

Renal Cell Carcinoma

Several types of cancer can develop in the kidneys. Renal cell carcinoma (RCC), the most common form, accounts for approximately 85% of all cases. In RCC, cancerous (malignant) cells develop in the lining of the kidney's tubules and grow into a mass called a tumor. In most cases, a single tumor develops, although more than one tumor can develop within one or both kidneys.

Early diagnosis of kidney cancer is important. As with most types of cancer, the earlier the tumor is discovered, the better a patient's chances for survival. Tumors discovered at an early stage often respond well to treatment. Survival rates in such cases are high. Tumors that have grown large or spread (metastasized) through the bloodstream or lymphatic system to other parts of the body are more difficult to treat and present an increased risk for mortality.

Incidence and Prevalence

According to the National Cancer Institute, the highest incidence of kidney cancer occurs in the United States, Canada, Northern Europe, Australia, and New Zealand. The lowest incidence is found in Thailand, China, and the Philippines.

In the United States, kidney cancer accounts for approximately 3% of all adult cancers. According to the American Cancer Society, about 32,000 new cases are diagnosed and about 12,000 people die from the disease annually. Kidney cancer occurs most often in people between the ages of 50 and 70, and affects men almost twice as often as women.

Smokers develop renal cell carcinoma about twice as often as nonsmokers and develop cancer of the renal pelvis about 4 times as often. Not smoking is the most effective way to prevent kidney cancer and it is estimated that the elimination of smoking would reduce the rate of renal pelvis cancer by one-half and the rate of renal cell carcinoma by one-third.

The Kidneys

The kidneys are an essential part of the body's urinary system. Each kidney is composed of about one million microscopic "filtering packets" called glomeruli. The glomeruli remove uremic waste products from the blood. Each glomerulus connects to a long tube, called the tubule. Urine made by the glomerulus moves down the tubule. Together, the glomerulus and the tubule form a unit called a nephron. Each nephron connects to progressively larger tubular branches, until it reaches a large collection area called the calyx. The calices form the funnel-shaped portion of the upper ureter (renal pelvis). Urine moves from the renal pelvis to the ureters, the large tubes that connect the kidney to the bladder.

The kidneys produce three important hormones: erythropoietin (EPO), which triggers the production of red blood cells in bones; renin, which regulates blood pressure; and vitamin D, which helps regulate the body's metabolism of calcium necessary for healthy bones.