Kidney cancer is most often diagnosed incidentally at the time of radiographic imaging for other complaints. Although numerous improvements and greater use of screening measures have occurred in the setting of renal cell carcinoma (RCC), screening for this disease is usually only carried out for patients who have been identified as having one of the known genetic lineages linked with specific RCC subtypes. This article reviews key concepts in the screening, diagnosis, and prognosis of patients with RCC.

At a Glance

- Kidney cancer includes several distinct morphologic characteristics and histologic subtypes that guide surgical intervention and systemic treatment planning.
- Most kidney cancers are diagnosed incidentally at the time of diagnostic imaging for unrelated complaints.
- Imaging modalities such as computed tomography, ultrasonography, and magnetic resonance imaging are essential in establishing an accurate diagnosis of renal cell carcinoma and determining the course of treatment.

Because surgical planning is dependent on disease extent, radiographic imaging plays a key role in accurately determining tumor stage, adjacent organ involvement, and metastases prior to treatment initiation (Campbell, Novick, & Bukowski, 2006).

Contrast-Enhanced Computed Tomography

RCC often is diagnosed incidentally at the time of computed tomography (CT) and ultrasonography for unrelated complaints (Volpe et al., 2003), which is fortunate as most asymptomatic tumors are small, confined, and curable (Campbell et al., 2006). CT is effective in identifying intra-abdominal metastases, regional lymphadenopathy, and venous involvement, as well as surveying the status of the contralateral kidney. However, CT offers limited accuracy in detecting lesions smaller than 2 cm (Bechtold & Zagoria, 1997) and does not show the microscopic invasion of perinephric fat. CT also is limited in the evaluation of minimally...