

Kidney Cancer: An Overview of Renal Cell Carcinoma and Its Subtypes

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Description

Kidney cancer is a growing global health issue, representing approximately 2%-3% of all cancers. It is the most prevalent type of malignancy in the kidneys. The incidence of kidney cancer has steadily increased in recent decades. This rise can be attributed to advancements in medical imaging technologies that enable earlier detection, as well as potential influences from environmental and lifestyle factors. Renal Cell Carcinoma (RCC) originates in the renal cortex, where blood filtration occurs. Several subtypes of RCC exist, with clear cell carcinoma being the most common, accounting for approximately 70%-80% of cases. Clear cell carcinoma is characterized by its association with genetic mutations. Another subtype is papillary carcinoma, which is further divided into two categories: Type 1 and Type 2. Type 1 papillary carcinoma tends to be less aggressive, whereas Type 2 is typically more aggressive and has a worse prognosis. Papillary RCC constitutes about 10%-15% of kidney cancer cases. Chromophobe RCC is a rarer subtype, comprising around 5% of RCC cases. This form of kidney cancer is generally less aggressive than clear cell carcinoma, but it can still metastasize. Other forms of kidney cancer include urothelial carcinoma, which affects the renal pelvis, the part of the kidney responsible for collecting urine. Although less common than RCC, urothelial carcinoma is an important consideration in the diagnosis and treatment of kidney cancers. Additionally, Wilms tumor is a rare form of kidney cancer that predominantly affects children, typically under the age of 5. Early detection and diagnosis are vital in the management of kidney cancer, with treatment options including surgery, targeted therapies and immunotherapies. Prognosis largely depends on the stage at diagnosis, with early-stage cancers generally having better outcomes. Continued research into the genetic and environmental factors contributing to RCC is essential for improving prevention and treatment strategies.

Kidney cancer

Kidney cancer often goes unnoticed in its early stages due to the lack of apparent symptoms, making early diagnosis difficult. However, as the tumor grows, several symptoms may become noticeable. One of the most common signs is blood in the urine (hematuria), which can be an early indicator of kidney cancer. Additionally, individuals may experience pain on one side of the body, typically in the lower back or abdomen, which could signal

the presence of a tumor. Unexplained and significant weight loss can also suggest kidney cancer or other serious health conditions. Another common symptom is persistent fatigue, which may not be attributable to physical activity or inadequate sleep. This is often seen in various cancers, including kidney cancer. In some cases, patients may experience fever, night sweats, and notice a palpable lump or mass in the abdominal area. When kidney cancer spreads to other parts of the body (metastasis), additional symptoms like bone pain, coughing, or shortness of breath may appear. Early detection is critical in the successful treatment of kidney cancer. Diagnostic techniques include imaging tests such as ultrasound, Computed Tomography (CT) scans and Magnetic Resonance Imaging (MRI). These methods help visualize tumors and assess their size, location and potential spread. CT scans, in particular, provide detailed information for evaluating the tumor. In some cases, a biopsy is performed to confirm the presence of cancer cells, though imaging results may sometimes be sufficient for diagnosis. Blood tests can also be useful in evaluating kidney function and identifying markers associated with cancer, though they are not definitive diagnostic tools.

Treatment options

The treatment of kidney cancer is customized based on several key factors, including the cancer's stage, the patient's general health, and whether the cancer has spread beyond the kidney. Surgical options are most commonly used, particularly for localized kidney cancer. The two main types of surgery are radical nephrectomy, where the entire kidney is removed and partial nephrectomy, which spares part of the kidney by only removing the tumor. In advanced stages, targeted therapies play a significant role. Drugs like Tyrosine Kinase Inhibitors (TKIs) and immune checkpoint inhibitors have shown effectiveness in slowing cancer progression by targeting the specific molecules involved in tumor growth. Immunotherapy, which enhances the body's immune response to cancer, is also widely used. The prognosis for early-stage kidney cancer is quite favorable, with over 90% of patients surviving for at least five years when the cancer is localized. However, if the cancer spreads, survival rates decline significantly, with only 10%-15% surviving for five years once metastasis occurs. Ongoing monitoring is essential for detecting any recurrence or spread of the disease, making regular follow-ups a critical component of long-term care for kidney cancer patients.