CONDITION

Ovarian hyperthecosis

Ovarian hyperthecosis is a rare condition in which ovarian cells produce too much testosterone.

WHAT IT IS
Excess ovarian testosterone production from overactive hormone-making cells

BODY SYSTEM
Reproductive and hormone systems

MAIN SYMPTOMS
Facial hair, scalp hair loss, acne, voice deepening

WHAT CAUSES IT
Usually unknown, with insulin resistance often involved

HOW IT IS DIAGNOSED
Hormone tests, imaging, and ovarian tissue examination

MAIN TREATMENT
Ovarian surgery or hormone-suppressing treatment

CAN IT BE CURED?
Sometimes - ovaries can be surgically removed

IS IT AN EMERGENCY?
No, but rapid virilization needs prompt assessment

LONG-TERM OUTLOOK
Usually manageable, though some physical changes may remain

Overview

Ovarian hyperthecosis is a rare condition in which certain cells throughout the ovaries become overactive and make too much testosterone. Testosterone is an androgen, a group of hormones involved in body hair, muscle, sexual function, and many other processes.

Everyone has androgens, but unusually high levels can cause coarse facial or body hair, acne, scalp hair loss, and menstrual changes. More marked excess can cause virilization , meaning the development of changes such as a deeper voice, increased muscle, or enlargement of the clitoris.

Ovarian hyperthecosis most often becomes apparent around or after menopause, although it can occur before menopause. It is different from an ovarian tumour. Hyperthecosis usually affects hormone-making cells scattered through both ovaries rather than forming one distinct

mass.

The condition matters because rapid or marked androgen excess can also be caused by an ovarian or adrenal tumour. Careful testing is needed to identify where the hormones are coming from. Hyperthecosis is also associated with insulin resistance and other metabolic concerns, including type 2 diabetes.

Symptoms

Symptoms usually develop gradually, but they can become more noticeable over months or years. Their severity does not always match the testosterone result exactly.

Possible symptoms include:

After menopause, some facial hair and scalp thinning can occur because the balance of hormones naturally changes. Ovarian hyperthecosis tends to cause more marked or progressive changes than typical ageing.

Some changes may improve when testosterone levels fall. Acne and new coarse-hair growth may lessen. A deepened voice, clitoral enlargement, and established scalp hair loss are less likely to reverse completely.

Hyperthecosis is also linked with insulin resistance. This means the body has difficulty responding to insulin, the hormone that controls blood sugar. It may occur alongside weight gain around the abdomen, type 2 diabetes, high blood pressure, abnormal cholesterol levels, or fatty liver disease. These problems can also occur for unrelated reasons.

- Coarse hair on the face, chest, abdomen, or back
- Thinning hair on the scalp, often around the crown or temples
- Acne or oily skin
- Irregular or absent periods before menopause
- A deeper voice
- Increased muscle or a change in body shape
- Enlargement of the clitoris
- Increased or reduced sexual desire

Causes and risk factors

The exact cause of ovarian hyperthecosis is not fully understood.

The ovaries contain theca cells , which normally make androgens. In hyperthecosis, groups of these cells become enlarged and more active within the ovarian tissue. They may continue producing substantial amounts of testosterone after menopause, when most ovarian activity has declined.

High insulin levels may stimulate the ovaries to produce more androgen. This may help explain the association between hyperthecosis, insulin resistance, and metabolic conditions. However, insulin resistance does not prove that someone has hyperthecosis, and not everyone with the condition is overweight or has diabetes.

Factors associated with the condition include:

Ovarian hyperthecosis is not known to be directly inherited. It is not caused by something you ate, sexual activity, or inadequate personal care.

- Being around or beyond menopause
- Insulin resistance
- Type 2 diabetes
- Obesity or increased abdominal fat
- A history of longstanding ovarian androgen excess

Diagnosis

There is no single blood test that confirms ovarian hyperthecosis. Diagnosis involves showing that androgen levels are high, investigating their source, and excluding other conditions.

A clinician will ask when the symptoms began and how quickly they have changed. They may ask about menstrual history, menopause, medicines, supplements, and exposure to testosterone gels or creams used by another household member. An examination may look for signs of androgen excess, insulin resistance, or another hormone condition.

Blood tests commonly measure testosterone. Because testosterone levels in women are relatively low, an accurate laboratory method is important. Tests may be repeated to confirm an unexpected result. Other tests may include sex hormone-binding globulin, androstenedione, and DHEAS, an androgen made mainly by the adrenal glands.

Further hormone tests may be used when symptoms suggest another cause, such as congenital adrenal hyperplasia, Cushing syndrome, or a disorder involving growth hormone. These tests are selected according to the person's symptoms rather than ordered in every

case.

A pelvic ultrasound or MRI scan may examine the ovaries. Hyperthecosis can cause both ovaries to appear enlarged or solid, but the ovaries may also look normal. A scan that finds no mass does not rule out the condition. Imaging of the adrenal glands may be needed if blood results point toward an adrenal source.

Rarely, blood may be sampled from the veins draining each ovary and the adrenal glands. This specialist procedure is not widely available, and its results can be difficult to interpret.

The most certain confirmation comes from examining ovarian tissue under a microscope after surgery. Pathology may show nests of enlarged, hormone-producing theca cells spread through the ovaries. Before surgery, the diagnosis is often based on the overall pattern of symptoms, blood tests, and imaging.

Treatment and management

Treatment aims to reduce androgen production, manage its effects, and address related metabolic concerns. The best approach is influenced by age, menopause status, symptom severity, other health conditions, and whether future pregnancy is important.

For someone who has completed menopause, removal of both ovaries may be offered. This removes the main source of excess testosterone and also allows the tissue to be examined for hyperthecosis or a small tumour that was not visible on a scan. Removing the uterus is not automatically required.

Removing both ovaries before natural menopause causes immediate surgical menopause. The possible effects on fertility, bone health, cardiovascular health, and menopause symptoms need careful discussion before surgery.

If surgery is unsuitable or not wanted, medicines that suppress signals from the brain to the ovaries may reduce testosterone production. These are usually gonadotropin-releasing hormone, or GnRH, medicines. Their possible effects include hot flushes and bone loss, so ongoing review may be needed.

Anti-androgen medicines can block some effects of testosterone. They may help reduce new coarse-hair growth or acne, but they do not remove the ovarian source. Some can harm a developing fetus, so pregnancy prevention is important when pregnancy is possible.

Visible symptoms may also be treated directly. Options include laser hair reduction, electrolysis, or standard hair-removal methods. Acne and scalp hair loss may need separate treatment. Coarse hair already present often requires direct removal even after hormone levels improve because hair grows in long cycles.

Management may also include checking blood sugar, blood pressure, cholesterol, and liver health. Treating insulin resistance or diabetes is important for long-term health, although it may not be enough to control severe androgen excess by itself.

Complications

Ovarian hyperthecosis can affect physical health and emotional well-being.

Long-term insulin resistance can contribute to type 2 diabetes and may be associated with high blood pressure, unhealthy cholesterol levels, and fatty liver disease. Together, these can increase cardiovascular risk over time.

Some androgen is converted into estrogen in body tissues. After menopause, ongoing estrogen exposure without the balancing effect of progesterone may stimulate the lining of the uterus. Any bleeding after menopause therefore needs assessment to check for endometrial hyperplasia, which is thickening of the uterine lining, or endometrial cancer. Most causes of postmenopausal bleeding are not cancer, but the symptom should not be ignored.

Facial hair, voice changes, scalp hair loss, and changes in sexual function can affect confidence, relationships, and mood. Supportive care and treatment of visible symptoms remain worthwhile even when some changes cannot be fully reversed.

Prevention

There is no established way to prevent ovarian hyperthecosis because its underlying cause is not known.

Healthy eating, regular movement, and treatment of diabetes or other metabolic conditions can improve general health and insulin sensitivity. These measures should not be presented as a guarantee that hyperthecosis will be prevented or reversed.

Testosterone products should be stored and applied carefully to avoid accidental skin contact with another person. Accidental exposure can cause androgen-related symptoms, although it does not cause ovarian hyperthecosis itself.

Living with it and what to expect

The course differs from person to person. Without treatment, androgen-related changes may continue gradually. A sudden acceleration is less typical and needs prompt investigation for

another cause, including a hormone-producing tumour.

When treatment successfully lowers testosterone, acne and new body-hair growth may improve over several months. Existing coarse hairs do not disappear immediately. Scalp hair may stabilise, but regrowth is not certain. Voice deepening and clitoral enlargement may remain.

After surgery, testosterone levels usually fall substantially if the ovaries were the source. Follow-up blood tests can check this response. If levels stay high, further assessment may be needed for another source of androgen.

Long-term care may include monitoring blood sugar, cholesterol, blood pressure, and liver health. People using hormone-suppressing treatment may also need review of menopause symptoms and bone health.

Routine follow-up is useful for reviewing symptoms, treatment effects, and metabolic risks. Many people continue their usual work, activities, and relationships, although managing visible hair changes or irreversible virilization can take time and emotional adjustment.

When to get medical help

Arrange a routine medical appointment if you develop increasing facial or body hair, persistent acne, scalp hair thinning, or irregular periods. These symptoms have many possible causes and do not by themselves mean that you have ovarian hyperthecosis.

Seek prompt medical assessment if changes progress quickly over several months, particularly:

Rapid virilization can have several causes, including an ovarian or adrenal tumour, and should not wait for a routine check months away.

Seek urgent or emergency care for sudden severe pelvic or abdominal pain, heavy bleeding with weakness or fainting, chest pain, severe shortness of breath, or new neurological symptoms. These are not usual features of ovarian hyperthecosis but may signal another serious problem.

- Rapid voice deepening
- New clitoral enlargement
- Rapidly increasing coarse hair
- A marked increase in muscle
- Any bleeding after menopause

Common questions

Is ovarian hyperthecosis the same as polycystic ovary syndrome?

No. Both conditions can cause ovarian androgen excess and insulin resistance, but they are distinct. Polycystic ovary syndrome usually begins during the reproductive years and commonly involves irregular ovulation. Hyperthecosis more often causes marked testosterone excess around or after menopause and involves overactive theca cells throughout the ovaries.

Is ovarian hyperthecosis cancer?

No. Ovarian hyperthecosis is not cancer and does not usually form a distinct tumour. However, ovarian and adrenal tumours can cause similar symptoms and hormone results. That is why investigation is needed before assuming hyperthecosis is the cause.

Can ovarian hyperthecosis happen after menopause?

Yes. It is most often recognised after menopause. Although the ovaries make much less estrogen at this stage, hormone-producing ovarian cells can remain active and produce too much testosterone.

Will facial hair go away after treatment?

New coarse-hair growth may slow as testosterone falls, but existing hairs often remain. Hair grows in cycles, so improvement can take months. Laser treatment, electrolysis, or other hair-removal methods may still be needed.

Can I have ovarian hyperthecosis if my scan is normal?

Yes. The abnormal cells can be spread through the ovaries without creating a visible mass. Normal-looking ovaries on ultrasound or MRI do not fully exclude hyperthecosis.

Does removing the ovaries cure it?

Removing both ovaries can eliminate the ovarian source of excess testosterone and is often definitive after menopause. Surgery cannot guarantee reversal of established voice, hair, or genital changes. Before menopause, it also ends natural fertility and causes immediate menopause.

Sources

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