CONDITION

Male hypogonadism

Male hypogonadism means the testicles do not make enough testosterone, sperm, or both.

WHAT IT IS
Reduced testicular testosterone or sperm production

BODY SYSTEM
Hormones and reproductive system

MAIN SYMPTOMS
Low sex drive, erection problems, fatigue, reduced muscle mass

WHAT CAUSES IT
Testicular, pituitary, genetic, medication, or chronic health problems

HOW IT IS DIAGNOSED
Symptoms plus repeated morning testosterone blood tests

MAIN TREATMENT
Treating causes, hormone therapy, and fertility-focused care

CAN IT BE CURED?
Sometimes - reversible causes can be treated

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

LONG-TERM OUTLOOK
Often manageable with cause-specific care and monitoring

Overview

Male hypogonadism means the testicles do not produce enough testosterone, sperm, or both. Testosterone is a hormone involved in sexual development, sex drive, erections, muscle and bone strength, red blood cell production, and general well-being.

The condition can begin before puberty or develop later in life. Before puberty, it may delay or limit typical male sexual development. In adults, it may affect sexual function, fertility, physical strength, and bone health.

Hypogonadism is not diagnosed from symptoms alone. Tiredness, low mood, erection problems, and reduced sex drive have many possible causes. Diagnosis usually requires compatible symptoms and more than one low testosterone result from blood collected under appropriate conditions.

Testosterone levels gradually decline with age, but aging alone does not always mean someone has hypogonadism or needs treatment. The important questions are whether the level is consistently low, whether symptoms are present, and why the level is low.

Symptoms

Symptoms differ according to age, how low testosterone is, and how quickly the change occurred.

Possible symptoms in adults include:

Erection problems do not automatically mean testosterone is low. Blood vessel disease, diabetes, medicines, stress, relationship difficulties, and other hormone conditions are common alternative causes.

If hypogonadism starts before puberty, signs can include delayed voice deepening, limited facial or body hair, slower growth of the penis and testicles, reduced muscle development, or unusually long arms and legs compared with the torso.

- Reduced interest in sex
- Fewer spontaneous or morning erections
- Difficulty getting or maintaining an erection
- Reduced energy or physical stamina
- Loss of muscle strength or muscle mass
- Increased body fat
- Low mood, irritability, or difficulty concentrating
- Reduced beard or body-hair growth
- Hot flushes when testosterone is very low
- Breast tenderness or enlargement
- Difficulty having a biological child
- Fragile bones or fractures after minor injuries

Causes and risk factors

Hypogonadism is often divided into two main types.

Primary hypogonadism starts in the testicles. The brain sends the expected hormone signals,

but the testicles cannot respond normally. Causes include genetic conditions such as Klinefelter syndrome, testicular injury or infection, testicular torsion, cancer treatment, and removal of the testicles.

Secondary hypogonadism starts in the hypothalamus or pituitary gland. These parts of the brain control hormone signals to the testicles. Causes can include pituitary tumours, high prolactin levels, genetic conditions, head injury, brain surgery, radiation treatment, or iron overload.

Some cases are linked to a potentially reversible suppression of hormone signalling. Factors can include severe illness, undernutrition, substantial obesity, poorly controlled diabetes, sleep disorders, and extreme physical stress.

Medicines and substances can also affect testosterone production. Examples include long-term opioid pain medicines, glucocorticoids such as prednisone, and anabolic steroids. Testosterone or anabolic steroid use can suppress the body's own hormone signals and reduce sperm production. Recovery after stopping may take months and is not always predictable.

Aging may contribute to lower testosterone levels, but symptoms should not be assumed to be an unavoidable part of getting older. Other medical, sleep, medication, and mental health causes may need consideration.

Diagnosis

Diagnosis begins with a discussion of symptoms, sexual development, fertility goals, medical conditions, medicines, and previous testicular or brain injuries. An examination may assess body hair, muscle mass, breast tissue, testicle size, and other signs of hormone changes.

The main test is a total testosterone blood test. Because levels change during the day and can fall temporarily during illness, testing is usually done in the morning and repeated on a different day. Shift workers may need testing timed to their usual sleep pattern.

A single low result does not usually confirm hypogonadism. The result is interpreted alongside symptoms, the laboratory's reference range, and the circumstances in which the sample was taken.

Further tests may include:

Before testosterone treatment, assessment may also include blood pressure, a red blood cell count, and discussion of prostate health, sleep apnoea, heart disease, urinary symptoms, and plans for biological children.

- Luteinising hormone and follicle-stimulating hormone, which show how the brain is signalling the testicles
- Prolactin, because high levels can suppress reproductive hormones
- Free testosterone or related measurements when proteins affecting testosterone levels may be abnormal
- Blood count, iron tests, thyroid tests, or other tests for possible causes
- Semen analysis when fertility is a concern
- Genetic testing in selected cases
- Pituitary imaging when results or symptoms suggest a pituitary problem

Treatment and management

Treatment is based on the cause, symptoms, fertility plans, overall health, and confirmed test results.

Where possible, care focuses first on a reversible cause. This may involve reviewing a medicine, treating a pituitary or hormone disorder, improving management of a chronic illness, addressing undernutrition, or treating a sleep disorder. Changes to prescribed medicines should be made with the prescriber rather than stopped suddenly.

Testosterone replacement may be considered for people with symptoms and consistently low testosterone caused by hypogonadism. It can be given in forms such as gels, injections, patches, or implanted pellets. Each form has practical advantages and disadvantages. For example, gels can transfer to another person through skin contact unless precautions are followed, while injections may produce changes in symptoms between doses.

Treatment may improve sexual symptoms, bone density, anaemia, or body composition in some people. It does not reliably solve every symptom, especially when tiredness, low mood, or erection problems have another cause.

Testosterone therapy suppresses sperm production and can reduce fertility. It is generally not used as a fertility treatment. People who want biological children may be referred to a hormone or fertility specialist for treatment aimed at stimulating the body's own reproductive hormone system.

Testosterone is not suitable for everyone. Extra assessment is particularly important with known or suspected prostate or breast cancer, a high red blood cell count, untreated severe sleep apnoea, recent major cardiovascular events, significant urinary symptoms, or uncontrolled heart failure.

Monitoring commonly includes symptoms, testosterone levels, blood count, blood pressure, side effects, and prostate assessment when appropriate. Treatment may need adjustment or discontinuation if it does not help or causes unsafe changes.

Complications

The effects of untreated hypogonadism depend on its cause, severity, and duration.

Possible long-term problems include reduced bone density and osteoporosis, which makes fractures more likely. Reduced muscle mass, anaemia, sexual difficulties, infertility, and changes in mood or quality of life may also occur.

Some complications come from the underlying cause rather than from low testosterone itself. A pituitary mass, for example, may affect vision or other hormones. A genetic condition may have health effects beyond testosterone production.

Testosterone treatment can also cause problems. It may raise the red blood cell count, increase blood pressure, worsen acne, cause breast tenderness, reduce testicle size, or worsen sleep apnoea. It can enlarge the prostate and may aggravate urinary symptoms. Monitoring helps identify these changes early.

Prevention

Many forms of male hypogonadism cannot be prevented. This includes cases caused by inherited conditions, congenital differences, unavoidable testicular damage, or necessary cancer treatment.

Some avoidable risks can be reduced. Non-medical anabolic steroid use can suppress natural testosterone and sperm production. Protective equipment may reduce testicular injury during contact sports or hazardous work.

Managing chronic conditions, maintaining adequate nutrition, and seeking care for sleep problems may help when hormone suppression is related to general health. These steps cannot prevent every case and should not be treated as a guarantee of normal testosterone.

People having chemotherapy, radiation, or surgery that may affect fertility can ask about sperm storage before treatment when time and circumstances allow.

Living with it and what to expect

The course of hypogonadism differs according to its cause. Hormone suppression from an acute illness or certain medicines may improve after the cause is resolved. Recovery can take time. Testicular damage, genetic conditions, and some pituitary disorders may require long-term treatment and monitoring.

When testosterone therapy is effective, sexual interest and energy may change within months, while improvements in muscle or bone can take longer. Not everyone experiences the same benefit. Symptoms caused by another condition may remain even when testosterone reaches the intended range.

Long-term follow-up is important if treatment continues. This is routine care rather than a sign that something is wrong. Follow-up checks whether symptoms are improving and whether blood pressure, red blood cells, prostate health, and testosterone levels remain safe.

Fertility needs separate planning. Testosterone replacement may improve some symptoms while making sperm production worse. Anyone who may want biological children in the future should raise this before starting treatment.

Most people can continue work, exercise, relationships, and sexual activity. Support may be useful when changes in sexual function, fertility, mood, or body image affect confidence or relationships.

When to get medical help

Arrange a routine medical appointment for persistent low sex drive, loss of morning erections, unexplained fatigue, reduced muscle strength, breast enlargement, fertility concerns, or signs of delayed puberty. These symptoms are not specific to hypogonadism, but they can be assessed properly.

Seek prompt medical advice if symptoms develop after a head injury, cancer treatment, testicular injury, or use of anabolic steroids. Sudden testicular pain or swelling needs urgent assessment because testicular torsion and infection require timely care.

Get emergency help for a sudden severe headache with vision loss, double vision, confusion, fainting, or repeated vomiting. Rarely, this can signal bleeding into or pressure around the pituitary gland.

During testosterone treatment, urgent assessment is needed for chest pain, severe shortness of breath, one-sided leg swelling, new weakness on one side, or difficulty speaking. These symptoms can have several causes and should not be managed through routine follow-up.

Common questions

Is low testosterone the same as male hypogonadism?

Not always. Testosterone can fall temporarily during illness, poor sleep, undernutrition, or use of certain medicines. Hypogonadism usually requires relevant symptoms and repeatedly low levels, followed by assessment of the cause.

Can male hypogonadism be cured?

Some cases improve when a reversible cause is treated. Hypogonadism caused by permanent testicular damage, an inherited condition, or certain pituitary disorders may need long-term management rather than a cure.

Will testosterone treatment fix erection problems?

It may help when low testosterone is an important cause, particularly if sexual desire is also reduced. Many erection problems are related to blood vessels, diabetes, medicines, stress, or other factors, so additional treatment may be needed.

Can I have children if I have hypogonadism?

Possibly. Fertility depends on the cause and whether sperm production is affected. Testosterone replacement can lower or stop sperm production, so fertility goals should be discussed before treatment. Specialist hormone or fertility treatments may be available.

Does testosterone treatment cause prostate cancer?

Current evidence has not established that correctly prescribed testosterone causes prostate cancer. However, testosterone can stimulate prostate tissue, and it is not appropriate for some people with known or suspected cancer. Prostate assessment and monitoring may be recommended according to age and individual risk.

Can diet or exercise raise low testosterone?

They may help when low levels are linked to obesity, undernutrition, poor sleep, or chronic illness. They are unlikely to correct hypogonadism caused by permanent testicular damage, a genetic condition, or loss of pituitary hormone signalling.

Sources

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