CASE REPORTS

Giant renal oncocytoma presenting with right flank pain and hematoma

Robert Zakhia El Doueihi, Muhammad Ahmad Bulbul*

Division of Urology, American University of Beirut Medical Center, Beirut, Lebanon

Received: August 3, 2018 **Accepted:** September 16, 2018 **Online Published:** September 27, 2018
DOI: 10.5430/crim.v5n4p13 **URL:** https://doi.org/10.5430/crim.v5n4p13

ABSTRACT

Renal oncocytomas are benign tumors representing 3% to 7% of primary renal neoplasms. Oncocytomas are often asymptomatic, discovered incidentally on routine radiological imaging. We report a giant renal oncocytoma in a 68-year-old male with chronic kidney disease. Patient had right upper quadrant pain and hematoma. The mass was palpable on physical exam. CT scan showed a 16 cm × 14 cm right renal mass, consistent with renal cell carcinoma, no major adenopathy, no renal vein invasion. Right radical nephrectomy was performed and histological examination was consisted with oncocytoma.

Key Words: Giant oncocytoma, Imaging, Symptoms

1. INTRODUCTION

Renal oncocytomas account for 3% to 7% of primary renal neoplasms.[1] They are epithelial tumors originating from the distal renal tubules and usually behave in a benign manner. Most oncocytomas are asymptomatic at presentation, of small size (on average 4.9+/-2.7cm),[2] single (although 12% are multifocal), unilateral (4%-5% bilateral) and discovered incidentally during evaluation of other non-urologic problems. In a rare instance it can present as huge mass that can be perceived as renal cell carcinoma (RCC) or be part of hereditary syndromes. Prognosis of giant oncocytomas is not reported differently from the smaller lesions.[3]

2. CASE PRESENTATION

A 68-year-old male, known to have hypertension, Diabetes mellitus and end stage renal disease on intermittent hemodialysis for the past 6 years, presented on July 2015 with right upper quadrant pain and hematoma. In addition, he had obstructive voiding. Computer tomography of the abdomen and pelvis revealed 16 cm × 14 cm right kidney mass occupying the whole right kidney space with multiple subcentimetric retroperitoneal lymph nodes and possible lung nodules. PET (Positron emission tomography) scan done on October 2015 showed almost complete replacement of the right kidney by heterogeneous irregular mass measuring 16 cm × 14 cm (SUVmax 4.9) with significant thinning of the cortex with suspicious mesenteric lymph nodes but non-active subcentimetric left lung nodule. Patient underwent right open radical nephrectomy (see Figure 1). At surgery the mass was not stuck but had multiple collaterals. The vein was free and no adenopathy felt. Patient had an uneventful post-operative course.

The specimen weighted 2,700 g and measured 28 cm × 19 cm × 13 cm. Histopathologic evaluation was consistent with pure renal oncocytoma. The tumor was confined to the kidney with no adrenal or lymph nodes involvement.

*Correspondence: Muhammad Ahmad Bulbul; Email: mb30@aub.edu.lb; Address: Division of Urology, American University of Beirut Medical Center, P.O. Box 11-0236, Riad El-Solh, Beirut, Lebanon.

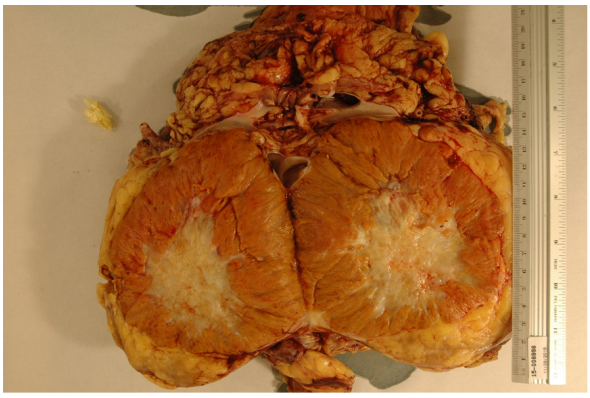

Figure 1. The appearance of the mass with the kidney after resection

3. DISCUSSION

Renal oncocytoma was first described in 1942 by Zippel. Oncocytoma originate from distal tubules and are the most common benign renal tumors. The definition of giant oncocytoma is lacking, so we opted to consider any oncocytoma measuring more than 10 cm as a giant oncocytoma. We found 7 cases reported in the literature of giant oncocytoma (see Table 1), the size ranged between 20 cm and 27 cm, and weight between 2,500 and 4,642 g.[4]

Oncocytomas are commonly associated with several pathognomonic cytogenetic changes such as loss of the first and Y-chromosomes, translocation in the 11q13 area, complete or partial loss of chromosome 1, monosomy 14 and trisomy 7.[5,6] Partial or complete losses of chromosome 1 were most frequently found in both sporadic and familial tumors. RCC coexist with renal oncocytoma in 10% to 32% of the cases.[3,5]

Macroscopically, these tumors are tan in color or light brown (mahogany brown), localized to the cortex, well circumscribed with a commonly seen central scar. Renal oncocytomas consist of pure oncocytes, which are polygonal cells with abundant mitochondria-rich eosinophilic cytoplasm arising from intercalated cells in the kidney.[5,7]

Table 1. Literature of giant oncocytoma

Authors	Year	Age	Sex	Size (cm)	Weight (g)	Incision
Desmos et al. [9]	1988	64	M	27 × 20 × 15	4,652	-
Banks et al. [10]	2001	57	M	21 × 18 × 15	3,090	-
Kilic et al. [2]	2003	65	M	20 × 15 × 10	2,680	-
Sundararajan et al. [4]	2008	37	M	20	3,353	Thoracoabdominal
Sami Akbulut et al. [7]	2010	25	F	25 × 16 × 12	3,380	Midline
Safraz Ahmad et al. [3]	2011	61	M	25 × 16 × 16	2,500	Right flank incision
Albert El Hajj et al. [6]	2014	45	M	20	-	Midline

Chromophobe renal cell carcinoma and oncocytoma are closely related tumors since they both originate from the intercalated ducts of the distal nephron and have histologic similarities. Hence, there are many markers useful for the differentiation between renal tumors.[7,8] Liu et al. proposed a diagnostic strategy composed of two steps to differentiate oncocytoma and other tumors.

Diagnostic strategy recommended by Liu et al.:

1st step:

	Vimentin	GSTa	CD117
Oncocytoma and chromophobe RCC	Neg.	Neg.	Pos.
Clear cell RCC	Pos.	Pos.	Neg.

2nd step:

	Hale colloidal	CK7	EpCAM
Chromophobe RCC	Pos.	Pos.	Neg.
Oncocytoma	Neg.	Neg.	Neg.

The biological behavior of the masses cannot be reliably determined based on conventional imaging alone. Oncocytomas can appear on CT scan as a central scar located within a homogenous well-circumscribed mass. However, this is considered nonspecific since it doesn't exclude clear cell renal carcinoma which occurs in only 30% of cases of oncocytomas.

Gorin et al., prospectively evaluated the role of 99mTc-sestamibi SPECT/CT in differentiating oncocytomas/HOCT (hybrid oncocytic chromophobe tumors) from renal cell carcinoma. They studied 50 patients with a solid clinical T1 renal mass who were imaged with 99mTc-sestamibi SPECT/CT prior to surgical resection. Preoperatively SPECT/CT scans were read by two blinded readers, and their results were compared with centrally reviewed surgical pathology data. The overall sensitivity was of 87.5% and the specificity of 95.2%, with oncocytomas accumulating radiotracer at level near or above that of the normal renal parenchyma, in contrast with RCCs that appear as photopenic defect on SPECT/CT. Fur-

ther studies needed to validate the results of this study.[8]

Makita et al. reported the first case of renal oncocytoma developed in a long-term hemodialysis patient,[11] however, no other reports could find an association between renal oncocytomas and end stage renal disease patients in hemodialysis.

Renal oncocytomas are almost invariably benign with excellent long-term outcomes.[7] Although radical surgery was the mainstay of treatment in the past, improved preoperative and perioperative diagnosis should permit more frequent use of nephron-sparing surgery.

4. Conclusion

Most oncocytomas can be managed by nephron-sparing surgery as in the case of renal cell carcinoma or any other renal mass. Radical nephrectomy should be reserved to very big masses, technically impossible to do nephron-sparing surgery.

Conflicts of Interest Disclosure

The authors declare no conflicts of interest.

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