Giant renal Oncocytoma

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Abstract
A 72 year old lady with myelodysplasia presented with left flank fullness. Contrast enhanced computed tomography of the abdomen and pelvis showed a well-circumscribed heterogeneously enhancing lobulated lesion arising from the left kidney with non-enhancing areas of possible necrosis. She underwent radical nephrectomy for left renal mass. Histopathology revealed giant renal oncocytoma. Most of the series on renal oncocytoma have reported small tumors with 4-6cm size but we report a case of giant renal oncocytoma mimicking renal cell carcinoma in association with myelodysplastic syndrome.

Keywords: Giant, Oncocytoma, Myelodysplasia, Renal, Nephrectomy.

Introduction
Oncocytomas constitute 3 to 7% of all solid renal tumors and most are detected incidentally.[1] Often they cannot be differentiated from renal cell carcinoma (RCC) by clinical or radiological means. Various pathological techniques are necessary for the distinction between these tumors. Mean tumor size for renal oncocytomas has ranged from 4 to 6 cm in most series similar to the size of incidentally detected RCCs. [2] We describe a case of giant renal oncocytoma mimicking renal cell carcinoma in association with myelodysplastic syndrome.

Case Report
A 72 year old lady presented with complaints of fullness in left side of upper abdomen for 3 months. She also had easy fatigability, loss of appetite and suffered a weight loss of 9 kgs during the past 3 months. Of clinical significance was the history that she was anemic and on treatment with oral haematinics. On clinical examination, a well defined, hard, bimanually palpable mass of 20 x 15 cm size was present in the left hypochondrium & lumbar region. Moderate hepatosplenomegaly was also noted. The blood investigations revealed normal renal function, low hemoglobin and platelet count with dysmorphic platelets. Bone marrow evaluation revealed features suggestive of myelodysplastic syndrome. Ultrasound of abdomen revealed a heterogeneous hyperechoic mass in left renal fossa with increased vascularity replacing the whole of the kidney (Fig.1a).

Contrast enhanced computed tomography (CT) of the abdomen and pelvis showed a well-circumscribed heterogeneously enhancing lobulated lesion arising from the kidney with non-enhancing areas of possible necrosis and surrounded by multiple collaterals (Fig. 1b). Metastatic lesions were not identified. Radical nephrectomy was done (Fig.1c). The tumor was seen replacing whole of the renal parenchyma and weighed 1560grams. Gross sectioning revealed a tumor measuring 14x11x7cm occupying the whole of the kidney with a yellowish brown cut surface and central area of scarring and hemorrhage (Fig.1d). The rim of normal kidney was seen pushed to the periphery measuring 1cm in width. The renal vessels at the hilum were free of tumor. There were no lymph nodes in the perirenal fat. Histology showed a well circumscribed tumor composed of nests, sheets and tubules of polygonal cells with pleomorphic round to oval nuclei, finely dispersed chromatin with small nucleoli and moderate amounts of granular eosinophilic cytoplasm (Fig. 2a). The tumor nests were separated by thin fibrovascular septa and myxoid stroma (Fig.2b). There was no lymphovascular invasion. The tumor cells were positive for cytokeratin 20 (Fig.2c). Histologically, the features were suggestive of oncocytoma; however eosinophilic variant of chromophobe type of renal cell carcinoma (RCC) had to be excluded. This was possible by electron microscopy, which showed numerous mitochondria, in keeping with oncocytoma (Fig.2d). She was referred to hematology department for further management of myelodysplastic syndrome. At 8 months follow-up, she was doing well with no evidence of disease.

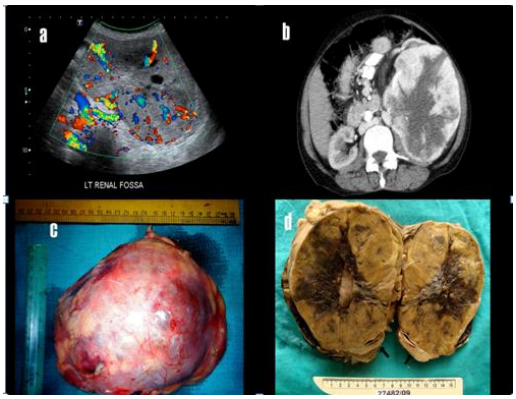

Fig. 1

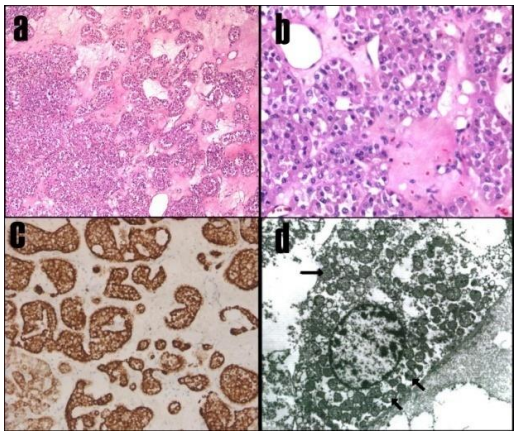

Fig. 2

Discussion

Renal oncocytomas are considered benign tumors and there are no reported patient deaths due to metastases. These can present as renal masses, difficult to be differentiated from RCC, clinically and radiologically. These are well circumscribed solid tumors with mahogany brown color.[3-4] A central stellate scar is often present and may show areas of hemorrhage, but necrosis is rare. Histological these are composed of nests, cords or tubules of uniform round cells with granular eosinophilic cytoplasm and round nuclei with central nucleolus.[2] The stroma shows hyalinization and myxoid change with small nests of tumor floating in it. Focal papillary areas and clear cell changes can be present, but do not form a major component. Capsular and vascular invasion may be occasionally present. Patients with multiple oncocytic lesions (oncocytosis) have been described.[5] Some of the patients with oncocytosis had combined morphology of oncocytoma and chromophobe RCC and are suggestive that these tumors may be causally and genetically related. There exists a hypothesis that chromophobe tumors may represent a genetic/morphologic progression from oncocytoma.[6]

Differentiating oncocytoma from eosinophilic variant of chromophobe RCC can be difficult. Studies using histochemical, ultrastructural and molecular techniques have been performed but not been found to be quite successful. However, of these, ultrastructural studies and genetic assays have so far been the best. Ultrastructurally the mitochondria are different in renal oncocytoma and chromophobe; mitochondria being predominantly uniform and round with lamellar cristae in renal oncocytoma and variable in shape and size with tubulocystic cristae in chromophobe RCC.[4] Genetic analysis also helps to distinguish oncocytoma and chromophobe RCC, in that oncocytoma do not demonstrate losses of heterozygosity at chromosome1, 2, 6,10,13,17 and 21, characteristic of chromophobic RCC.[7]

Differentiating chromophobe RCC from oncocytoma might be possible with few biomarkers like Ka11 metastasis suppressor protein, cytokeratin [7] and endogenous avidin binding activity but further studies are needed.[8]

Most of the series on renal oncocytoma have reported small tumors with 4-6cm size similar to incidentally detected RCC. However a few case reports have reported giant renal oncocytomas with the largest tumor weighing 4652g.[9] Most of the cases have only unilateral presentation except few and also few reports of metastases from oncocytoma is also documented.[10] We report a case of large renal oncocytoma mimicking RCC where electron microscopy confirmed the diagnosis of oncocytoma.[3] To our knowledge this is first largest renal oncocytoma associated with myelodysplasia reported in the literature. Renal oncocytoma weighing more than 1000g can be called as giant as there is no nomenclature for terming giant renal oncocytomas in the literature.

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