Bilateral Hybrid Oncocytoma and Renal Cell Carcinoma

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Abstract

A 26-year-old female presented with abdominal pain and distension in 2003. Clinical evaluation and imaging were suggestive of bilateral benign renal solid masses. Fine needle aspiration showed tubular cells only. Patient was kept under periodic follow up. She reported 4 years later with increase in pain and size of masses, and underwent bilateral staged nephron sparing surgery. The histopathology was reported as bilateral oncocytoma. Two years after surgery, she developed epidural spinal cord compression and liver metastasis. A decompression laminectomy and biopsy revealed conventional renal cell carcinoma (RCC). To our knowledge this is the first case report of sporadic bilateral synchronous hybrid RCC and oncocytoma in a young woman, with spinal epidural metastasis.

Case Report

Twenty six years old woman presented in 2003, with complaints of right flank discomfort associated with swelling. She denied history of fever, dysuria or hematuria. The general physical examination was normal, and abdominal examination revealed bilateral renal masses. A full blood count, biochemical profile and chest radiograph were normal. Ultrasound examination of the abdomen showed large masses arising from the lower pole of both kidneys measuring 6.8 x 7.3 cm and 6.5 x 4.7 cm respectively. There was no intravascular thrombus or lymphadenopathy. A computerized tomography of the abdomen (CT) confirmed solid well defined masses with cystic changes in both the kidneys, right larger than left. A CT guided fine needle aspiration cytology (FNAC) from the masses showed benign renal tubular epithelial cells only. Patient was diagnosed to have bilateral renal neoplasm and offered partial nephrectomy. She declined surgery and was discharged.

She reported back in 2007 with complaints of progressive increase in size of mass and hematuria. CT scan (Figure 1 a, b) showed a 10.1 x 10.36 x 12.9 cm mass in middle and lower poles of right kidney, with specks of calcification. There was progressive centripetal enhancement seen in delayed scans. The left kidney also showed an exophytic lesion arising from inferior pole measuring 10 x 12.5 x 13.5 cm. The radiological impression was that of indeterminate lesion, with a differential diagnosis of RCC, oncocytoma, or angiolipoma. An FNAC was repeated, which was inconclusive. The metastatic evaluation was non contributory.

She underwent left nephron sparing surgery in Jul 07. Macroscopically the tumor was mixed solid cystic mass with smooth capsule and central areas of scarring. The per-operative examination by the surgeon did not raise the suspicion of malignancy. Microscopic examination revealed an encapsulated tumor with cells in tubular pattern. The cells were large cuboidal, with intensely eosinophilic granular cytoplasm and centrally placed uniformly sized nucleus with clumped cytoplasm. The gross and microscopic findings were consistent with oncocytoma. Ten weeks later the right lower pole renal mass was resected by a partial nephrectomy. The histopathology was similar with a final diagnosis of bilateral oncocytoma. She was reviewed six monthly with MRI scans, which showed no residual or recurrent renal mass.

The patient remained well until Dec 2009, when she began to experience pain in the back and weakness in both lower limbs. Clinical examination confirmed paraparesis with grade III/V power in lower limbs with sensory level at D7. An urgent MRI of spine (Figure 2) revealed an epidural deposit at the level of D6 causing severe canal stenosis and cord compression. The CT scan of abdomen (Figure 3) showed evidence of multiple liver and adrenal metastases, with no recurrence in both kidneys. Patient was started on steroids and emergency D6 laminectomy and decompression of cord was done. The histopathology of the epidural deposit was clear cell renal cell carcinoma (Figure 4a). The Halle colloidal iron stain was negative. Immunohistochemistry was positive for epithelial membrane antigen (EMA) and Vimentin, and negative for cytokeratin 7 (Figure 4b). The histopathology slides of the partial nephrectomy were reviewed, which has retrospectively confirmed focal areas of clear cell renal cell carcinoma (RCC) with oncocytoma (Figure 5). This excluded the diagnosis of oncocytoma transforming into RCC.

Palliative radiotherapy was commenced with good relief of pain, and improvement in power in lower limbs. Patient is able to walk with support and she is presently on tab Sunitinib 50 mg OD.
The differential diagnosis for bilateral, solid renal masses includes RCCs, lymphoma, RO, angiomylipomas (with only microscopic fat), and metastatic disease. CT with intravenous contrast is the imaging modality of choice for detecting, evaluating, and following the patient who has a renal cortical tumor. Lymphoma shows little or no enhancement when compared to normal renal parenchyma, and lesions are typically homogeneous. The diagnosis of angiomylipoma can be made if macroscopic fat can be identified on imaging studies. Bilateral angiomylipomas are usually found in patients with tuberous sclerosis. Our patient had no family or personal history, nor other clinical or radiographic evidence, to support the diagnosis of tuberous sclerosis. Clear-cell carcinomas tend to be hypervascular, with a heterogeneous internal pattern due to presence of central necrosis. Oncocytomas cannot be reliably differentiated from RCCs by preoperative imaging. The diagnosis of oncocytoma may be suggested if a central stellate scar is identified on CT within an otherwise homogenous tumor. Our young patient had bilateral renal tumors which were radiologically well circumscribed. However the large size and heterogeneous contrast enhancement was in favor of RCC.

A bilateral renal cancer at young age raises the possibility of hereditary RCC syndromes. In von Hippel-Lindau (VHL) disease, individuals with germ line mutations of the tumor suppressor gene 3p25-26, have a predisposition to clear cell renal cell carcinomas along with tumors in the brain, spine, eye, pancreas, epididymis and adrenal gland. Our patient did not give family history of renal cell carcinoma and clinical examination was negative for genodermatosis associated with VHL syndrome and Birt-Hogg-Dube syndrome.

Definitive diagnosis of solid renal lesions by percutaneous needle biopsy is somewhat limited by sampling error, although accuracy does increase when multiple core specimens are obtained. A FNAC was done two times in this patient, which did not reveal malignancy possibly due to sampling error.

Hematoxylin and eosin (H and E) histology is sufficient to classify renal cell tumors in 90% of cases. Epithelial renal tumours with eosinophilic cells which can be mistaken with renal oncocytomas include eosinophilic variants of chromophobe and clear cell and papillary RCCs. In difficult cases where conventional H and E staining shows overlapping morphologic characteristics, diagnoses can be made by employing Hale’s colloidal staining, immunohistochemistry and electron microscopy. The initial diagnosis in this case was based on H and E section only. Immunostaining with EMA, CK7 and Vimentin later helped in confirming the existence of concurrent RCC.

Concurrence of renal cell carcinoma and renal oncocytoma within the same kidney is well established in the literature. Val-Bernal et al. found the hybrid tumor in 6.2%, whereas Capaccio et al. reported a lower incidence, being seen in 1.3% of their cases. There is no consensus on the optimal management of such cases. Some authors recommend radical nephrectomy for such cases, because a coexisting renal cell carcinoma is difficult to separate from oncocytoma, while others feel that partial nephrectomy, enucleation, or wedge resection may still be options.
We have described a young woman with sporadic bilateral synchronous hybrid renal cell tumor, where the malignant component was missed initially. The overlapping morphological characteristics of granular variant of clear cell RCC and RO posed difficulty in making a proper diagnosis. The case highlights the role of ancillary techniques in the diagnosis of renal neoplasms and the challenges faced in surgical management of bilateral synchronous renal cell carcinoma.

References