CONDITION

Ovarian overproduction of androgens

Ovarian overproduction of androgens means the ovaries make more testosterone-like hormones than the body needs.

WHAT IT IS
Excess androgen production by the ovaries

BODY SYSTEM
Reproductive and hormone systems

MAIN SYMPTOMS
Excess facial hair, acne, scalp hair loss, irregular periods

WHAT CAUSES IT
Usually PCOS; sometimes hyperthecosis or an ovarian tumor

HOW IT IS DIAGNOSED
Repeat androgen blood tests and targeted pelvic imaging

MAIN TREATMENT
Hormonal treatment, hair management, or surgery for a tumor

CAN IT BE CURED?
Sometimes - removable tumors can be cured

IS IT AN EMERGENCY?
Sometimes - sudden severe pelvic pain needs emergency assessment

LONG-TERM OUTLOOK
Usually manageable; rapid changes need prompt investigation

Overview

Androgens are hormones that include testosterone. Everyone makes them. In women, they are produced in small amounts by the ovaries and adrenal glands, which sit above the kidneys.

Ovarian overproduction of androgens means the ovaries are making more androgen than expected. This may show up as a high level on a blood test, physical changes caused by androgens, or both. The medical term for these findings is hyperandrogenism .

Polycystic ovary syndrome, or PCOS, is the most common cause. Other causes include ovarian hyperthecosis, in which hormone-producing ovarian cells become unusually active, and an androgen-producing ovarian tumor. These tumors are uncommon.

The timing and speed of changes matter. Gradual facial hair growth with irregular periods often

has a different cause from rapid voice deepening or major muscle changes. Finding the cause also matters because treatment differs for PCOS, hyperthecosis, and a tumor.

Symptoms

Symptoms differ from person to person. A high blood androgen level does not always cause obvious physical changes, and symptoms can occur even when a result is near the laboratory reference range.

Possible symptoms include:

Very high androgen levels can cause virilization , meaning the development of more typically male physical features. These may include a deeper voice, increased muscle mass, enlargement of the clitoris, reduced breast fullness, or rapidly increasing body hair.

Virilization is not typical of uncomplicated PCOS. New or quickly progressing features need prompt assessment, particularly after menopause.

Symptoms can also affect emotional well-being. Unwanted hair growth, acne, scalp hair loss, and fertility concerns may contribute to distress, low confidence, anxiety, or depression.

- Coarse, dark hair on the face, chest, abdomen, back, or inner thighs
- Persistent acne or oily skin
- Thinning scalp hair, especially around the crown
- Irregular, infrequent, or absent periods
- Difficulty becoming pregnant because ovulation is irregular
- Darkened, thickened skin around the neck or underarms, which can accompany insulin resistance

Causes and risk factors

PCOS is a hormonal and metabolic condition that can cause the ovaries to produce extra androgen. It may also interfere with regular ovulation. Its cause is complex and involves genetic, hormonal, and environmental factors.

Insulin resistance is common in PCOS. This means the body's cells do not respond normally to insulin, the hormone that helps control blood sugar. Higher insulin levels can encourage the ovaries to make more androgen. PCOS can occur at any body size and is not caused by a personal failure.

Ovarian hyperthecosis occurs when androgen-producing cells are spread through the ovarian tissue and become overactive. It is seen more often around or after menopause and can produce higher testosterone levels or more marked symptoms than PCOS.

An androgen-secreting ovarian tumor can release testosterone or related hormones. These tumors may be noncancerous or cancerous. Rapid symptom progression, virilization, or a markedly abnormal testosterone result can increase concern, but these findings do not confirm a tumor by themselves.

Some conditions produce similar symptoms without ovarian overproduction. These include adrenal gland conditions, thyroid disorders, high prolactin, Cushing syndrome, and certain inherited enzyme conditions. Testosterone, anabolic steroids, some hormonal products, and supplements can also raise androgen levels or affect test results.

Family history may increase the likelihood of PCOS. Menopause can make an existing androgen effect more noticeable because estrogen levels fall, changing the balance between the hormones.

Diagnosis

Diagnosis begins with a review of your symptoms and how quickly they developed. Your healthcare professional may ask about periods, pregnancy plans, menopause, weight changes, medications, supplements, and any use of testosterone or anabolic steroids.

An examination may look for hair-growth patterns, acne, scalp hair loss, skin changes, and signs of virilization. These findings are assessed respectfully and alongside what is important to you.

Blood testing usually includes total testosterone. The result may be repeated, especially if it does not fit the symptoms or if the first test was done using a less accurate laboratory method. A test called sex hormone-binding globulin may help estimate how much testosterone is free to act on tissues.

Other tests can help separate an ovarian source from an adrenal or other hormonal cause. These may include DHEAS, a hormone made mainly by the adrenal glands, and tests for thyroid function, prolactin, or an inherited adrenal enzyme condition. A pregnancy test may be appropriate before certain investigations or treatments.

Pelvic ultrasound can examine the ovaries and uterus. An MRI may be used if an ultrasound is unclear or concern remains. Small hormone-producing tumors and ovarian hyperthecosis may not always be visible on an initial scan.

PCOS is diagnosed from a combination of features after other causes have been considered.

Having ovarian cysts is not required, and having an ovarian cyst does not by itself mean you have PCOS.

In unusual or difficult cases, a specialist team may sample blood from veins draining the ovaries and adrenal glands. This invasive test is reserved for selected situations when standard testing and imaging do not identify the source.

Treatment and management

Treatment is based on the cause, the severity of symptoms, your stage of life, and whether pregnancy is possible or desired. It may address androgen production, menstrual health, unwanted hair or acne, fertility, and related metabolic concerns.

For PCOS, combined hormonal contraception can make bleeding more regular and reduce the amount of active androgen. It is not suitable for everyone. If periods are very infrequent, another form of progestogen may be used to protect the uterine lining.

Anti-androgen medicines can reduce new coarse hair growth and sometimes help acne or scalp hair loss. Their effects are gradual. Some can harm a developing fetus, so pregnancy prevention and appropriate monitoring are important when these medicines are used.

Metformin may be offered for metabolic concerns or irregular ovulation in some people with PCOS. It is not primarily a cosmetic treatment for unwanted hair. Support with nutrition, movement, sleep, and weight-related goals can be useful when tailored to your health and circumstances, without blame or extreme restrictions.

Hair removal options include shaving, waxing, threading, depilatory creams, laser treatment, and electrolysis. Laser treatment works best for some combinations of hair and skin colour, while electrolysis can treat individual hairs. Prescription skin treatments may slow facial hair growth but do not remove existing hair.

Acne and scalp hair loss can be treated separately with skin or hair therapies. A dermatologist may help when symptoms are persistent or scarring is developing.

A hormone-producing ovarian tumor is usually treated surgically. Surgery can also be considered for severe ovarian hyperthecosis, especially after menopause. The approach depends on imaging, age, fertility goals, and whether cancer is suspected.

If you want to become pregnant, treatment may focus on restoring ovulation. Fertility treatment does not require you to first eliminate every visible androgen-related symptom.

Complications

The risks depend mainly on the underlying cause.

In PCOS, long gaps between periods can allow the lining of the uterus to become too thick. Over time, this can increase the risk of endometrial hyperplasia, which means abnormal overgrowth of the lining, and endometrial cancer. Treatment that provides regular shedding or hormonal protection can reduce this concern.

PCOS can also be associated with insulin resistance, type 2 diabetes, abnormal cholesterol levels, high blood pressure, sleep apnea, and pregnancy complications. Not everyone with PCOS develops these problems.

Some androgen-related changes respond slowly to treatment. A deepened voice or clitoral enlargement may not fully reverse. Coarse hairs already present usually need direct hair-removal treatment even after hormone levels improve.

An untreated ovarian tumor may continue to grow or produce hormones. Whether it can spread depends on the tumor type.

Prevention

Ovarian overproduction of androgens usually cannot be reliably prevented. PCOS has genetic and biological influences, while ovarian hyperthecosis and hormone-producing tumors do not have established prevention methods.

Avoiding non-prescribed testosterone, anabolic steroids, and poorly labelled hormone supplements can prevent exposure-related symptoms and confusing blood-test results. This does not prevent ovarian conditions themselves.

Early assessment of irregular periods or rapidly changing symptoms can help identify the cause and reduce complications. Regular follow-up for PCOS may also identify blood sugar, cholesterol, or uterine-lining concerns before they cause symptoms.

Living with it and what to expect

The course depends on the cause. PCOS is usually a long-term condition. Symptoms may change with age, pregnancy, medication, body changes, and menopause. Treatment can manage symptoms and health risks, but it does not permanently remove the underlying tendency.

Hair growth changes slowly because each hair has a long growth cycle. Hormonal treatment

may take several months to reduce new growth. It does not make existing coarse hairs disappear. Acne may improve sooner, while scalp hair recovery can be limited if thinning has been present for a long time.

Periods may become more regular with treatment, but they can become irregular again if treatment stops. Fertility can be reduced when ovulation is infrequent, yet many people with ovarian androgen excess become pregnant naturally or with treatment.

Symptoms do not always end at menopause. Menstrual problems stop being relevant, but facial hair or scalp thinning may continue. New, rapid androgen-related changes after menopause still need investigation rather than being assumed to be normal ageing.

An androgen-producing tumor may be cured by complete removal. Hyperthecosis can improve after surgical treatment, although the choice of treatment is individual.

Long-term follow-up may include review of periods, symptoms, blood pressure, blood sugar, cholesterol, and treatment effects. The timing is routine unless symptoms are progressing quickly.

When to get medical help

Arrange a routine appointment if you develop persistent unwanted coarse hair, acne, scalp hair thinning, or irregular periods. You should also seek advice if you regularly go long periods without menstrual bleeding or are having difficulty becoming pregnant.

Request prompt medical assessment if symptoms develop over a few months, become much more noticeable, or begin after menopause. Rapid voice deepening, increased muscle mass, clitoral enlargement, or quickly advancing hair growth need timely investigation.

Seek urgent or emergency care for:

These symptoms do not necessarily come from androgen excess, but they can signal ovarian twisting, internal bleeding, ectopic pregnancy, or another condition needing urgent assessment.

- Sudden, severe pelvic or lower abdominal pain
- Pelvic pain with fainting, severe weakness, vomiting, or heavy bleeding
- Severe pain or bleeding during a known or possible pregnancy

Common questions

Does ovarian androgen overproduction mean I have PCOS?

Not always. PCOS is the most common cause, but hyperthecosis, an ovarian tumor, adrenal conditions, medications, and other hormone disorders can produce similar findings. Diagnosis requires more than a testosterone result or ultrasound alone.

Are ovarian cysts causing the extra testosterone?

Usually not. The "polycystic" appearance in PCOS refers to many small, immature egg follicles rather than dangerous cysts. You can have PCOS without this appearance, and an ordinary ovarian cyst does not usually cause androgen excess.

Can high ovarian androgens affect fertility?

They can if the underlying condition disrupts ovulation. This is common in PCOS. Fertility is not necessarily lost, and treatment can help induce ovulation when needed. A tumor or hyperthecosis may affect fertility in different ways.

Will facial hair go away when my hormone levels improve?

Existing coarse hairs usually remain until they are removed. Lowering androgen activity can slow new growth and make regrowth finer, but improvement takes months. Laser treatment, electrolysis, or other hair-removal methods may still be needed.

Does menopause make ovarian androgen overproduction stop?

Not necessarily. The ovaries continue to make some androgen after menopause, while estrogen levels fall. Hyperthecosis and ovarian tumors can also occur after menopause. New or rapidly worsening symptoms should be assessed.

Can ovarian androgen overproduction be cured?

Sometimes. Surgical removal of a hormone-producing tumor may cure the problem. PCOS is generally managed rather than cured, and hyperthecosis may improve with surgery or other specialist treatment.

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