudden, severe headache is the most common symptom. It may be felt behind the eyes or across the forehead. Some people describe it as the worst headache they have experienced, but pain severity differs from person to person.

Other possible symptoms include:

Vision problems occur because the swollen gland is close to the optic nerves and the optic chiasm, where those nerves cross. Loss of side vision can happen if the optic chiasm is compressed.

Double vision or a drooping eyelid may result from pressure on nerves controlling the eye muscles. One pupil may become larger than the other.

Hormone loss may also cause symptoms. Low cortisol can lead to vomiting, weakness, low blood pressure, low blood sugar or low blood sodium. These problems may not be obvious from symptoms alone, which is why urgent blood tests are needed.

Occasionally, pituitary bleeding is found on a scan in someone with few or no acute symptoms. This is sometimes called subclinical pituitary apoplexy and is managed differently from the emergency syndrome.

- Blurred vision, double vision or loss of part of the visual field
- Drooping of one eyelid or difficulty moving an eye
- Nausea, vomiting, neck stiffness or sensitivity to light
- Unusual sleepiness, confusion, fainting or reduced consciousness
- Low blood pressure, marked weakness or dizziness
- Fever or, less commonly, seizures

Causes and risk factors

Pituitary apoplexy usually occurs when a pituitary tumour bleeds or part of it loses its blood supply. Most pituitary tumours involved are adenomas. These are generally benign, meaning they do not spread to distant parts of the body.

The tumour may already be known, but pituitary apoplexy is sometimes the first sign that it is present. It can also occur, less commonly, in other pituitary growths or in a gland enlarged during pregnancy.

Often there is no clear trigger. Factors associated with some cases include:

Taking an anticoagulant like warfarin or apixaban does not mean pituitary apoplexy will occur. Do not stop prescribed medication because of this possibility. Sudden symptoms need urgent assessment, while medication decisions should be made with the healthcare team.

- Major surgery, particularly heart surgery
- Severe or poorly controlled high blood pressure
- Head injury
- Pregnancy or the period soon after birth
- Medicines that reduce blood clotting
- Certain tests or treatments that stimulate pituitary hormones
- Radiation treatment involving the pituitary area

Diagnosis

Diagnosis begins with an urgent assessment of symptoms, vision, eye movements, alertness, blood pressure and general condition.

A magnetic resonance imaging scan, or MRI, focused on the pituitary is the preferred imaging test. It can show bleeding, damaged tissue, a pituitary tumour and pressure on nearby structures.

A computed tomography scan, or CT scan, is often available more quickly and may identify bleeding or rule out other emergencies. However, a CT scan can miss pituitary apoplexy. An MRI may still be needed when symptoms suggest the condition.

Blood tests usually measure cortisol and other pituitary-related hormones. These may include ACTH, thyroid hormones, prolactin, growth-related hormones and reproductive hormones. Blood sodium, blood sugar, kidney function and a full blood count are also checked.

Emergency steroid treatment should not be delayed while waiting for test results when severe cortisol deficiency is suspected.

An eye assessment may measure sharpness of vision, visual fields, pupil reactions and eye movements. Neurosurgery, endocrinology and ophthalmology teams may all take part in the assessment. Endocrinology is the medical specialty concerned with hormones.

Doctors also consider other causes of sudden headache and neurological symptoms, including bleeding around the brain, meningitis, stroke and migraine.

Treatment and management

Initial treatment focuses on stabilising blood pressure, replacing essential hormones and protecting vision and brain function.

A corticosteroid such as hydrocortisone is often given urgently when there are signs of low cortisol, reduced consciousness, low blood pressure or serious visual or neurological symptoms. Corticosteroids like prednisone or hydrocortisone replace the effect of cortisol and may also help reduce swelling.

Fluids, oxygen and treatment for abnormal blood sugar or sodium may be needed. Vomiting and severe pain can also be treated. Close monitoring is important because hormone levels and neurological symptoms may change.

Not everyone needs an operation. Some people can be managed with steroids, hormone replacement and careful observation, especially when their vision and level of consciousness are stable or improving.

Surgery may be recommended for severe or worsening loss of vision, major visual-field loss or a declining level of consciousness. The usual operation is transsphenoidal surgery, in which the surgeon reaches the pituitary through the nose and sphenoid sinus. The aim is to relieve pressure and remove tumour tissue.

The timing of surgery is based on the pattern and progression of symptoms, imaging findings and the person's overall condition. Decisions are usually made by a team experienced in pituitary care.

After the immediate crisis, hormone tests are repeated. Some people need temporary or long-term replacement of cortisol, thyroid, sex or water-balance hormones. Hormone treatment should be adjusted through follow-up testing rather than stopped without medical advice.

Complications

The main early complications come from pressure on nearby nerves and sudden hormone loss.

Possible complications include:

Adrenal insufficiency needs particular attention. People who continue to need cortisol replacement may receive instructions about taking extra steroid during illness and carrying medical alert information.

Some hormone problems improve as swelling settles. Others can be permanent because the pituitary tissue has been damaged. Visual recovery is more likely when pressure is recognised and treated promptly, but the extent of recovery cannot be predicted for an individual.

- Lasting loss of vision or abnormal eye movement
- Adrenal insufficiency, meaning the body cannot make enough cortisol
- Low thyroid, reproductive or growth-related hormone levels
- Problems controlling water balance and blood sodium
- Reduced consciousness, seizures or stroke-like neurological problems
- Further bleeding or growth of the remaining pituitary tumour

Prevention

Pituitary apoplexy often cannot be prevented. It may happen without warning, including in someone who did not know they had a pituitary tumour.

If you have a known pituitary tumour, keeping planned MRI scans, hormone tests and eye assessments can identify tumour growth or hormone changes. Follow-up does not guarantee that apoplexy will be prevented, but it supports earlier management of pituitary problems.

Your healthcare team should know about a pituitary tumour before major surgery, pregnancy planning or changes to medicines that affect blood clotting. Do not stop anticoagulants or other prescribed medicines on your own.

If you need long-term cortisol replacement, following your sick-day plan can reduce the risk of an adrenal crisis during infection, injury or surgery. This does not prevent pituitary bleeding, but it helps protect against the effects of cortisol deficiency.

Living with it and what to expect

Hospital monitoring is usually needed during the acute event. Headache, nausea and eye-movement problems may improve as bleeding and swelling settle. Recovery can take days to months and is not identical for everyone.

Follow-up generally includes repeat hormone blood tests, pituitary MRI scans and vision checks. These show whether the remaining tumour has changed and whether pituitary function is recovering.

Some people regain normal pituitary function. Others need one or more replacement hormones for months or for life. Taking replacement hormones can allow usual daily activities, but regular testing is needed to make sure treatment remains appropriate.

If cortisol replacement is required, you may be taught how to manage doses during physical illness and when to use emergency steroid treatment. Wearing a medical alert bracelet or carrying a steroid emergency card can tell others that you are at risk of adrenal crisis.

A remaining pituitary tumour may stay stable, shrink or require later treatment. Options can include observation, surgery, medication for certain hormone-producing tumours or, less often, radiotherapy.

Many people return to work, exercise and family life after recovery. Driving may need to stop temporarily if vision is affected or national licensing rules require medical review. Fatigue, headaches, emotional distress and adjustment to long-term medication can also affect recovery and should be discussed during routine follow-up.

When to get medical help

Call emergency services for a sudden severe headache accompanied by any of the following:

These symptoms can have several causes, including pituitary apoplexy, stroke, meningitis or bleeding around the brain. They need immediate assessment rather than a routine appointment. Do not drive yourself to hospital.

If you have already been diagnosed with pituitary apoplexy, seek urgent help for worsening vision, increasing sleepiness, persistent vomiting or symptoms from your adrenal emergency plan.

Contact your usual healthcare team for non-emergency concerns such as ongoing fatigue, thirst, frequent urination, menstrual changes, sexual difficulties, medication questions or gradual changes in headache. These can be reviewed through routine pituitary follow-up.

- New loss of vision, double vision or a drooping eyelid
- Confusion, fainting, extreme drowsiness or a seizure

- Repeated vomiting, marked weakness or collapse
- New difficulty speaking, moving or staying awake

Common questions

Is pituitary apoplexy a stroke?

It is sometimes described as a stroke of the pituitary because it involves bleeding or interrupted blood flow. It is not the same as a typical stroke affecting the main part of the brain, but it is still an emergency.

Does pituitary apoplexy mean I have cancer?

Usually not. Most cases occur within a pituitary adenoma, which is generally a noncancerous tumour. Imaging and examination of tissue removed during surgery can clarify the type of growth.

Will I need brain surgery?

Not everyone does. Surgery is more likely when vision is severely affected or worsening, or when consciousness declines. People with stable or improving symptoms may be managed with medication and close observation.

Will my eyesight return to normal?

Vision often improves after pressure on the visual nerves is relieved, but recovery may be partial. The outcome is influenced by the severity and duration of compression and by how the condition responds to treatment.

Will I need hormone treatment for life?

Some people do, while others recover part or all of their pituitary function. Repeat blood tests over the following months help determine which hormones are still needed. Cortisol replacement should never be stopped suddenly without medical guidance.

Can pituitary apoplexy happen again?

Another episode is possible but not inevitable. Ongoing MRI, vision and hormone follow-up helps monitor any remaining tumour and guides further treatment if changes occur.

Sources

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