CONDITION

Prolactinoma

A prolactinoma is a noncancerous pituitary tumor that produces too much prolactin.

WHAT IT IS
Benign pituitary tumor that makes excess prolactin

BODY SYSTEM
Hormone system and brain

MAIN SYMPTOMS
Irregular periods, milk leakage, low sex drive, vision changes

WHAT CAUSES IT
Usually unknown cell changes; rarely inherited

HOW IT IS DIAGNOSED
Repeated prolactin blood tests and pituitary MRI

MAIN TREATMENT
Dopamine agonist medicines; sometimes surgery

CAN IT BE CURED?
Sometimes - medicines or surgery can produce lasting remission

IS IT AN EMERGENCY?
Sometimes - sudden severe headache or vision loss

LONG-TERM OUTLOOK
Usually well controlled with treatment and monitoring

Overview

A prolactinoma is a noncancerous tumor of the pituitary gland. The pituitary is a pea-sized gland at the base of the brain. It helps control growth, reproduction, stress responses, and several other body functions.

A prolactinoma makes too much prolactin. Prolactin is best known as the hormone that stimulates breast milk production. High levels can also reduce estrogen or testosterone. This can affect periods, fertility, sexual function, and bone strength.

Prolactinomas are described by size. A microprolactinoma is smaller than 10 millimetres. A macroprolactinoma is 10 millimetres or larger. Size matters because a larger tumor is more likely to press on nearby structures, including the nerves used for vision.

Most prolactinomas respond well to medicine. Treatment can lower prolactin, improve

symptoms, and shrink the tumor. Surgery is an option in selected situations.

Symptoms

Symptoms come from either high prolactin levels or pressure from a larger tumor. Some small prolactinomas cause few or no noticeable symptoms.

High prolactin can reduce the hormones that control the ovaries or testicles. Possible symptoms include:

Breast milk leakage is called galactorrhea . Not everyone with high prolactin develops it, and its absence does not rule out a prolactinoma.

Long-lasting reductions in estrogen or testosterone can weaken bones. In children and teenagers, high prolactin may delay puberty or affect normal sexual development.

A larger tumor may cause headaches. It can also press on the optic chiasm, where the nerves from the eyes cross. This commonly affects side, or peripheral, vision first. Double vision or reduced sharpness of vision can occur if nearby nerves are involved.

Symptoms alone cannot confirm a prolactinoma. Several medicines and health conditions can cause similar symptoms or raise prolactin levels.

- Irregular or absent periods
- Difficulty becoming pregnant
- Breast milk production when not pregnant or breastfeeding
- Low sex drive
- Vaginal dryness or discomfort during sex
- Erectile difficulties
- Reduced facial or body hair
- Low energy or reduced muscle mass

Causes and risk factors

A prolactinoma begins when prolactin-producing pituitary cells grow into a tumor. The reason this happens is usually unknown. These tumors are almost always benign, meaning they do not behave like cancer or spread to distant organs.

A small number are linked to inherited conditions that increase the chance of endocrine

tumors. These include multiple endocrine neoplasia type 1, often shortened to MEN1, and some forms of familial pituitary tumor syndrome. Genetic assessment may be considered when pituitary tumors occur at a young age or affect several relatives.

Medicines do not cause prolactinomas. However, some medicines can raise prolactin and may look like a prolactinoma at first. Examples include certain antipsychotics like olanzapine or risperidone , nausea medicines, antidepressants like sertraline or fluoxetine , opioid pain medicines, and estrogen treatments. Do not stop a prescribed medicine without medical guidance.

Pregnancy, an underactive thyroid, kidney disease, liver disease, and pressure on the pituitary stalk can also increase prolactin without a prolactinoma being present.

Diagnosis

Diagnosis starts with a blood test for prolactin. Because stress, exercise, sleep, sex, breast stimulation, and some medicines can temporarily affect the result, the test may need to be repeated.

A healthcare professional will review symptoms, pregnancy possibility, current medicines, and other medical conditions. Blood tests may also check thyroid function, kidney function, and related hormones such as estrogen, testosterone, and cortisol.

Some people have macroprolactin , an inactive form in which prolactin molecules clump together. It can make a laboratory result look high without causing the usual effects of excess prolactin. A laboratory can test for this when appropriate.

If prolactin remains raised and another cause has not been found, an MRI scan can show the pituitary gland and measure a tumor. MRI uses a magnetic field rather than X-rays. Contrast dye may be given to make the pituitary easier to see.

A formal visual field test checks side vision when a tumor is near the optic nerves or when visual symptoms are present. A very large tumor can sometimes produce a misleadingly modest prolactin result because of a laboratory issue called the hook effect . The laboratory can repeat the test using a diluted blood sample.

The diagnosis is based on the prolactin pattern, MRI findings, symptoms, and exclusion of other causes. A small pituitary growth on an MRI is not automatically a prolactinoma.

Treatment and management

Treatment aims to restore prolactin to a healthy range, improve symptoms, preserve fertility and bone health, and reduce pressure from the tumor.

Dopamine agonists are the main treatment. These medicines copy the action of dopamine, a brain chemical that normally limits prolactin production. Cabergoline is commonly used because it is often effective and well tolerated. Bromocriptine is another established option.

Medicine can lower prolactin and shrink the tumor, sometimes substantially. Possible side effects include nausea, constipation, tiredness, headache, and dizziness when standing. Less commonly, dopamine agonists can affect mood or impulse control. New compulsive gambling, shopping, eating, or sexual behaviour should be reported promptly.

Follow-up usually includes prolactin blood tests. Repeat MRI scans and vision tests are used when the tumor's size or location makes them necessary. Monitoring is more frequent early in treatment or if symptoms change.

Surgery may be considered when medicine does not control the condition, causes unacceptable side effects, or is not preferred after a discussion of the options. It may also be needed when a tumor continues to threaten vision. The usual operation is transsphenoidal surgery, in which a specialist reaches the pituitary through the nose and sphenoid sinus.

Surgery can lead to remission, particularly for some smaller tumors, but prolactin can rise again later. Risks include bleeding, infection, leakage of the fluid surrounding the brain, and reduced production of other pituitary hormones. Results are generally better in centres with experienced pituitary surgeons.

Radiotherapy is rarely used. It may be considered for an aggressive tumor that remains uncontrolled after medicine and surgery.

Pregnancy planning needs specific advice because fertility may return soon after prolactin falls. Medicine is often reviewed once pregnancy is confirmed, but the safest plan is influenced by tumor size and its distance from the optic nerves. Larger tumors may need closer monitoring during pregnancy.

Complications

Without effective control, reduced estrogen or testosterone can contribute to low bone density and fractures. Fertility and sexual function may also remain affected.

A large tumor can damage vision by pressing on the optic nerves. Pressure on the normal pituitary gland may reduce other essential hormones, including those involved in thyroid, adrenal, and reproductive function.

Rarely, sudden bleeding into or loss of blood supply to a pituitary tumor causes pituitary apoplexy . This can produce a sudden severe headache, vomiting, vision loss, double vision, or reduced consciousness. It requires emergency assessment.

Treatment can also have complications. These range from medicine side effects to hormone deficiencies following surgery. Regular follow-up helps identify these problems early.

Prevention

There is no known way to prevent a prolactinoma. Most develop without an identifiable cause, and inherited forms cannot be prevented through lifestyle changes.

When an inherited tumor syndrome is suspected, genetic counselling and planned screening may help find related problems earlier. This does not prevent the underlying genetic change.

Living with it and what to expect

Many people can manage a prolactinoma with medicine and periodic monitoring. Prolactin may improve before every symptom does. Periods, sexual function, and fertility can recover, while bone strength may take longer to improve.

Treatment often continues for several years. Some people can try stopping medicine after prolactin has stayed normal and the tumor has become very small or is no longer visible. This should be planned and monitored because prolactin can rise again. Others need longer-term treatment.

A larger tumor may require ongoing MRI scans and vision testing even when symptoms improve. New headaches or visual changes should not be saved for the next routine appointment.

People treated for low estrogen or testosterone may also have their bone health reviewed. Weight-bearing activity, adequate nutrition, and avoiding smoking support general bone health, but they do not replace control of the prolactinoma.

Pregnancy is possible for many people after treatment. Because fertility may return before periods become regular, contraception may be needed if pregnancy is not planned. Breastfeeding is often possible, but decisions about restarting medicine and monitoring the tumor are individual.

The condition may affect sex, fertility, mood, and body image. These concerns are part of the condition and are appropriate to raise during follow-up.

When to get medical help

Seek emergency medical care for:

These symptoms can occur with pituitary apoplexy or serious pressure on nearby nerves.

Arrange prompt medical assessment for gradually worsening vision, persistent new headaches, or symptoms suggesting loss of other pituitary hormones, such as severe weakness or unexplained faintness. Headache or visual changes during pregnancy also need prompt assessment in someone with a known prolactinoma.

Routine assessment is appropriate for unexplained milk leakage, absent or irregular periods, erectile difficulties, low sex drive, or difficulty becoming pregnant. These symptoms have many possible causes and do not by themselves mean that you have a prolactinoma.

If you are already being treated, contact your healthcare team about troublesome side effects, new compulsive behaviour, pregnancy plans, or a positive pregnancy test. Do not stop a dopamine agonist suddenly unless you have been told how to manage it.

- A sudden, extremely severe headache
- Sudden loss or marked worsening of vision
- New double vision with a severe headache
- A drooping eyelid, confusion, collapse, or repeated vomiting with headache

Common questions

Is a prolactinoma cancer?

Almost always, no. A prolactinoma is usually a benign pituitary tumor. It can still cause health problems by changing hormone levels or pressing on nearby structures, especially if it becomes large.

Does high prolactin always mean I have a prolactinoma?

No. Pregnancy, medicines, an underactive thyroid, kidney or liver conditions, stress during the blood test, and other pituitary problems can raise prolactin. Repeat testing and, when appropriate, an MRI help identify the cause.

Can a prolactinoma go away?

Sometimes it enters lasting remission after medicine or surgery. In other cases, prolactin rises again after treatment is stopped. Continued blood tests are important even when the tumor is no longer visible.

Will I need medicine for the rest of my life?

Not necessarily. Some people can have a monitored trial without medicine after a sustained response. Others need longer treatment because prolactin rises again or a tumor remains. The decision is based on blood tests, MRI findings, symptoms, and pregnancy plans.

Can I get pregnant with a prolactinoma?

Often, yes. Lowering prolactin can restore ovulation and fertility. Because pregnancy affects the pituitary and changes how treatment is managed, it is helpful to make a plan with an endocrinology and pregnancy care team before conception.

Can I breastfeed if I have a prolactinoma?

Breastfeeding is often possible. The plan depends on tumor size, symptoms, and whether dopamine agonist medicine must be restarted, since these medicines reduce milk production.

Sources

- National Institute of Diabetes and Digestive and Kidney Diseases. "Prolactinoma."
- Petersenn S, et al. "Diagnosis and management of prolactin-secreting pituitary adenomas: a Pituitary Society international Consensus Statement." Nature Reviews Endocrinology . 2023;19:722-740.
- Melmed S, et al. "Diagnosis and Treatment of Hyperprolactinemia: An Endocrine Society Clinical Practice Guideline." Journal of Clinical Endocrinology & Metabolism . 2011;96(2):273-288.
- European Society of Endocrinology. "Clinical Practice Guideline on functioning and nonfunctioning pituitary adenomas in pregnancy." European Journal of Endocrinology . 2021;185:G1-G33.
- Society for Endocrinology. "Emergency management of pituitary apoplexy in adult patients." Endocrine Connections . 2016;5:G12-G15.