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Oncology

Renal cell carcinoma with contralateral adrenal metastasis: Case report☆

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ABSTRACT

Renal cell carcinoma is the major cause of kidney malignancy. Its adrenal metastasis is less frequent and is even rarer when it is affected contralaterally or bilaterally.

We present the case of a 55-year-old man with diffuse abdominal pain. An irregular mass in the lower third of the left renal cortex and another in the right adrenal gland. Pathology showed it was a renal cell carcinoma with metastasis in the contralateral adrenal gland.

1. Introduction

Renal cell carcinoma (RCC) accounts for 3% of all cancers worldwide and for 90%–95% of malignancies affecting the kidneys. Although RCC metastasis can develop in any organ, the most common sites are the lungs, liver, bone, and brain.[1]

In this sense, the possibility of adrenal metastases is relatively low. The isolated incidence of ipsilateral and contralateral adrenal metastases was 3–5% and 0.7%, respectively, in patients undergoing nephrectomy.[2] Only a few cases of bilateral adrenal metastasis have been reported in the literature (<0.5%).[2]

Therefore, due to the rarity of the cases, the ideal diagnosis and treatment strategy for this condition have not been fully defined yet.[1]

Thus, surgical resection of these metastases continues to be the only therapeutic option in patients with isolated or low-volume metastases. So, surgery may be the preferred treatment strategy for adrenal metastasis of RCC.[1]

2. Case

A 55-year-old male was referred to the Urology service due to diffuse abdominal pain that started 5 days ago, with slight worsening after ingestion of food, without fever, diarrhea and dysuria, without comorbidities or history of previous surgeries, allergic to sodium dipyrone, former cannabis user, denies smoking, alcoholism and use of other drugs.

Normal in physical and laboratory exams (hemogram, sodium, potassium, creatinine, urea, urine). Computed tomography and magnetic resonance imaging of the abdomen and pelvis were performed, which showed an irregular mass in the lower third of the left renal cortex with protrusion into the renal pelvis infiltrating and thickening the anterior renal fascia measuring approximately 10.0× 6.1 × 7.0cm suggesting primary neoplastic involvement, a mass in right adrenal gland in close contact with the inferior vena cava that displaces it cranially measuring approximately 6.8 × 4.1cm suggesting secondary neoplastic involvement and anterior retroperitoneal nodular formation in relation to the horizontal duodenal portion measuring about 2.1 × 2.9cm, suggesting adenomegaly. (Fig. 1).

He underwent right adrenalectomy and robotic-assisted left radical nephrectomy in the same surgical procedure without intercurrences, being discharged 2 days later. In the anatomopathological examination, a clear cell carcinoma of rhabdoid pattern with Fuhrman grade IV and WHO/ISUP grade IV nuclear characteristics was evidenced in the left kidney, reactionary lymphoid hyperplasia in the hilum without metastasis and in the right adrenal gland a metastatic renal clear cell carcinoma was diagnosed, TNM staging pT3aN0M1 (Figs. 2 and 3), with immunohistochemistry staining positive for CD-10 and vimentin and negative for Ck7, C-kit and HMB-45. After surgery, the patient had a good evolution and no recurrences or new metastases were observed.

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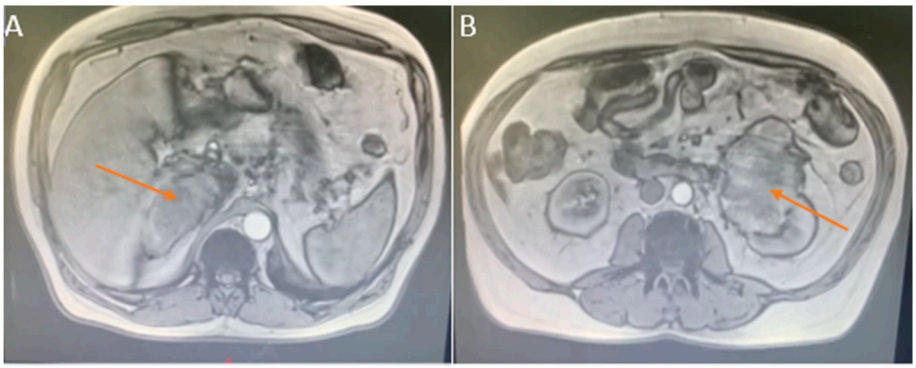

Fig. 1. Computerized tomography of abdomen and pelvis
A: Arrow indicates mass in the left kidney./B: Arrow indicates mass in the right adrenal.

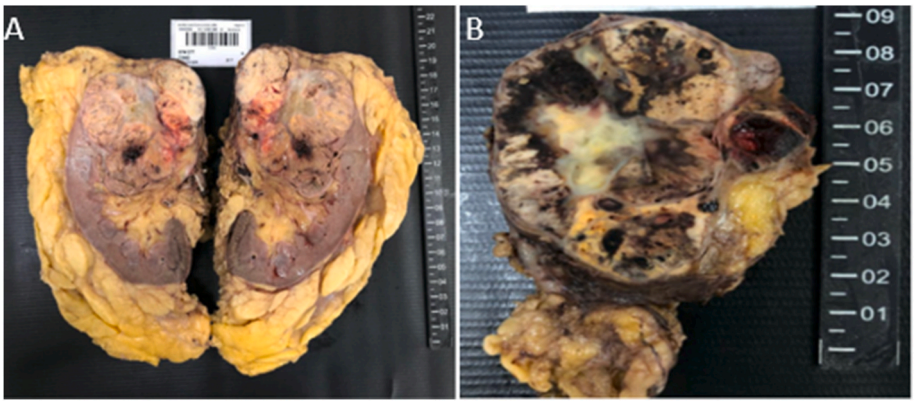

Fig. 2. Macroscopic examination
A: Large tumor lesion of heterogeneous appearance with gelatinous areas and foci of hemorrhage and necrosis located in the middle third of the right kidney measuring 9,4 × 7,3 × 3,8cm/B: Architecture of the adrenal gland altered by tumor involvement, presenting a heterogeneous lesion measuring 6,5 × 5,5 × 3,4cm.

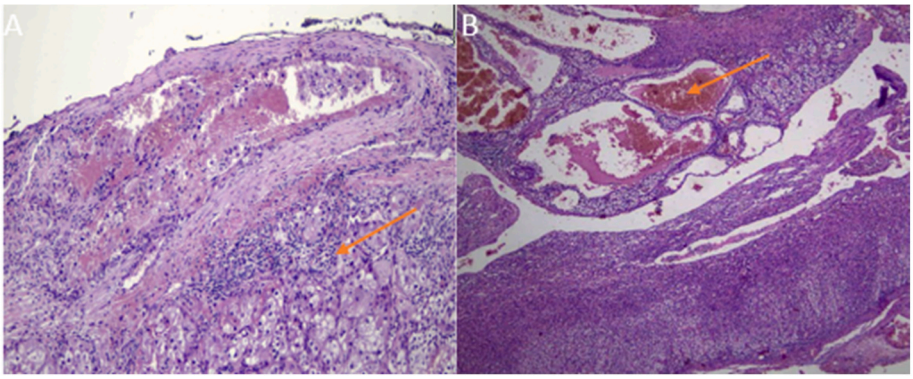

Fig. 3. Microscopic examination
A: Arrow indicates cells with features of clear cell-type renal carcinoma mixed with nuclear atypia cells with bizarre nuclei and giant cells./B: Arrow indicates intravascular neoplastic embolization.

3. Discussion

Adrenal metastases are rare, may appear synchronously or metachronously to RCC, may be ipsilateral to the affected kidney, or less frequently contralateral.[3]

The biological mechanism of adrenal metastasis remains uncertain, with several theories, one of which proposes that metastasis occurs via hematogenous route, as it occurs in other organs. However, some autopsy studies state that it actually depends on the size of the organ and the blood flow. Other authors point to the "seed and soil" theory in which the contralateral adrenal gland would have a greater affinity with the tumor cells, creating a fertile environment for it to develop in it and not in other organs.[4]

The diagnosis of adrenal metastases is challenging, as one of their characteristics is to remain silent and asymptomatic, and blood tests for cortisol and adrenaline generally persist within the normal range.[4]

CT scan is the initial method of choice for oncology and MRI is another useful imaging method for the characterization of adrenal lesions, however these imaging tests are not useful in differentiating whether the adrenal lesion is a primary adrenal carcinoma, a benign

adenoma or an adrenal metastasis due to RCC, problem solved only with biopsy.[2,5]

Therapy is still limited, especially in cancer with a rhabdoid pattern, a worse prognostic factor, however, adrenalectomy to remove metastatic lesions may prolong survival of patients undergoing radical nephrectomy.[2] Studies indicate that after adrenalectomy, the 3-year survival rate increases from 35% to 60%, while the 5-year rate increases from 14% to 38%.[1] Thus, in this case, left radical nephrectomy and robotic right adrenalectomy were performed to prevent malignant progression of the cancer, without hormone replacement since left adrenal remained functional.

4. Conclusion

Renal cell carcinoma is the most common cancer of the kidneys and its metastasis to the adrenal gland is observed less frequently than to other organs. The disease's diagnostic is complex. Its treatment is surgical removal of the compromised kidney and adrenal gland with an anatomopathological study with follow-up to increase the chances of patient's survival.

Declaration of interest

The authors declare that they have no conflict of interest.

Section headings

Oncology.

Author contributions

Matheus Miranda Paiva: Conceptualization; Supervision; Validation; Writing – review & editing, Alessandro Vengjer: Supervision; Writing – review & editing, Guilherme Henrique Silveira Stiirmer: Conceptulization; Data curation; Investigation; Writing – review & editing, Gabriel Rodrigues Almeida: Writing – review & editing, Fernando Oliveira dos Santos: Conceptualization, Investigation; Writing – original draft, Paulo Peixoto do Nascimento: Investigation; Writing – original draft.

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