

Renal Oncocytoma

A renal oncocytoma is a benign epithelial neoplasm that comprises 5-9% of renal tubular epithelial tumors. Grossly, it looks like a brown tumor with a central radial scar. Histologically, excessive mitochondria can be seen. This tumor normally arises from renal cortex cells and can present with hematuria, flank pain, and/or an abdominal mass. Renal oncocytoma are capable of malignant transformation into oncocytic renal cell carcinoma (RCC) and thus should be resected surgically in most cases.



PLAY PICMONIC

Characteristics

Benign Epithelial Tumor

Benign-bunny with E-pick Cells and Tumor-guy

A renal oncocytoma is a benign epithelial tumor that arises from the intercalated cells of the collecting duct in the renal cortex. It accounts for about 5% of all renal epithelial neoplasms. Despite being benign, it often mimics renal cell carcinoma (RCC) radiographically, so surgical removal is usually performed for diagnosis and treatment.

Central Radial Scar

Center-bullseye Radial-tire Scarface

Grossly, renal oncocytomas are well-circumscribed, mahogany-brown tumors that may contain a central stellate (radial) scar. Although this finding is characteristic, it occurs in only about one-third of cases and is not pathognomonic, since some renal cell carcinomas can also show central scarring.

Excessive Mitochondria

Up-arrow Mitochondria

Microscopically, the tumor is composed of large eosinophilic cells (oncocytes) with granular cytoplasm due to numerous mitochondria. There is no perinuclear clearing, which helps distinguish oncocytoma from chromophobe RCC, where perinuclear halos are typically present.

Renal Cortex

Kidney Cortez

Renal oncocytomas originate from intercalated cells of the collecting ducts located in the renal cortex. Similar oncocytic tumors can also arise in other organs, such as the thyroid, parathyroid, salivary glands, pancreas, and pituitary gland.

Clinical Features

Hematuria

Red-urinal

Patients may present with painless microscopic hematuria, which is the most common symptom. The classic triad of hematuria, flank pain, and a palpable abdominal mass is rare (present in <10% of cases). Many tumors are discovered incidentally on imaging performed for unrelated reasons.

Flank Pain

Flank Pain-bolt

Flank pain may occur as the tumor enlarges or stretches the renal capsule. It usually appears in later stages.

Abdominal Mass

Abdominal Mass

A palpable abdominal or flank mass may be found if the tumor grows large enough.

Considerations

Malignant Transformation

Malignant-man Transformer

Although considered benign, rare cases of malignant transformation into oncocytic renal cell carcinoma have been reported. Thus, histopathologic evaluation is essential after surgical removal.

Surgical Resection

Surgeon

Because renal oncocytomas cannot be reliably distinguished from RCC on imaging, partial or radical nephrectomy is often performed to confirm the diagnosis and rule out malignancy.