CONDITION

Leydig cell testicular tumor

A Leydig cell testicular tumor is a growth in the testicle's hormone-producing cells.

WHAT IT IS
Tumor of testosterone-producing cells in a testicle

BODY SYSTEM
Male reproductive and hormone systems

MAIN SYMPTOMS
Testicular lump, swelling, breast growth, early puberty

WHAT CAUSES IT
Usually unknown

HOW IT IS DIAGNOSED
Ultrasound and surgical tissue examination

MAIN TREATMENT
Surgery to remove the tumor or testicle

CAN IT BE CURED?
Sometimes - localized tumors are often removed completely

IS IT AN EMERGENCY?
Sometimes - with sudden severe testicular pain

LONG-TERM OUTLOOK
Usually favorable when localized; metastatic tumors are harder to treat

Overview

A Leydig cell testicular tumor is a growth that begins in Leydig cells. These cells sit between the sperm-producing structures in the testicle and normally make testosterone.

Leydig cell tumors belong to a group called sex cord-stromal tumors. They are different from germ cell tumors, which are the more common type of testicular cancer. This difference matters because the tumors can produce hormones and may need a different approach to treatment and follow-up.

Many Leydig cell tumors remain limited to the testicle. A smaller group behaves as cancer and spreads to other parts of the body. Doctors cannot always determine how a tumor will behave from symptoms or scans alone. Examination of the removed tissue is important.

These tumors can occur in adults or children. In adults, they may be found because of a

testicular lump or hormone-related changes. In children, excess testosterone may cause signs of puberty much earlier than expected.

Symptoms

Some Leydig cell tumors cause no pain. They may be noticed during self-examination, an examination for another concern, or an ultrasound.

Possible testicular symptoms include:

Because Leydig cells make hormones, a tumor may change testosterone or estrogen levels. Estrogen is present in all sexes but is usually found at lower levels in adult males.

Hormone-related symptoms in adults can include breast tissue growth, called gynecomastia, reduced interest in sex, erection problems, or reduced fertility. Some people have no noticeable hormone symptoms even when blood test results are abnormal.

In children, excess male hormones may cause pubic or underarm hair, acne, a deeper voice, rapid growth, or enlargement of the penis earlier than expected. This is called precocious puberty, meaning puberty that begins unusually early. The pattern may be different from ordinary puberty because the hormone is coming from the tumor rather than the brain's normal puberty signals.

Symptoms alone cannot show whether a tumor is benign, meaning it does not spread, or malignant, meaning it can invade or spread.

- A firm lump in one testicle
- Enlargement, swelling, or a heavy feeling in the scrotum
- A dull ache or discomfort in the testicle or groin
- Less often, pain in the affected testicle

Causes and risk factors

The cause of most Leydig cell tumors is unknown. They develop when Leydig cells grow and divide abnormally, but it is usually not clear why this starts.

Changes in cell-signaling genes have been found in some tumors. These changes are usually limited to the tumor and do not necessarily mean that the condition was inherited or can be passed to children.

There are no well-established lifestyle causes. A Leydig cell tumor is not known to result from

sexual activity, injury, masturbation, or something you ate. An injury may draw attention to an existing lump, but it does not usually explain the tumor.

Some other conditions can produce testicular lumps that resemble a Leydig cell tumor. For example, testicular adrenal rest tumors can occur in some people with congenital adrenal hyperplasia, an inherited condition affecting hormone production. These are a different type of growth and require a different evaluation.

Diagnosis

Evaluation usually begins with a physical examination and a scrotal ultrasound. Ultrasound uses sound waves to show whether a lump is inside the testicle and whether it is solid or fluid-filled. A solid mass within the testicle needs prompt assessment, but an ultrasound image alone cannot confirm that it is a Leydig cell tumor.

Blood tests often include the standard testicular tumor markers alpha-fetoprotein, beta-human chorionic gonadotropin, and lactate dehydrogenase. These markers are usually not raised by a Leydig cell tumor. Their main value is helping doctors consider other types of testicular tumor.

Hormone tests may include testosterone, estradiol, and the pituitary hormones LH and FSH. The exact tests are guided by age and symptoms.

The diagnosis is confirmed by examining tumor tissue under a microscope. The tissue is usually obtained during surgery rather than by passing a needle through the scrotum. If cancer is suspected, surgery is normally performed through an incision in the groin. This avoids disturbing the scrotal tissues and follows the usual surgical approach for a testicular mass.

A pathologist looks for features that may suggest aggressive behavior. These include invasion into nearby tissue or blood vessels, dead tissue within the tumor, frequent cell division, marked cell abnormalities, and larger tumor size. No single microscopic feature predicts the outcome perfectly. Spread to another part of the body provides clear evidence that a tumor is malignant.

If the findings suggest a risk of spread, imaging such as CT scans may be used to examine lymph nodes and organs elsewhere in the body.

Treatment and management

Surgery is the main treatment. The type of operation is based on the tumor's size and position, the ultrasound findings, the condition of the other testicle, and how likely the mass is to be benign.

A radical inguinal orchiectomy removes the affected testicle and spermatic cord through an incision in the groin. It is commonly used when a testicular mass may be cancer. For a tumor limited to the testicle, this operation may be the only treatment needed.

Testis-sparing surgery removes the tumor while leaving the rest of the testicle in place. It may be considered for selected small masses that appear likely to be benign, especially when preserving testicular tissue is important. During the operation, a pathologist may perform a rapid examination called a frozen section. This helps guide whether it is reasonable to preserve the remaining tissue, although final laboratory examination is more detailed.

If a tumor has spread, surgery may still be considered for removable tumors or affected lymph nodes. Malignant Leydig cell tumors tend not to respond as reliably to standard chemotherapy or radiation as germ cell testicular cancers do. Care is usually planned by a specialist team experienced in testicular and rare tumors.

Treatment may also address hormone effects. Hormone levels often improve after the tumor is removed, but breast tissue growth or fertility problems may not reverse completely.

Before treatment, it can be helpful to discuss fertility if you may want biological children. One healthy testicle can often make enough testosterone and sperm, but this is not guaranteed. Sperm banking may be offered when fertility could be affected by surgery, additional treatment, or an existing problem with the other testicle.

Complications

Possible complications come from the tumor, its hormone production, or its treatment.

Hormone changes may affect sexual function, breast tissue, puberty, bone health, or fertility. Children who begin puberty early may have an early growth spurt but may stop growing sooner because their bones mature too quickly.

A malignant tumor can spread. Common sites include lymph nodes at the back of the abdomen and, less often, organs such as the lungs, liver, or bones. Metastatic disease means cancer that has spread beyond its original location and is more difficult to treat.

Removing one testicle may reduce sperm production, particularly if the remaining testicle was not functioning normally. Testosterone usually remains adequate when the other testicle is healthy. If it becomes low, symptoms can include tiredness, lower sexual interest, erection difficulties, reduced muscle strength, and low mood. Blood testing can check for this.

Surgery can also cause temporary pain, bruising, or swelling. Some people find that changes in body image or worries about sexual health are as important as the physical recovery. A testicular prosthesis, an implant that gives the appearance of a testicle, may be an option for

some people.

Prevention

There is no known way to prevent a Leydig cell testicular tumor. Most cases have no identifiable lifestyle cause, so routine changes in diet, exercise, or sexual activity have not been shown to stop one from developing.

Knowing the usual feel of your testicles may help you notice a new change. This is early detection, not prevention. A new lump should be assessed even if it is painless.

Living with it and what to expect

For a tumor confined to one testicle, treatment often consists of surgery followed by monitoring. Many people return to their usual work, exercise, relationships, and sexual activity after recovery. The length of physical recovery depends on the operation and your general health.

Follow-up is shaped by the final pathology report. It may include examinations, hormone or tumor-marker blood tests, and imaging. Tumors with features linked to aggressive behavior generally need closer or longer monitoring. Follow-up can also check the health of the remaining testicle and whether testosterone levels are adequate.

After removal of one testicle, the other can often provide enough testosterone for normal sexual function and general health. Fertility may remain normal, be reduced, or already have been affected before treatment. A semen analysis can measure sperm count and movement if this is a concern.

Hormone-related symptoms may improve over weeks or months after the tumor is removed. Breast enlargement can remain because established breast tissue may not shrink fully. Children treated for early puberty may need ongoing review of growth, bone development, and hormone levels.

A malignant or metastatic Leydig cell tumor has a less predictable course. It may require further surgery, specialist cancer treatment, and long-term scans. Some recurrences or metastases are found after the initial treatment period, which is why attending planned follow-up matters even when you feel well.

When to get medical help

Arrange a prompt medical appointment if you notice a new testicular lump, persistent swelling, a change in testicle size or firmness, or a heavy feeling in the scrotum. These symptoms have several possible causes, many of which are not cancer, but they should be examined.

Also seek routine medical assessment for unexplained breast growth, ongoing sexual or fertility changes, or signs of unusually early puberty in a child.

Get urgent or emergency help for sudden, severe testicular pain, especially with swelling, nausea, or vomiting. This can be testicular torsion, in which the testicle twists and loses its blood supply. Torsion is not a typical sign of a Leydig cell tumor, but it needs treatment within hours.

After surgery, seek urgent advice for rapidly increasing swelling, heavy bleeding, worsening redness, pus, fever, severe pain, chest pain, or difficulty breathing.

Common questions

Is a Leydig cell tumor cancer?

Not always. Many are benign and remain in the testicle. Some are malignant and can spread. The pathology findings, imaging, and follow-up help assess how the tumor is behaving.

Do I need the whole testicle removed?

Not in every case. Removing the entire testicle is common when cancer cannot be excluded. Testis-sparing surgery may be possible for selected small tumors that appear likely to be benign. The safest approach depends on the mass and the health of both testicles.

Will removing one testicle lower my testosterone?

A healthy remaining testicle can often make enough testosterone. Some people develop low levels, particularly if the other testicle is not working normally. Symptoms and blood tests can identify this.

Can I still have children after treatment?

Many people can, but fertility cannot be guaranteed. It depends on sperm production before treatment, the health of the other testicle, and whether further therapy is needed. Semen testing and sperm banking may be discussed before treatment.

Can a benign Leydig cell tumor come back?

Complete removal lowers the chance of a local return. However, pathology cannot always predict behavior perfectly, and new or delayed disease is possible. Your follow-up plan reflects

the tumor's specific features.

Is a testicular lump always painful?

No. Testicular tumors are often painless. Pain is more commonly caused by infection, inflammation, injury, or torsion, but symptoms overlap. Any new lump or persistent change deserves assessment.

Sources

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