CONDITION

Renal pelvis or ureter cancer

Cancer that begins in the urine-collecting lining of the kidney or ureter

WHAT IT IS
Cancer of the renal pelvis or ureter lining

BODY SYSTEM
Urinary system

MAIN SYMPTOMS
Blood in urine, side pain, urinary changes, weight loss

WHAT CAUSES IT
DNA changes in urinary tract lining cells

HOW IT IS DIAGNOSED
CT urography and ureteroscopy with biopsy

MAIN TREATMENT
Surgery, endoscopic treatment, chemotherapy, immunotherapy

CAN IT BE CURED?
Sometimes - localized tumors may be removed

IS IT AN EMERGENCY?
Sometimes - heavy bleeding, blocked urine, or infection

LONG-TERM OUTLOOK
Early cancer often treatable; advanced cancer harder to control

Overview

Renal pelvis or ureter cancer begins in the upper urinary tract. The renal pelvis is the funnel-shaped area inside each kidney where urine collects. The ureters are the tubes that carry urine from the kidneys to the bladder.

Most of these cancers are urothelial carcinomas . They start in urothelial cells, which form the lining of the renal pelvis, ureters, bladder, and part of the urethra. The medical term for the condition is often upper tract urothelial carcinoma , or UTUC.

This is different from the more common type of kidney cancer, renal cell carcinoma, which starts in kidney tissue rather than the urine-collecting lining. The distinction matters because the tests, treatments, and patterns of recurrence are different.

Some tumors stay within the lining and grow slowly. Others invade the ureter wall, kidney,

nearby tissues, lymph nodes, or distant organs. The tumor's grade and stage help show how likely it is to grow or spread. Grade describes how abnormal the cells look. Stage describes how far the cancer has grown.

Symptoms

Blood in the urine is the most common warning sign. Urine may look pink, red, or brown, or blood may be found only during a urine test. Bleeding can come and go, so urine returning to its usual color does not rule out a problem.

Other possible symptoms include:

Pain can develop if a tumor or blood clot blocks urine flow. This may cause swelling of the kidney, called hydronephrosis.

These symptoms have many possible causes, including stones, infection, or non-cancerous prostate and bladder conditions. They still need medical assessment, especially visible blood in the urine.

- Pain in the side or back, especially below the ribs
- Burning, urgency, or needing to urinate more often
- Tiredness or weakness caused by anemia, meaning too few red blood cells
- Reduced appetite or unexplained weight loss

Causes and risk factors

The cancer develops when DNA changes cause cells in the urinary tract lining to grow without normal control. Usually, it is not possible to identify one exact cause.

Smoking is an important preventable risk factor. Tobacco chemicals enter the bloodstream, are filtered by the kidneys, and can remain in contact with the urinary tract lining.

Other factors associated with a higher risk include:

Most people with a risk factor do not develop this cancer. Some people who develop it have no known risk factors.

A family history may matter when several relatives have Lynch-associated cancers, such as bowel, womb, ovarian, or upper urinary tract cancer. In that situation, genetic counseling may help assess whether testing is appropriate.

- A previous or current bladder cancer
- Long-term exposure to certain industrial chemicals, including some aromatic amines
- Previous treatment with certain chemotherapy medicines
- Long-standing irritation or inflammation in the urinary tract
- Exposure to aristolochic acid, found in some unregulated herbal products
- Lynch syndrome, an inherited condition that raises the risk of several cancers

Diagnosis

Assessment usually begins with questions about symptoms, smoking, previous cancers, medicines, work exposures, and family history. Blood tests check kidney function and look for anemia. Urine tests can identify blood, infection, or abnormal cells.

A CT urogram is commonly used to examine the kidneys, ureters, and bladder after contrast dye is given into a vein. It can show a mass, thickening, blockage, or signs that cancer has spread. MRI or another imaging method may be considered when CT contrast is unsuitable.

Cystoscopy is often part of the assessment. A thin camera is passed through the urethra to inspect the bladder because bladder and upper urinary tract cancers can occur together.

Ureteroscopy allows a specialist to pass a narrow camera into the ureter and renal pelvis. They can look directly at the abnormal area and take a biopsy. A biopsy removes a small tissue sample for examination under a microscope. It can confirm the cancer type and estimate its grade.

Urine cytology, which looks for abnormal cells shed into urine, can support the diagnosis. It is more likely to detect high-grade cancer than low-grade cancer.

No single test gives every detail. Imaging, biopsy findings, urine cytology, and sometimes tissue removed during surgery are combined to determine the cancer's stage and risk level.

Treatment and management

Treatment is based on where the tumor is, whether it appears low-grade or high-grade, how deeply it has grown, and whether it has spread. Kidney function, general health, and your preferences also matter.

A small, low-grade tumor may sometimes be treated with a kidney-sparing approach. The tumor can be destroyed or removed through a ureteroscope using endoscopic instruments or

laser energy. Some people may be offered medicine delivered directly into the upper urinary tract. These approaches preserve kidney tissue but require close follow-up because the cancer can return.

Removing only part of the ureter may be possible for selected tumors, particularly those near the bladder. The remaining ureter is then reconnected.

For cancer considered at high risk of invasion or recurrence, standard surgery often removes the affected kidney, the whole ureter, and a small cuff of bladder where the ureter connects. This is called radical nephroureterectomy. Nearby lymph nodes may also be removed in some cases.

A chemotherapy treatment placed directly into the bladder around the time of surgery may lower the chance of a later bladder tumor. It treats the bladder lining rather than the rest of the body.

Chemotherapy given through a vein may be offered before or after surgery for some higher-risk cancers. The decision is influenced by cancer stage and kidney function, since removing a kidney can affect which chemotherapy medicines are suitable.

If the cancer cannot be removed or has spread, systemic treatment travels through the bloodstream. Options can include chemotherapy, immunotherapy that helps the immune system recognize cancer, and targeted treatment for tumors with particular gene changes. Radiotherapy may sometimes relieve pain, bleeding, or other symptoms, but it is not usually the main treatment for a localized tumor.

Complications

A tumor can narrow or block a ureter, causing hydronephrosis and reduced kidney function. A blocked urinary tract can also become infected.

Ongoing bleeding may lead to anemia or blood clots in the urine. Cancer can return in the remaining upper urinary tract or appear in the bladder. It may also spread to lymph nodes, lungs, liver, bones, or other areas.

Treatment can affect kidney function. Endoscopic treatment may cause scarring or narrowing of the ureter, while surgery can leave you with one functioning kidney. Temporary drainage tubes or ureteric stents may be needed if urine flow is blocked.

Prevention

There is no certain way to prevent renal pelvis or ureter cancer. Inherited risks such as Lynch syndrome cannot be prevented.

Not smoking, or stopping smoking, can reduce exposure to one of the main avoidable risk factors. If your work involves chemicals linked to urothelial cancer, follow workplace controls and use the recommended protective equipment.

Avoid unregulated herbal remedies that may contain aristolochic acid. If you have Lynch syndrome or a previous urothelial cancer, follow-up may help find a new tumor earlier, but it cannot guarantee prevention.

Living with it and what to expect

What happens over months and years is strongly influenced by the cancer's stage, grade, and response to treatment. A localized, low-grade tumor may be managed successfully while preserving the kidney, although repeated procedures are sometimes needed. High-grade or invasive cancer is more likely to require major surgery and additional treatment.

Follow-up is important because urothelial cancer can recur. Monitoring may include cystoscopy, urine tests, scans, and, after kidney-sparing treatment, repeat ureteroscopy. Follow-up is usually more intensive at first and may continue for years.

Many people live well with one kidney. Your care team may monitor blood pressure, blood tests, and urine tests because the remaining kidney has to provide most or all kidney function. Some people develop chronic kidney impairment, while others maintain stable function.

Recovery after surgery can involve tiredness, discomfort, and a gradual return to usual activities. Systemic treatment may affect energy, appetite, infection risk, nerves, or digestion, depending on the treatment used.

Emotional effects can continue after physical recovery. Worry before scans or procedures is common. Clear information about the follow-up plan and support from family, cancer services, or counseling can make this easier to manage.

When to get medical help

Arrange a prompt medical appointment if you notice visible blood in your urine, even if it happens once or is painless. Also seek assessment for continuing side pain, repeated urinary symptoms without a clear cause, unexplained weight loss, or unusual tiredness.

If you have been treated for this cancer, contact your cancer team about new bleeding,

worsening urinary symptoms, persistent pain, treatment side effects, or difficulty following your monitoring plan. These concerns usually need timely review but are not always emergencies.

Seek urgent or emergency care for:

These symptoms can indicate significant bleeding, a blocked urinary tract, infection, or impaired kidney function.

- Heavy bleeding or large blood clots in the urine
- Being unable to pass urine
- Severe side pain with fever, chills, or vomiting
- Fainting, marked weakness, confusion, or shortness of breath
- Very little urine together with worsening pain or swelling

Common questions

Is renal pelvis cancer the same as kidney cancer?

It is a type of cancer located within the kidney, but it is not the usual form of kidney cancer. It starts in the urine-collecting lining rather than the kidney tissue. Ureter cancer begins in the same type of lining and is treated in a similar way.

Can renal pelvis or ureter cancer be cured?

Sometimes. A localized tumor may be cured by complete removal or destruction. The chance is lower if the cancer has grown deeply, reached lymph nodes, or spread to distant organs. Even after successful treatment, continued monitoring is needed because urothelial cancer can return.

Will my kidney have to be removed?

Not always. Some small, low-grade tumors can be treated endoscopically, and selected ureter tumors can be removed without taking out the kidney. Removing the kidney and ureter is more likely when the tumor is high-grade, invasive, large, or cannot be fully treated by a kidney-sparing method.

Why can the cancer return in the bladder?

The renal pelvis, ureters, and bladder share the same urothelial lining. Abnormal cells or cancer-forming changes may affect more than one part of that lining. For this reason, bladder checks are usually part of follow-up even when the original tumor was higher in the urinary tract.

What affects the outlook?

The main factors are stage, grade, lymph node involvement, whether the tumor was completely removed, and whether it has spread. Kidney function and overall health can influence which treatments are possible. Population survival figures cannot predict exactly what will happen to one person.

Can I live normally with one kidney?

Many people can work, exercise, and carry out usual activities with one healthy kidney. Regular monitoring helps identify changes in kidney function or blood pressure. Individual advice may be needed about medicines, hydration, diet, or activities if kidney function is reduced.

Sources

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