Chromophobe renal cell carcinoma mimicking oncocytoma: Role of imaging with brief review of literature

Clinical History:

A 45-year-old female patient with chief complaints of abdominal pain and haematuria for 3 months and dysmennorrhoea for 4 months. She also reported complaints of feeling an abdominal mass for 3 months.

Imaging Findings:

CECT abdomen showed a heterogeneously enhancing mass lesion involving the mid and lower pole of left kidney measuring 14x12x11 cm. The central portion of the mass lesion showed non-enhancing hypodense areas resembling a scar pattern. The left renal vein was noted to be dilated with no evidence of intraluminal filling defects.

Discussion:

Renal Cell Carcinoma (RCC) is the 8th most common malignant tumour affecting the adult population. The classical triad of flank pain, haematuria and a palpable flank mass is seen in only 5-10% of the cases. Non-specific symptoms include anorexia, weight loss or fever of unknown origin. Other clinical features include varicocele formation secondary to tumour thrombus in left renal vein and disseminated malignancy. Paraneoplastic syndromes include polycythemia, hypercalcaemia, hepatic dysfunction etc. [1] Among the various subtypes of RCC, Chromophobe RCC is the third most common after Clear Cell and Papillary subtypes, comprising 5-10% of all RCC’s. Among the subtypes, Chromophobe RCC has a more favourable prognosis, nevertheless it is considered as a malignant tumour with potential for metastases. [2, 3] It is important to differentiate Chromophobe RCC from renal oncocytoma as the latter is a benign condition. On CT and MRI, the classical feature of an oncocytoma is the presence of a renal scar. Chromophobe RCCs generally exhibit areas of necrosis or a spoke wheel pattern which may mimic a fibrous scar and hence limit the use of this imaging feature to differentiate it from a renal oncocytoma. On MRI both of these lesions tend to be peripherally located and lack fat, haemorrhage, cysts, homogeneous enhancement, perinephric fat invasion or hyperintensities on any of the various phases used in renal imaging protocol. Both of these tumours lack infiltrative margins and show no renal invasion. Renal tumours greater than 7 cm in diameter, exhibiting weak enhancement and showing calcification are likely to be a Chromophobe RCC. The presence of calcification is associated with a better prognosis. On angiography Chromophobe RCCs are hypovascular. [3, 4] Histopathology plays a crucial role in the diagnosis of Chromophobe RCC, and one of the diagnostic criteria is presence of Hale colloidal iron, another is presence of intracytoplasmatic microvesicles between 250-400 nmin diameter which can be seen on electron microscopy. However, the main diagnostic criteria of Chromophobe RCC is
morphology coupled with characteristic immunophenotype (CK7 and KIT positivity). [5] The management of Chromophobe still continues to be surgery (nephrectomy), however, studies and few documented cases have shown that those Chromophobe RCCs which express CD117 may benefit from medical therapy using kinase inhibitors like imatinib, dasatinib, nilotinib, sunitinib and sorafenib without the need for surgery. [5, 6]

**Differential Diagnosis List:** Chromophobe renal cell carcinoma, Renal oncocytoma, Renal lymphoma

**Final Diagnosis:** Chromophobe renal cell carcinoma

**References:**


Description: CECT abdomen, axial sections showed a large heterogenously enhancing mass lesion measuring 14x12x11 cm involving the mid and lower pole of left kidney. The lesion showed a central non-enhancing area. Origin: Father Muller Medical College, Mangalore, Karnataka, India.
Description: CECT abdomen, coronal sections showed a large heterogeneously enhancing mass lesion measuring 14x12x11 cm involving the mid and lower pole of left kidney. The lesion showed a central non-enhancing area. Origin: Father Muller Medical College, Mangalore, Karnataka, India.
Description: CECT abdomen, sagittal sections showed a large heterogenously enhancing mass lesion measuring 14x12x11 cm involving the mid and lower pole of left kidney. The lesion showed a central non-enhancing area. Origin: Father Muller Medical College, Mangalore, Karnataka, India.
Description: CECT abdomen, coronal sections showed a large heterogenously enhancing lesion with central non-enhancing area involving the mid and lower pole of left kidney. There was dilatation of lt. renal vein with no intraluminal filling defects. Origin: Father Muller Medical College, Mangalore, Karnataka, India.
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Figure 4

Description: Large polygonal cells of various sizes with prominent cell membrane arranged in a stone-paving pattern (haematoxylin–eosin stain) Origin: Father Muller Medical College, Mangalore, Karnataka, India
Description: Cytoplasm of the carcinoma component showing reactivity to Hale's colloidal iron stain.
Origin: Father Muller Medical College, Mangalore, Karnataka, India