

## Renal Oncocytoma, Benign or Malignant?

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### Abstract

**Introduction:** Renal oncocytoma is a benign renal tumor, which is commonly asymptomatic and discovered incidentally with diagnostic imaging. This benign tumor occasionally co-exists with a malignant neoplasm, which may be present within or near the oncocytoma; in addition a few rare cases of renal oncocytoma have simulated a malignant course, showing extension to branches of the renal vein or distant metastasis.

**Report of the case:** A rare case of renal oncocytoma has been reported in a 56 year- old woman, who referred with distant metastatic disease.

**Key words:** Oncocytoma, Renal, malignancy, malignant, neoplasm, benign.

### Introduction

The most common renal tumors are clear cell, papillary, chromophobe, collecting duct renal cell carcinomas, benign oncocytomas and angiomyolipomas. Tumors with hybrid features have been recognized; in particular, tumors with features of both chromophoberenal cell carcinoma and oncocytoma. It is particularly important to distinguish the different types of renal cell carcinoma because they have different prognoses<sup>(1)</sup>. Renal oncocytomas (RO) account for approximately 7% of all primary epithelial renal neoplasms. Grossly, they are typically solid and mahogany brown, often have a central stellate scar, and can reach huge sizes. They can be multicentric and bilateral. They may invade the renal capsule or renal vein<sup>(2)</sup>. The 2004 World Health Organization classification of renal tumors classifies renal oncocytomas as benign renal neoplasms<sup>(3)</sup>. However, the metastatic potential of RO remains controversial. Here we discuss a patient who presented with lung metastasis 7 years after the diagnosis of a renal oncocytoma.

### Case presentation

A 49 year-old woman presented in 2006, with complaints of left flank discomfort. She denied a history of fever, dysuria, or hematuria. She did not give any history of seizure. On physical examination,

she had a palpable abdominal mass in the left upper quadrant. A full blood count, biochemical profile and chest radiography were normal. Ultrasound (US) examination showed a well-defined hypoechoic mass, 5 cm in diameter, in the upper pole of the left kidney (figure 1). Invasion or infiltration into the peri nephric fat or collecting system, and metastases were not found. A percutaneous needle biopsy was suggestive of RO. The patient underwent left nephron sparing surgery in 2006 through left subcostal incision. The resected mass was a firm, brownish 50×45 mm tumor. Microscopic examination showed a uniform population of plump tumor cells arranged in nests and trabeculae, with a granular, acidophilic cytoplasm (figure 2). The final diagnosis was RO. The patient was followed carefully. She returned after 2 years (in 2008) with complaints of Left Upper Quadrant (LUQ) pain and hematuria. US examination showed a hypoechoic mass in the upper pole of the left kidney. The mass was resected. The patient remained well until 2010, when she began to experience pain in the LUQ. That time she received palliative radiotherapy (RT) with good relief of pain. In the patient's metastatic evaluation, we found no evidence of metastasis. This year (7 years after initial presentation), she presented with a dry cough that had persisted for

5 weeks. Her laboratory data were all normal; but a chest radiograph revealed multiple pulmonary nodules. Accordingly, she underwent additional imaging assessment. Computed Tomographic (CT) scan of the thorax showed widespread multiple round nodules in the lungs (figure 3). Lung biopsy was performed. Microscopic evaluation showed a typical metastatic oncocytoma. The patient was referred to the oncology ward and received Gemcitabine. She has been followed carefully until now and is in good condition.

## Discussion

Kidney cancers account for about 3% of all cancer cases<sup>(4)</sup>. The importance of distinguishing the different types of renal cell carcinoma is underscored by the fact that they have different prognoses<sup>(1)</sup>. RO, which comprise about 3-7% of all renal tumors<sup>(5)</sup>, were first described by Zippel in 1942<sup>(6)</sup>. Symptomatic patients usually present with gross hematuria, flank pain, or a palpable mass. Our patient had presented with flank pain. The average tumor size is 6 cm. In the presented case, tumor size was 50×45 mm. The male to female ratio is 2–3:1 the peak occurrence is in the 40 to 60 year-old age range<sup>(7)</sup>. The current patient (in her first presentation) was a 49 year-old female. Renal oncocytomas are classified as benign renal neoplasms by the World Health Organization<sup>(3)</sup>. One study investigated the data of 26 patients with renal oncocytoma from 1999 to 2010, and found

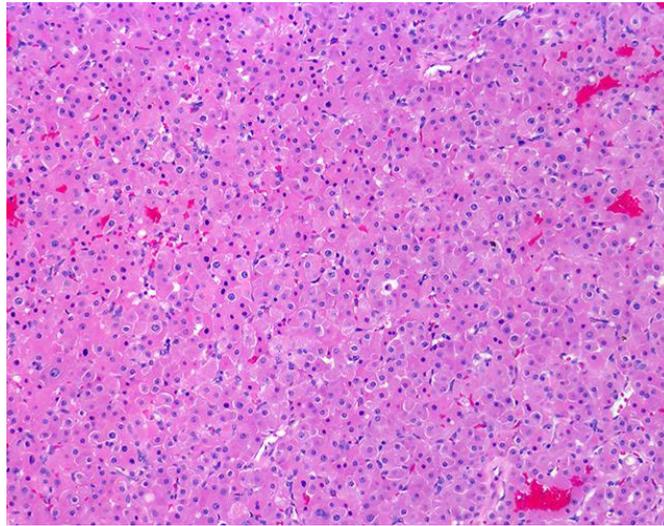
no disease recurrence, progression or death due to oncocytoma<sup>(8)</sup>. Another study found no relapse and metastasis after 1 to 5 years<sup>(9)</sup>. On the other hand, it has been reported that oncocytomas may involve fat tissue in up to 20% of cases, and lymphovascular structures in up to 5%<sup>(10)</sup>. In addition, renal oncocytomas can contain foci of atypical cells and show vascular space invasion or extracapsular extension<sup>(11)</sup>. Oncocytomas sometimes coexist with malignant renal neoplasms, which can exist within or adjacent to the oncocytoma. Finally, the literature reports rare documented cases of metastasis. For example, Amin et al.<sup>(12)</sup> described a case of renal oncocytoma with extensive skeletal metastases. In Lieber's report, four patients died of metastatic disease, and two patients had lymph node metastases<sup>(13)</sup>. In a report from Scotland<sup>(14)</sup>, four cases among 24 patients (18%) had metastases, a high incidence of metastasis that is not reproduced in any other large study. Engel et al. described a patient who developed retroperitoneal disease and cervical lymph node metastases 3 weeks after resection of a 5 cm renal oncocytoma. Interestingly, this patient has remained well five years after radiation therapy to the neck<sup>(15)</sup>. It is apparent that the definite indication of malignancy in a renal oncocytoma is metastasis or aggressive infiltration into adjacent structures. The behavior of the tumor in the present case (repeated local recurrences and pulmonary metastasis) is witness to its malignant nature. Mention should be made that Dechet et al



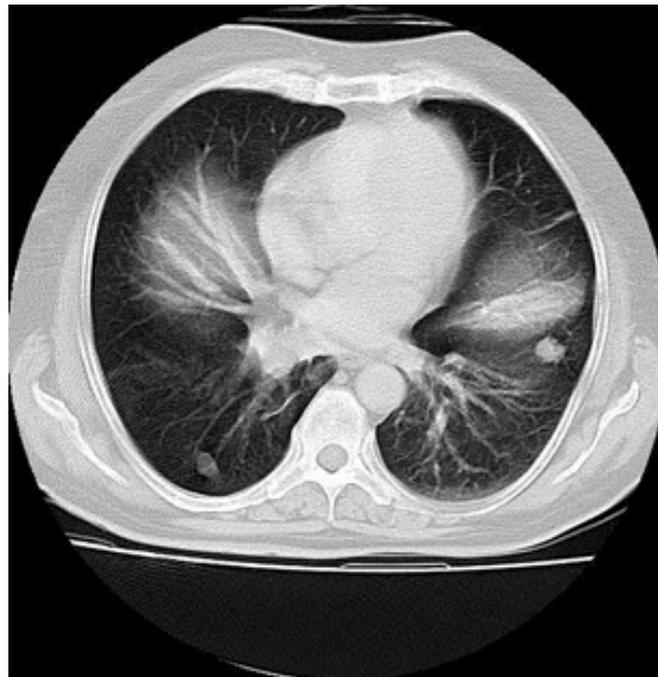
**Figure 1:** A well defined hypoechoic mass, 5 cm in diameter in the upper pole of the left kidney in ultrasound examination.

explained that 10% of patients with oncocytoma also had concurrent renal cell carcinoma<sup>(16)</sup>. As a result, it is suggested that many, if not most, cases of metastatic oncocytoma reported in the literature are examples of hybrid tumors. It shows that adequate sampling of renal tumors is essential

to exclude any heterogeneity. In the current case, examination of multiple blocks from the renal tumor showed no evidence of concomitant renal cell carcinoma. In addition, the metastatic tumor had the same morphology, suggesting that this was not a case of a hybrid tumor. According to these



**Figure 2:** A uniform population of plump tumor cells arranged in nests and trabeculae with a granular, acidophilic cytoplasm (H&E X10).



**Figure 3:** CT-scan of the thorax showed multiple round nodules in the lungs.

observations, it seems better to say that renal oncocytomas have a low, rather than no, malignant potential. The majority of patients with RO are treated with nephrectomy. Nephrectomy, wedge resection, or enucleation can be done. Certain situations, however, mandate nephron-sparing surgery because radical nephrectomy would render the patient anephric, requiring renal replacement therapy. Our patient underwent resection twice, and then received radiation therapy and after 7 years, she presented with pulmonary metastasis.

## Conclusion

The present case highlights the reality that, although renal oncocytoma is considered benign, there are also rare malignant forms; thus its low malignant potential nature might be anticipated.

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