CONDITION

Testicular cancer

Testicular cancer is cancer that begins in a testicle, usually in cells that make sperm.

WHAT IT IS
Cancer beginning in the tissues of a testicle

BODY SYSTEM
Male reproductive system

MAIN SYMPTOMS
Painless lump, swelling, heaviness, dull ache

WHAT CAUSES IT
Usually unknown; abnormal changes in germ cells

HOW IT IS DIAGNOSED
Ultrasound, tumour-marker blood tests, and surgical pathology

MAIN TREATMENT
Surgery, monitoring, chemotherapy, or radiotherapy

CAN IT BE CURED?
Yes - most cases respond well to treatment

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

LONG-TERM OUTLOOK
Cure is common, though outlook worsens with extensive spread

Overview

Testicular cancer begins in one of the testicles. The testicles sit inside the scrotum, the pouch of skin below the penis. They make sperm and the hormone testosterone.

Most testicular cancers start in germ cells, which are the cells that normally develop into sperm. These cancers are divided into two main groups: seminomas and non-seminomas. The type helps determine which treatments are most likely to work.

Testicular cancer often affects younger and middle-aged adults, but it can occur at any age. It is usually highly treatable, including in many cases that have spread beyond the testicle. Finding and assessing it promptly can make treatment simpler and helps prevent further spread.

A lump or change in a testicle is not always cancer. Cysts, infections, enlarged veins and other

conditions can cause similar symptoms. An examination and ultrasound are needed to find the cause.

Symptoms

The most common sign is a new lump, swelling or change in the feel of one testicle. It is often painless.

Possible symptoms include:

One testicle commonly hangs lower or is slightly larger than the other. This can be normal. A new or continuing change is what needs assessment.

Less often, hormone changes may cause breast tenderness or enlargement. Cancer that has spread can cause back or abdominal pain, a persistent cough, breathlessness, or swelling in the neck. These symptoms have many more common causes, but they still need medical review.

Sudden, severe testicle pain is not the usual presentation of testicular cancer. It can be caused by testicular torsion, in which the cord supplying blood to the testicle twists. Torsion is an emergency because the testicle can be damaged quickly.

- A firm lump or area within a testicle
- Enlargement, swelling or increased firmness of one testicle
- A heavy feeling in the scrotum
- A dull ache in the testicle, scrotum, groin or lower abdomen
- A sudden collection of fluid in the scrotum
- Discomfort or pain in a testicle
- A testicle that has changed in shape or feels different from usual

Causes and risk factors

The exact cause of most testicular cancers is unknown. Cancer develops when cells acquire changes that make them grow and divide without normal control. These abnormal cells can form a tumour and may spread through lymph channels or the bloodstream.

Having a risk factor does not mean that you will develop testicular cancer. Some people have no recognised risk factors.

Factors linked with a higher risk include:

Testicular cancer is not contagious. It is not caused by masturbation, sexual activity, tight clothing or a minor injury. An injury may draw attention to a lump that was already present.

- An undescended testicle: This means a testicle did not move into the scrotum before birth. Risk remains higher even after surgery to move it.
- A previous testicular cancer: Cancer can later develop in the other testicle, although this is uncommon.
- Abnormal germ cells: Germ cell neoplasia in situ, sometimes called GCNIS, is a non-invasive group of abnormal cells that can develop into cancer.
- Family history: Risk is higher if a close relative, particularly a brother or father, has had testicular cancer.
- Certain differences in testicular development: Some conditions affecting how the testicles formed or function may increase risk.

Diagnosis

A healthcare professional will ask about the change, how long it has been present and whether you have pain or other symptoms. They will usually examine both testicles, the scrotum, groin and abdomen.

A scrotal ultrasound uses sound waves to create an image. It can show whether a lump is inside the testicle and whether it is solid or filled with fluid. Solid masses within a testicle need specialist assessment.

Blood tests may measure tumour markers. These are substances that some testicular cancers release into the blood. The main markers are alpha-fetoprotein, beta human chorionic gonadotropin and lactate dehydrogenase. Normal results do not rule out cancer, and raised results can sometimes have another cause.

When the findings suggest cancer, the usual next step is surgery to remove the affected testicle through a cut in the groin. This is called a radical inguinal orchiectomy. A laboratory examines the tissue to confirm whether cancer is present and identify its type. A biopsy through the scrotum is generally avoided because it may affect how cancer cells spread.

CT scans and sometimes other imaging tests check nearby lymph nodes and other organs. The examination, tumour markers, surgical findings and scans are used to assign a stage. The stage describes whether the cancer is limited to the testicle or has spread.

Treatment and management

Treatment is based on the cancer type, stage, tumour-marker results, general health and personal priorities. Care is usually planned by a team experienced in testicular cancer.

Surgery to remove the affected testicle is the main first treatment for most cases. The other testicle usually makes enough testosterone, and many people can still have biological children. An artificial testicle, called a testicular prosthesis, can be placed in the scrotum if wanted.

After surgery for cancer limited to the testicle, the options may include close surveillance, chemotherapy or, for selected seminomas, radiotherapy. Surveillance means planned examinations, blood tests and scans. It avoids immediate additional treatment, but attending every follow-up appointment is important.

Chemotherapy uses medicines that travel through the body to destroy cancer cells. It is commonly used when cancer has spread, when blood markers remain raised, or when the risk of recurrence makes it appropriate. Radiotherapy uses targeted high-energy radiation and is mainly used for certain seminomas.

Some people need surgery to remove lymph nodes at the back of the abdomen. This is known as retroperitoneal lymph node dissection. It may be used for particular non-seminomas or for tissue remaining after chemotherapy.

Treatment can affect sperm production. You may be offered sperm banking before surgery, chemotherapy, radiotherapy or lymph-node surgery. This stores sperm for possible future fertility treatment. Treatment should not be delayed without agreement from the cancer team.

If cancer returns, further chemotherapy, surgery or other specialist treatment may still be effective.

Complications

Testicular cancer can spread to lymph nodes in the abdomen and chest or, less commonly, to organs such as the lungs, liver, brain or bones. Spread does not automatically mean that treatment cannot cure it.

Possible effects of treatment include:

Not everyone develops these problems. Risks differ according to the treatment received. Follow-up may include checking symptoms, hormone levels and longer-term health risks.

Removing both testicles is rarely necessary. If it is needed, lifelong testosterone replacement is required because the body can no longer make enough of the hormone.

- Reduced sperm production or infertility
- Low testosterone if the remaining testicle does not make enough
- Changes in ejaculation after some lymph-node operations
- Numbness or tingling from certain chemotherapy medicines
- Hearing, kidney or lung problems after particular treatments
- A later risk of cardiovascular problems or another cancer after some therapies
- Anxiety about recurrence, fertility, sexuality or body image

Prevention

There is no reliable way to prevent most testicular cancers. The usual risk factors, such as being born with an undescended testicle or having a family history, cannot be changed.

Surgery to bring an undescended testicle into the scrotum may lower cancer risk when performed early, but it does not remove the risk completely. It also makes the testicle easier to examine.

Routine screening with ultrasound or blood tests is not generally used for people without symptoms. Formal monthly self-examination has not been shown to prevent cancer. However, knowing what your testicles normally look and feel like may help you notice a new lump, swelling or change sooner.

There is no evidence that supplements, special diets or changes in sexual activity prevent testicular cancer.

Living with it and what to expect

Many people complete treatment and return to work, exercise, relationships and usual daily life. Recovery time differs according to whether treatment involved surgery alone, chemotherapy, radiotherapy or more extensive surgery.

Follow-up continues after treatment because cancer can sometimes return. Appointments may include a symptom review, examination, tumour-marker tests and scans. Visits are usually more frequent during the period when recurrence is most likely, then become less frequent. The exact schedule reflects the cancer type, stage and treatment.

After one testicle is removed, sexual function and testosterone levels often remain normal. The remaining testicle commonly enlarges slightly and continues to make hormones and

sperm. Fertility may already be reduced before treatment, however, and chemotherapy, radiotherapy or surgery can reduce it further.

Tiredness may continue for weeks or months after treatment. Chemotherapy effects such as tingling, hearing changes or difficulty concentrating may take time to improve and occasionally persist. Report continuing symptoms during routine follow-up so they can be assessed.

Changes in appearance, worries about fertility and fear of recurrence can affect mood and relationships. A prosthesis, fertility support, counselling or contact with a testicular cancer support group may help. New anxiety before scans or appointments is common and worth discussing with the care team.

The outlook is especially good when cancer is confined to the testicle, but many cancers that have spread are also curable. Individual outlook is influenced by the cancer type, where it has spread and tumour-marker levels. Follow-up remains important even when treatment has been successful.

When to get medical help

Arrange a prompt medical appointment if you notice:

These symptoms do not necessarily mean cancer, but they should not be watched indefinitely without assessment.

Seek emergency care for sudden, severe testicle pain, especially with swelling, nausea or vomiting. This may be testicular torsion rather than cancer, and treatment is time-sensitive.

During cancer treatment, follow the urgent-contact instructions given by the oncology team. Fever or signs of infection during chemotherapy need urgent advice because treatment can reduce infection-fighting white blood cells.

Call emergency services for severe breathing difficulty, chest pain, coughing up blood, collapse or a new seizure. These symptoms are uncommon but require immediate assessment.

- A new lump, swelling or firm area in a testicle
- A testicle becoming larger, heavier or different in shape
- A persistent ache in the testicle, groin or lower abdomen
- Unexplained fluid or swelling in the scrotum

Common questions

Is every testicular lump cancer?

No. Cysts, infections, inflammation and enlarged veins can all cause lumps or swelling. It is not possible to identify the cause safely by touch alone, so a new lump needs an examination and usually an ultrasound.

Can testicular cancer be cured?

Yes, most cases can be cured. The chance of cure is highest when cancer is found early, but treatment can also cure many cancers that have spread. Your outlook is based on the cancer type, stage and tumour-marker results.

Will the affected testicle have to be removed?

Usually, if tests strongly suggest testicular cancer. Removing the testicle allows the laboratory to confirm the diagnosis and often removes the main tumour. A prosthetic testicle is optional.

Can I still have sex or children after treatment?

Many people retain erections, sexual desire and fertility after one testicle is removed. Other treatments can reduce sperm production or affect ejaculation. Sperm banking may be offered before treatment when future fertility is a concern.

Can testicular cancer come back?

It can recur, most often during the earlier years after treatment, although the timing differs between cancer types. This is why scheduled blood tests, examinations and scans matter. A recurrence may still be treatable and potentially curable.

Did an injury cause my testicular cancer?

A minor injury is not known to cause testicular cancer. Pain or swelling after an injury may make an existing lump easier to notice. Any change that remains after the injury settles should be assessed.

Sources

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