Multifocal and bilateral renal oncocytoma

Case 8397

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Patient: 62 years, male

Clinical History:
A 62-year-old man presented with multifocal and bilateral renal oncocytomas.

Imaging Findings:
A 62-year-old man underwent a trans-urethral resection of the prostate (TURP) for benign prostate enlargement (BPH). Five years later, during a follow-up visit, the ultrasound examination showed an incidental mass measuring 42 x 32 mm in the lower polar region of the right kidney. The mass was well-defined, hyperechoic to the normal renal parenchyma (Fig. 1). Contrast-enhanced CT examination showed a well-defined enhancing mass arising from the lower polar region of the right kidney (Fig. 2). The left kidney was normal. The patient underwent laparoscopic polar lower right kidney enucleoresection and histology revealed the renal mass to be oncocytoma. The resection margins were free of tumour and there was no evidence of invasion or lymphadenopathy. One year later, the patient came to our radiology department because a follow-up abdominal ultrasonography (performed elsewhere) showed small bilateral multiple focal hyperechoic kidney lesions, that needed further detailed diagnosis. Abdominal contrast-enhanced CT examination (Fig. 3) and MRI (Fig. 4-5) confirmed the presence of these masses which were proven histopathologically to be multiple oncocytomas.

Discussion:
Renal oncocytoma is an epithelial tumour arising from the intercalated cells of the tubular collecting system. Histologically, it is composed of oncocyes, large cells with finely granular eosinophilic cytoplasm. The most commonly identified genetic alterations involve loss of chromosome 1 and sex chromosome, and translocation of chromosome 11q13.

Oncocytoma accounts for about 3 to 10% of all primary renal neoplasms and may represent up to 18% of all solid parenchymal masses of less than 4 cm. It is usually single and unilateral, although multifocality and bilateral involvement have been reported. Approximately 70% of the cases are incidentally discovered during abdominal ultrasound or CT evaluation performed for other reasons. Over the recent years the incidence of oncocytoma seems to have increased, most likely due to the increasing number of incidentally detected solid renal masses caused by the widespread availability of imaging techniques, as well as to the increased recognition of this cell type by the uropathologists. Preoperative diagnosis is usually difficult. CT examination may reveal a central star-shaped scar, angiography a spoke wheel pattern (especially in cases reaching a considerable volume) and MRI a low intensity homogeneous mass on T1-weighted images, which appears as increased intensity on T2-weighted images, the presence of a capsule, central scar or stellate pattern and the absence of either haemorrhage or necrosis. It's in the evaluation of patients with a solitary kidney, poor renal function, advanced age or a small easily resectable renal mass when MRI may help diagnose an oncocytoma and, thus, allow renal sparing surgery. However, these findings
are not specific and may be found also in renal cell carcinoma. The role of needle biopsy or even frozen section is still highly controversial, since both modalities are limited either by difficulties in differentiating oncocytoma from some renal cell carcinoma variants, or by the possibility of leaving coexisting malignant renal tumours undiagnosed. Moreover, biopsy in general may have a sensitivity in identifying malignant renal masses as low as 40% and is not devoid of risks of bleeding and tumour cell dissemination. Therefore, in the vast majority of patients definitive diagnosis is made on the surgical specimen. The incidence of coexisting renal cell carcinoma in the same lesion or in other locations in the same kidney has been reported to be as high as 32%. This finding is of paramount importance, when considering surgical treatment and long-term follow-up in patients diagnosed with oncocytoma. Usually renal oncocytoma exhibits a benign clinical course. Only sporadic reports exist on oncocytomas bearing a malignant potential, loco-regionally invasive growth or even metastatic spreading. Given the above mentioned diagnostic uncertainties and biological features, most authors emphasize the need to treat these tumours aggressively with exploration and nephron-sparing surgery or nephrectomy depending on the intraoperative finding. A conservative approach is clearly desirable in case of high preoperative suspicion or histopathological proof of oncocytoma, and if the size, number and location of the tumours make them amenable to this option.

**Differential Diagnosis List:** Multifocal and bilateral renal oncocytoma.

**Final Diagnosis:** Multifocal and bilateral renal oncocytoma.

**References:**


**Figure 1**

a

**Description:** An incidental mass measuring 42 x 32 mm in the lower polar region of the right kidney.

**Origin:**

b

**Description:** The mass was well-defined, hyperechoic to the normal renal parenchyma.

**Origin:**
**Figure 2**

**a**

**Description:** Bilateral hypo-isointensity homogeneous masses on T1-weighted images.

**Origin:**

**b**

**Description:** On T2-weighted images the masses resulted better visible, showing hyperintensity to the normal renal parenchyma.

**Origin:**
**Figure 3**

**a**

Description: On T1-weighted images after Gd-administration the renal masses reaveals a slight peripherally enhancement. **Origin:**

**b**

Description: The central scar resulted hypo-intense, without enhancement after Gd administration. **Origin:**
Figure 4

Description: Abdominal contrast-enhanced CT examination revealing two solid masses of the right kidney, showing homogenous contrast enhancement to a lesser degree than the normal renal parenchyma. Origin:
Description: Abdominal contrast-enhanced CT examination revealing two solid masses of the left kidney, showing homogenous contrast enhancement to a lesser degree than the normal renal parenchyma. Origin:
Figure 5

a

Description: Abdominal contrast-enhanced CT examination showed a well-defined enhancing mass arising from the lower polar region of the right kidney. The mass showed homogenous contrast enhancement to a lesser degree than the normal renal parenchyma. Origin:

b

Description: CT examination may reveal a central star-shaped scar. Origin: