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Taking a Closer Look

BY ELIZABETH WHITTINGTON

Renal cell carcinoma is the most common type of kidney cancer, comprising more than 90 percent of all kidney cancers. Determining the type of RCC based on genetics and histology helps determine the best treatment and predicts survival. Recent studies involving DNA microarrays show genetic profile expressions can be used to classify renal cell carcinomas more appropriately than histology. The most common subtypes of RCC include the following:

- > **Clear-cell RCC is the most common type of RCC, affecting nearly 80 percent of patients.** Characterized by clear or pale cells, clear-cell RCC usually occurs in patients age 50 to 70. A mutation in the von Hippel-Lindau gene is responsible for many RCC cases, and is usually the culprit in patients under age 60.
- > **Papillary RCC comprises about 10 to 15 percent of all RCC cases and can occur in hereditary or sporadic forms.** Sporadic (non-hereditary) papillary RCCs have a five-year survival rate of almost 90 percent. While many papillary tumors carry a good prognosis, a certain subtype characterized by large tumor size, decreased cytokeratin 7, and an increase in an enzyme called topoisomerase II-alpha is particularly aggressive. Often involving both kidneys, papillary RCC sometimes is caused by the loss or excess of specific chromosomes. Papillary RCC occurs more often in African-Americans and is five times more likely to strike men than women.
- > **Chromophobe RCC is very rare, occurring in only 5 percent of RCC cases.** Tumors are composed of large clear cells. Cases of hereditary chromophobe RCC, called Birt Hogg Dubé syndrome, are caused by a defective gene thought to be involved in tumor suppression. This type of RCC often only requires surgery because the cancer rarely metastasizes.
- > **Renal oncocytoma is uncommon and rarely deadly.** This benign tumor can grow and invade local structures, but does not spread to other parts of the body. Typically treated by surgery, it appears to be caused by the loss of certain chromosomes.

Other types of RCC include **collecting duct carcinoma, renal medullary carcinoma, and sarcomatoid RCC**, all of which are extremely rare.