Incidental renal oncocytoma

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ABSTRACT

Introduction: Renal oncocytoma is a benign tumor that is a rare kidney lesion. Clinically it is indistinguishable from renal cell carcinoma; when radiological studies reveal a solid kidney tumor, definitive diagnosis can only be made through histological study.

Objective: To present the case of a patient with documented diagnosis of renal oncocytoma and to carry out a review of the literature.

Methods: The clinical case of a sixty-nine-year-old woman was reviewed who presented with right incidental kidney tumor. Treatment was radical nephrectomy.

Results: Histopathological study reported renal oncocytoma measuring seven centimeters in diameter.

Conclusions: Renal oncocytoma is not common and presents more frequently in men. Its diagnosis is usually an imaging study finding and generally presents in adult patients. Main differential diagnosis is eosinophilic chromophobe renal cell carcinoma.

Keywords: Renal oncocytoma, benign kidney tumors, Mexico.

RESUMEN

Introducción: El oncocitoma renal es una neoplasia benigna, que constituye una lesión rara del riñón. Por clínica es indistinguible del carcinoma de células renales, con el que las imágenes por radiología muestran un tumor sólido renal cuyo diagnóstico definitivo es sólo mediante el estudio histológico.

Objetivo: Presentar el caso de una paciente con diagnóstico documentado de oncocitoma renal; asimismo, realizar una revisión de la literatura.

Métodos: Se revisó el caso clínico de una mujer de 69 años de edad con hallazgo incidental de tumor renal derecho a quien se le realiza nefrectomía radical como tratamiento.

Resultados: Informe histopatológico de oncocitoma renal de 7 cm de diámetro.

Conclusiones: El oncocitoma renal presenta baja frecuencia, se presenta en el sexo masculino con mayor frecuencia, siendo su diagnóstico principalmente un hallazgo imagenológico, presentándose preferentemente en la edad adulta. El principal diagnóstico diferencial lo constituye el carcinoma de células renales cromófobo, variante eosinófilo.

Palabras clave: Oncocitoma renal, tumores renales benignos, México.
INTRODUCTION

The diagnosis of renal oncocytoma was accepted as a clinical pathological entity after a report on 13 cases by Klein and Valensi in 1976. Since then various publications have better characterized this essentially benign histological type that represents 3-4% of all solid kidney masses.

Regarding its macroscopic aspect, these tumors are bright red or reddish brown, homogeneous, and well-circumscribed, but like the majority of kidney tumors, they are not truly encapsulated. A central scar is usually observable but there is a lack of necrosis or obvious hypervascularity. Microscopic examination shows a predominance of rounded or polygonal eosinophilic cells, principally in a growth pattern in nests or organules.

From an ultrastructural perspective, oncocytomas are full of numerous large mitochondria, which contributes to their particular characteristics when stained. Although the majority of oncocytomas are cytologically low grade, prominent nucleoli are often observed and 2-30% of cases present with pleomorphism or cellular atypism. These findings generally are accepted as part of renal oncocytoma diagnosis. Other atypical characteristics are hemorrhage that is seen in 20-30% of cases and perirenal fat extension that has been reported as a clinical pathological entity after a report on 13 cases by Klein and Valensi in 1976. Since then various publications have better characterized this essentially benign histological type that represents 3-4% of all solid kidney masses.

Frequent cytogenetic findings in oncocytomas are the loss of the first chromosomes and the Y chromosome, the loss of heterozygosity in the 14q chromosome, and reordering in 11q13. In contrast, anomalies in the 3, 7, and 17 chromosomes are rarely seen. Therefore genetic alterations in renal oncocytomas are characteristic and are different from those described in different subtypes of renal cell carcinoma. Both oncocytoma and chromophobe cell carcinoma derive from distal tubules, which explains their histological similarities, especially in the eosinophilic variant of chromophobe carcinoma. A transitional histological type has been described in Birt-Hogg-Dubé syndrome, in which renal oncocytomas, chromophobe renal cell carcinoma, and peculiar skin lesions commonly develop. These transitional tumors display characteristics of oncocytoma as well as of chromophobe renal cell carcinoma and some authors have proposed that there can be a tumor spectrum that includes these two histological types. Nevertheless, cytogenetics and different immunohistochemical stains suggest individuality in those tumor types.

Unfortunately the majority of renal oncocytomas cannot be differentiated from renal cell carcinoma through clinical studies or imaging studies. Mean age at the time of presentation and predominance in men are similar for oncocytoma and renal cell carcinoma and although it is more probable that oncocytomas are asymptomatic (58-83%), the majority of renal cell carcinomas are currently diagnosed incidentally. Mean tumor size of oncocytomas is from 4-6 cm, similar to renal cell carcinoma. The central star-shape scar seen in computed tomography (CT) scans and the spoke-like arrangement of nourishing arteries in angiography can suggest oncocytoma diagnosis, but these findings are not very reliable and have little predictive value.

The nuclear agent technetium sestamibi is apparently retained in the mitochondria and there is greater uptake in oncocytomas than in renal cell carcinoma, angiomyolipoma, and renal cysts. Fine-needle aspiration or kidney biopsy is complicated by the difficulty of distinguishing oncocytoma from granular forms of conventional renal cell carcinoma or eosinophilic variants. Another factor limiting the usefulness of fine-needle aspiration or biopsy is the well-documented coexistence of renal cell carcinoma and oncocytoma in the same lesion or in other locations inside the same kidney that has been reported in 7-32% of cases.

Given these uncertainties in preoperative diagnosis, the majority of authors have pointed out the necessity of treating these tumors aggressively with thermal ablation, partial nephrectomy, or radical nephrectomy, according to clinical circumstances. Neophron-sparing approach is clearly recommended if oncocytoma is suspected and if size and location allow it, given the tendency of these tumors towards multicentricity, bilaterality, and metachronic recurrence reported in 4-13% of cases. Unfortunately, thermal ablation approach condemns the patient to prolonged surveillance due to the uncertainty in oncocytoma diagnosis, even when biopsy is performed before ablation.

CLINICAL CASE PRESENTATION

Patient is a 69-year-old woman from the State of Mexico with history of high blood pressure of 8-year progression and adequate control. She underwent laparoscopic fundoplication in June 2008 for gastroesophageal reflux. CT scan that was part of general surgery follow-up found incidental right kidney tumor measuring 5 cm x 7 cm (Image 1), and thus patient was referred to the authors’ service. She remained asymptomatic from a urological perspective. Physical examination did not produce relevant data for reference diagnosis. Preoperative protocol was completed and patient underwent right radical nephrectomy on April 10, 2010 with no intraoperative or postoperative complications. She was released from the hospital on the third postoperative day. Histopathological study reported right nephrectomy specimen with benign tumor morphologically consistent with renal oncocytoma, measuring 7 cm at its largest diameter; recent multifocal hemorrhage, lesion-free...
An interesting detail in the evolving knowledge about these tumors has been their benign behavior when they arise from the kidney, in contrast to other locations in which malignant progression has been demonstrated. The work of Lieber et al.\(^2\) and tumor histological classification, together with detailed electron microscopic studies have corroborated the benign nature of renal oncocytoma.

### CONCLUSIONS

Renal oncocytoma is a rare tumor that presents more frequently in men and in adults; its diagnosis is mainly an incidental imaging study finding. Principal differential diagnosis is chromophobe renal cell carcinoma with eosinophilic variant.

Even though renal oncocytomas are rare tumors, they are appearing more in the medical literature, basically because they are becoming better known by clinical physicians as well as by pathologists and therefore are being distinguished more often from renal cell carcinoma. The two pathologies can be easily confused.

Today there are sufficient clinical, paraclinical, imaging, biochemical, and anatomopathological elements to enable the distinction between the two pathologies, to the great benefit of the patient and health institutions. The benign nature of the tumor eliminates the need for radical and costly surgery as well as follow-up procedures for possible tumor extension.

### BIBLIOGRAPHY