RENAL CAPSULE LEIOMYOMA: CASE REPORT


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Summary.- OBJECTIVE: We present a case of leiomyoma of the renal capsule in a 49 year-old woman that was detected incidentally during an abdominal study for gastroesophageal reflux. We discuss the clinical, radiological and pathological diagnosis of renal leiomyoma as well as its treatment alternatives.

METHODS: Ultrasonography, CT and MRI were performed. A conventional pathological analysis including immunohistochemistry was performed after radical nephrectomy.

RESULTS: Ultrasonography detected a solid hypoechoic mass poorly vascularized in the upper pole of the right kidney. CT and MRI detected a well-delimited mass showing soft tissue density without extension to the neighbor structures and without lymphadenopathies. Radical nephrectomy was performed. Microscopically, the mass was made of a low-grade fusocellular proliferation with cells staining with antibodies against smooth muscle markers. The mass was in continuity with the renal capsule and compressed slightly the renal parenchyma without damaging it.

CONCLUSIONS: Renal leiomyomas are unfrequent benign tumors that should be suspected in young and middle aged women showing asymptomatic, well delimited and hypoechoic renal tumors with soft tissue density in CT scans. When vascular structures are not involved by the tumor, a conservative surgical intervention could be the first therapeutic option. Microscopically, renal leiomyomas are low-grade fusocellular tumors showing a smooth muscle immunohistochemical profile.


Resumen.- OBJETIVO: Presentamos un caso de leiomioma de la cápsula renal en una mujer de 49 años que fue encontrado de manera incidental durante un estudio ecográfico abdominal por reflujo gastroesofágico. A partir de este caso discutimos el diagnóstico clínico, radiológico y anatomopatológico de los leiomiomas renales así como su tratamiento.

MÉTODOS: La paciente fue estudiada mediante ecografía, TC y RM. Tras la nefrectomía radical se realizó el estudio anatomopatológico convencional de la pieza quirúrgica incluyendo técnica inmunohistoquímica.

RESULTADO: Ecográficamente se detectó una masa sólida, hipoeóica y pobremente vascularizada en el polo superior del riñón derecho. La TC y la RM detectaron una masa bien delimitada de densidad de partes blandas sin afectación local o regional y sin adenopatías. Se realizó una nefrectomía radical. Microscópicamente la masa estaba constituida por una proliferación fusocelular de bajo grado cuyas células se marcaban con anticuerpos contra antígenos de músculo liso. La masa estaba en continuidad con la cápsula renal y comprimía ligeramente el parénquima renal sin producir lesiones relevantes en él.

CONCLUSIONS: Los leiomiomas renales son tumores infrecuentes que se deben sospechar en mujeres jóvenes o de edad media con tumores renales asintomáticos, bien delimitados, hipoeóicos y con densidad de partes blandas en la TC. Si no hay afectación de estructuras vasculares, se podría optar por una intervención quirúrgica conservadora. Microscópicamente son tumores fusocelulares de bajo grado con el perfil inmunohistoquímico típico de los tumores del músculo liso.
INTRODUCTION

Kidney leiomyomas are rare neoplasms that are mostly asymptomatic, with fewer than 40 symptomatic cases requiring surgery having been published to date (1-3). Nevertheless, their detection as asymptomatic nodules during autopsy can reach 5% (4). In imaging studies, they appear as well-defined lesions, hypoechoic in ultrasound and with similar densities as the soft tissues in CT (1, 2, 5, 6).

The pathological diagnosis can be mistaken for other low-grade fusocellular tumors frequently found in the retroperitoneum, such as neurofibromas and schwannomas. Smooth-muscle immunohistochemical markers such as desmin and specific smooth-muscle actin can prove helpful (7).

We present a case of leiomyoma occurring in the renal capsule, detected by chance during an abdominal ultrasound exam, and we discuss its clinical, radiological, and pathological diagnosis as well as its treatment.

CASE REPORT

A 49 year-old female patient in a gastroesophageal reflux study presented a hypoechoic and poorly vascularized solid mass in the right kidney in an abdominal Doppler ultrasound. No relevant findings were noted during the physical examination.

In the thoracic abdominopelvic CT, a well-defined mass was observed in the anteromedial border of the right kidney near the upper end, with a similar density as the soft tissues, which displaced the renal vein without interrupting its flow (Figure 1, the tumor is marked with an asterisk). In the abdominal MRI, an exophytic tumor was detected in the upper part of the right kidney, 3.5 cm in diameter, with a well-defined shape, in direct contact with the right renal vein and the lower vena cava. It showed an intermediate intensity both in T1 as well as T2 highlighted in the arterial phase, but to a lesser degree than in the adjacent renal parenchyma. In the interstitial and venous phase, the lesion was hypointense with respect to the renal parenchyma.

With the diagnosis of right renal mass, a radical nephrectomy was performed by means of a lumbotomy. A partial nephrectomy was decided due to the location of the mass and the possible vascular involvement.

The weight of the surgical specimen was 209 grams and it measured 10 x 5.5 x 4 cm. A polynodular mass 3 cm in maximum diameter was identified attached to the renal capsule next to the upper pole, which when cut was solid, well-delimited, whitish, trabeculated and fibrous. Microscopically, the tumor consisted of fusiform cells with cigar-shaped nuclei and eosinophilic cytoplasm, which were arranged in fascicles with different orientations in three-dimensional space. Atypical cells, mitosis, and foci of necrosis were not found. The tumor was in Figure 1. CT image showing a well-delimited mass (asterisk) in the anteromedial border of the right kidney with soft tissue density.

FIGURE 2. Hematoxylin and eosin section showing a tumor (asterisk) made of spindle cells arranged in fascicles with several orientations in the tri-dimension space. The tumor is in continuity with the renal capsule and compresses the renal parenchyma.
continuity with the renal capsule, compressing the renal parenchyma and displacing the renal vein without infiltrating neighbouring structures (Figure 2, the tumor is indicated with an asterisk.) Using immunohistochemistry, the fusiform cells were marked with antibodies against specific smooth-muscle actin but not with antibodies against CD117, S-100 protein and HMB-45. The estimated mitotic index with antibodies against Ki-67 was less than 1%. The pathological diagnosis was leiomyoma of the renal capsule.

DISCUSSION

Leiomyomas are benign neoplasms that can originate in all structures of the genitourinary apparatus containing smooth muscle (3). Renal leiomyomas most frequently originate in the renal capsule (90%); the remaining 10% originate in the renal pelvis and renal vessels (8). Some authors believe that these tumors may originate in the perivascular epithelioid cells (PEC) that give rise to angiomyolipomas and are marked by antibodies against HMB-45 (although this did not occur in our case) (7).

Epidemiologically, renal leiomyomas occur more frequently in Caucasians (70%) and in women (66%), especially during the 2nd and 5th decade of life, with an average onset age of 42 years. No predilection for the left or right kidney has been noted, although a greater predominance of occurrences in the lower part of the kidney has been observed (74%) (1).

Clinically, they tend to be asymptomatic. The most frequent clinical symptom is the presence of a palpable mass (57%) associated or not with pain in the flank (53%); the classic Guyon triad, consisting of the appearance of hematuria, pain and an abdominal mass, is only found in 3.3% of cases (1). The finding of large, clinically symptomatic leiomyomas is rare (9). In the Steiner et al. revision, until 1989, the largest tumor found was 57 cm in diameter, with an average of 12.3 cm (1). In general, these tumors are often diagnosed during autopsy, with a frequency varying between 4.2%-5.2% (4).

In imaging studies, leiomyomas do not present any specific characteristics that could differentiate them from other renal masses. Using ultrasound, these tumors are mostly solid, well defined, and hypoechoic lesions. CT, which is more sensitive than ultrasound, often shows a solid lesion in contact with the capsule or pelvis without any signs of local or regional involvement and with a radiological density similar to that of the soft tissues. The invasion of neighbour structures suggests the possibility of a leiomyosarcoma. Although the majority are solid lesions (73%), they can also present as cystic masses or mixed solid and cystic masses (1, 2, 5, 8, 10).

In our case, given the lack of specificity in the imaging studies, the location of the mass, the possible vascular involvement and the suspicion of dealing with a malignant tumor, led us to opt for radical surgery. Nevertheless, some authors state that a conservative intervention can be performed in selected cases if the tumor displays characteristics already described under radiology and does not infiltrate structures of the vascular pedicle (1, 10).

Pathologically, renal leiomyomas are solid, whitish, well-delimited and fibrous masses that can show cystic and hemorrhagic areas. The presence of necrosis and the invasion of adjacent structures is a common finding in leiomyosarcomas. Microscopically, they are fusocellular tumors whose cells, with a cigar shaped nucleus and an eosiophilic cytoplasm, are arranged in interlacing fascicles. There is not nuclear atypia and the mitotic index is usually very low. The main differential diagnosis should be established with other fusocellular tumors in the retroperitoneum, like neurofibromas, schwannomas and even gastrointestinal stromal tumors. Immunohistochemical markers can be very helpful: leiomyomas are immunostained with antibodies against smooth muscle antigens like specific smooth-muscle actin and desmin, while they are not immunostained with antibodies against S-100 protein, a nerve sheath tumor marker, or CD 117 (c-kit), a gastrointestinal stromal tumor marker. The differential diagnosis must also include those renal angiomyolipomas very rich in smooth muscle cells: several slides of each tumor must be analyzed to detect the presence of adipose tissue or abnormal blood vessels and confirm the diagnosis of angiomyolipoma; these tumors are originated in PEC and can be immunostained with antibodies against HMB-45, although some leiomyomas of the renal capsule are also positive for this marker. Finally, the pathological criteria to differentiate a leiomyosarcoma from a leiomyoma are not established as precisely as in other organs. The presence of nuclear atypia and cytologic pleomorphism are not enough to diagnose a leiomyosarcoma, neither is a mitotic index value to make this diagnosis; anyway, these three criteria together with vascular invasion and necrosis can make the diagnosis of leiomyosarcoma (7).

CONCLUSIONS

Renal leiomyomas are rare tumors, often asymptomatic, that lack pathognomonic radiological findings. Nevertheless, its presence must be suspected in young and middle aged women with asymptomatic renal tumors that are well defined, hypoechoic and with the density of soft tissues as seen using CT. In these cases, and if there is no involvement of vascular structures, conservative surgical intervention can be an option. Microscopically, these are low-grade fusocellular tumors with an immunohistochemical profile typical of smooth-muscle tumors.
REFERENCES AND RECOMMENDED READINGS
(*of special interest, **of outstanding interest)


ASSOCIATION OF CROSSED RENAL ECTOPIA AND AORTIC ANEURISM. CASE REPORT

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Summary.- OBJECTIVE: Renal malformations are rare entities and rarely have clinical consequences. Crossed renal ectopia has an incidence of 1/2,000 autopsies. The association with aortic aneurysm is even more exceptional.

METHODS: We present our case and perform a bibliographic review.

RESULTS: To date and in our knowledge, seven cases of crossed renal ectopia associated with aortic aneurysm were described on the literature. This malformation makes the treatment of the aneurysm more complex. The possibility of renal function decrease caused by injuries to the renal