



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Skull metastasis revealing a renal tumor: A case report and review of the literature



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ARTICLE INFO

Article history:

Received 19 December 2017

Accepted 16 January 2018

Available online 10 February 2018

Keywords:

Renal tumor
Skull metastasis
Neurosurgery

ABSTRACT

BACKGROUND: Renal cell carcinomas represent 85% of malignant renal tumors. Typically, the tumor remains asymptomatic a long time before the appearance of urologic clinical signs. In some cases, metastasis can precede the manifestations of the primary tumor. Different sites are potential metastatic localizations for renal tumors, including skull metastases who represent a very rare location.

CASE DESCRIPTION: We report the case of a 65-year-old man presented after the appearance of a skull mass. This tumefaction developed and had progressively grown up during 9 months. Neurological examination was normal. Brain imaging showed a soft tissue lesion in the left parietal bone with marked osteolysis. Peroperative was found a huge oval-shape hemorrhagic and firm mass associated with scalp invasion and bone destruction that was totally resected. Histopathology revealed renal cell carcinoma (RCC). Pelvic and abdominal CT scan was performed, revealing a large mass on the left kidney with irregular contours and poor definition. The patient was then transferred to urology where he underwent nephrectomy. The patient went then through adjuvant chemotherapy. Clinical and radiological follow up of 12 months did not bring to light tumor recurrence.

CONCLUSIONS: Although metastases to the head and neck occur infrequently, they should be considered when evaluating any unusual subcutaneous mass in the head and neck. RCC should not be discounted when sites as unlikely as the calvaria are evaluated. Treatment of metastatic renal cell carcinoma is complex, and the optimal regimen for achieving a lasting response without severe toxicity has not yet been defined.

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1. Introduction

Renal cell carcinomas represent 85% of malignant renal tumors. The highest incidence occurs between the sixth and seventh decades of life, with a median age of diagnosis of 66 years [1]. Typically, the tumor is encapsulated, slowly growing on early stages, and this remains asymptomatic a long time before the appearance of urologic clinical signs [2]. In some cases, metastasis can precede the manifestations of the primary tumor [3].

About 50 different sites were described as potential metastatic localizations for renal tumors, including skull metastases who represent a very rare location [4].

Here we report a rare case of skull metastasis revealing a renal cell carcinoma.

This work has been reported in line with the SCARE criteria [5].

2. Case study

A 65-year-old man presented after the appearance of a skull mass. This tumefaction developed and had progressively grown up during 9 months. On physical examination, this mass was located in the left parietal bone, regular, non mobilizable, of oval form with a width of 9 cm, without signs of swelling facing it (Fig. 5).

Neurological examination was normal.

The brain computed tomography and magnetic resonance imaging (MRI) revealed a soft tissue lesion in the left parietal bone with marked osteolysis, compression without infiltration of the Dura mater, and invasion of the soft tissues of the scalp (Figs. 1–4). Peroperative was found a huge oval-shape hemorrhagic and firm mass associated with scalp invasion and bone destruction (Fig. 6). After skin incision, the mass was dissected from scalp and debulked; parietal craniectomy with safety margin of 1 cm around the lesion was performed (Fig. 7). The dura mater was compressed but not invaded. The mass was totally resected, and helping cranioplasty the skull was repaired. Pathologic gross examination of a piece-meal lesion (Fig. 8) displayed carcinomatous proliferation arranged in papillary structures. Stroma is abundant and fibrous. Mitosis is common with cytonuclear atypies. Endovascular tumor emboli

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Fig. 1. Axial section of a brain CT scan on parenchymal window showing the tumor destructing the cranial bone and extending to the scalp's soft tissues.

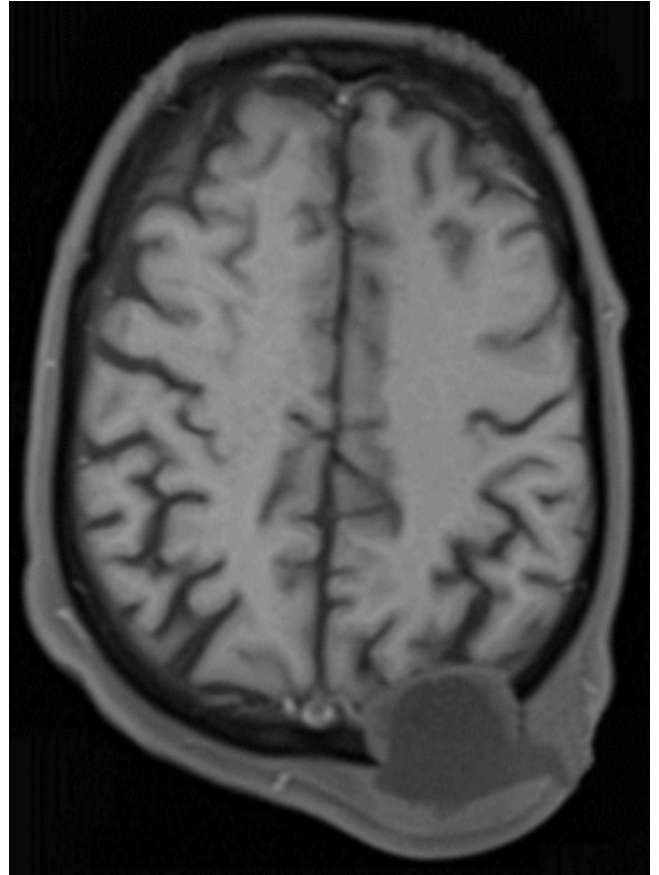


Fig. 3. Axial section of an MRI on T1 weighted imaging showing the tumor located on the left parietal bone.

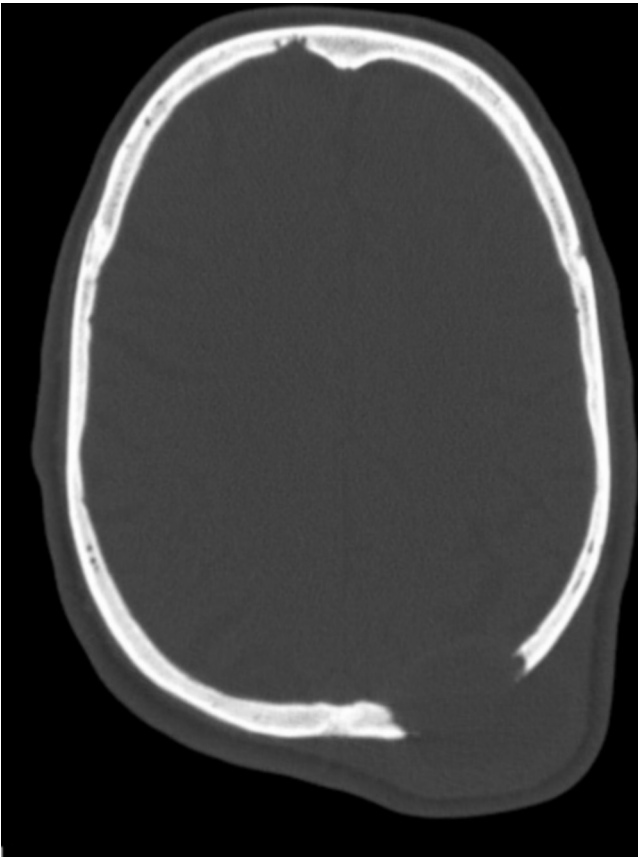


Fig. 2. Axial section of a brain CT scan on bone window showing an osteolysis of the left parietal bone.



Fig. 4. Axial section of an MRI on T2 weighted imaging showing the tumor. No dural or brain invasion are to be noticed.



Fig. 5. Preoperative photograph of the skull's mass.

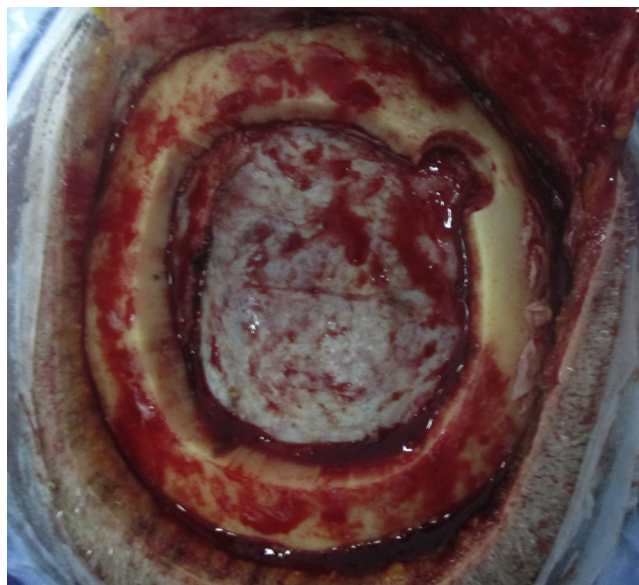


Fig. 7. Peroperative photo showing the skull after resection of the tumor.

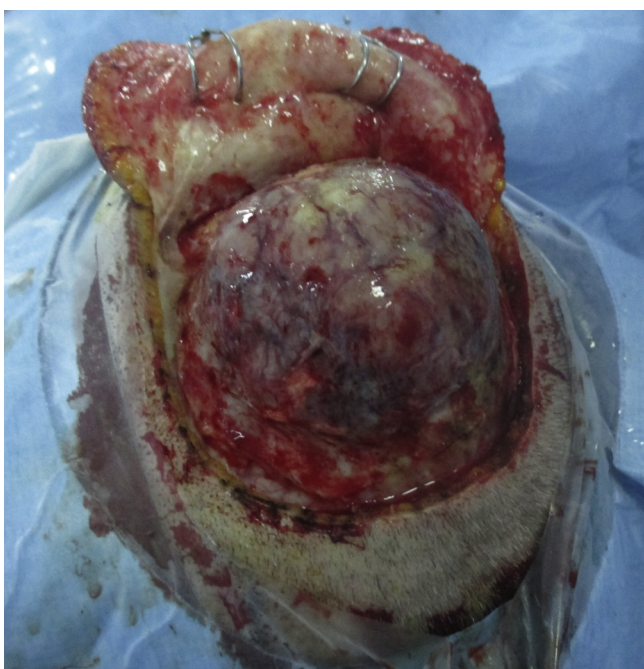


Fig. 6. Peroperative photo showing the tumor in situ.

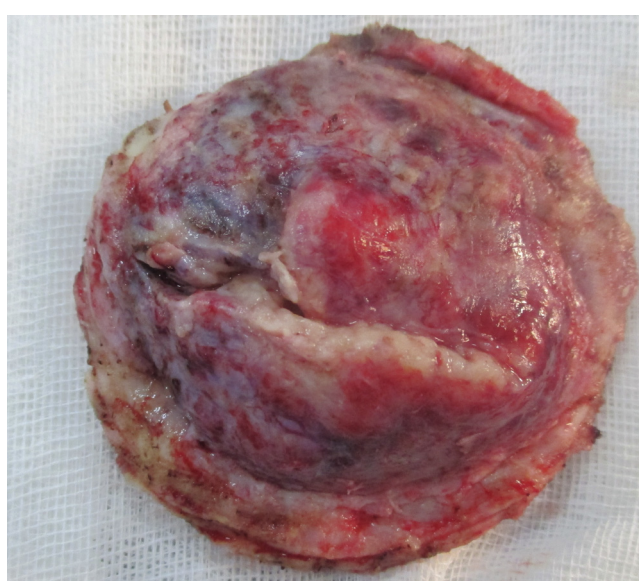


Fig. 8. Photo showing the tumor after resection.

were also noted. Immuno-histochemistry was negative for CK 20 but showed diffuse positivity CK 7, pointing to an urothelial origin (Figs. 9–11). Pelvic and abdominal CT scan was performed (Fig. 12), revealing a large mass on the left kidney with irregular contours and poor definition. The patient was then transferred to urology where he underwent nephrectomy. Histopathology revealed renal cell carcinoma. The patient went then through adjuvant chemotherapy. Clinical and radiological follow up of 12 months did not bring to light tumor recurrence.

3. Discussion

Renal cell carcinoma (RCC) comprises 2–3% of all adult malignancies and 85% of malignant renal tumors [6–8]. RCC has a strong tendency to metastasize; 25% of patients initially present with dis-

tant metastasis, whereas another 50% develop metastasis during follow-up [6,9]. Head and neck regional metastases may be linked to RCC in up to 8–15% of cases [6,10].

RCC has an unpredictable clinical course and behavior. They usually remain asymptomatic until the late stages of the disease. Currently, more than 50% of RCCs are detected incidentally when imaging is used to investigate nonspecific symptoms and other abdominal diseases [11,12].

RCC frequently invades the local vascular network by direct extension. It is probable that metastatic RCC cells reach the head and neck area by hematogenous flow [13].

Renal tumors appear frequently along to bone metastases. However, very few cases of metastases occurring in the skull have been described. Forbes [14] reviewed 1668 patients with RCC, and only five of them presented with skull metastasis. This localization usually emerges as a tumefaction of the skull. In some cases, when mainly developing towards the brain and compressing it, it can be revealed by signs of intracranial hypertension, or even focus neu-

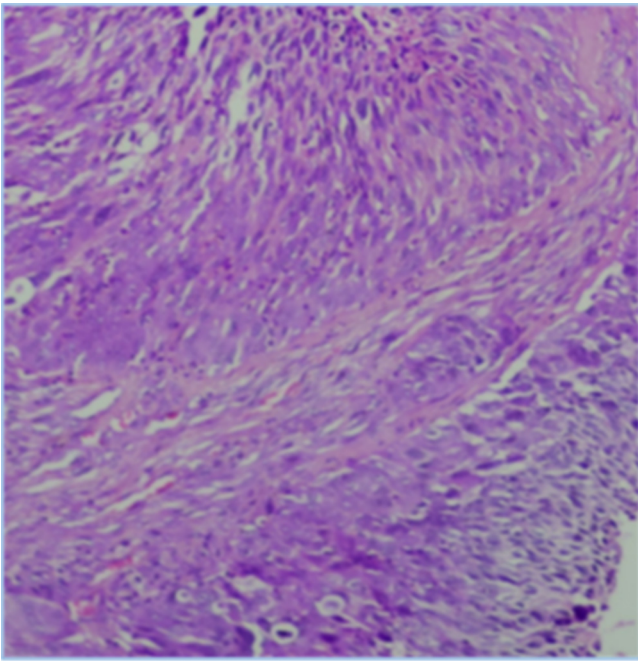


Fig. 9. Pathologic examination showing carcinomatous proliferation arranged in papillary structures with abundant stroma.

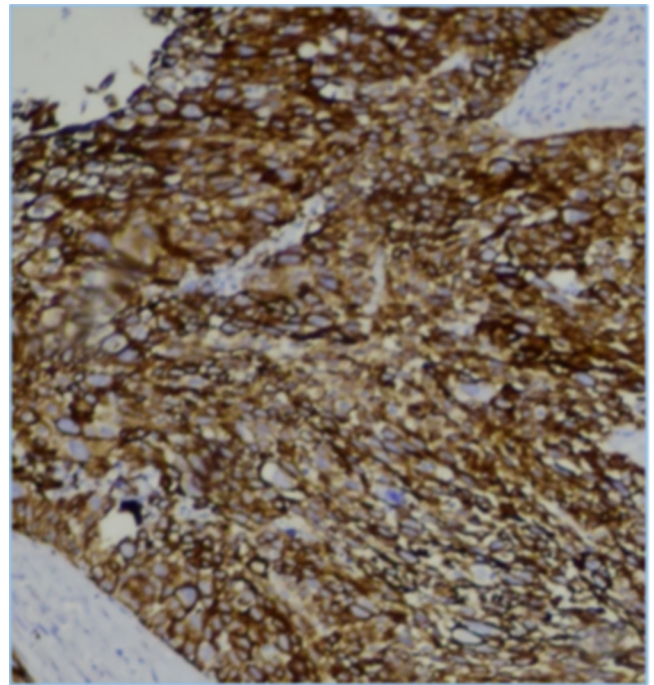


Fig. 11. Pathologic examination showing the immune-positivity of tumor cells for CK 7.

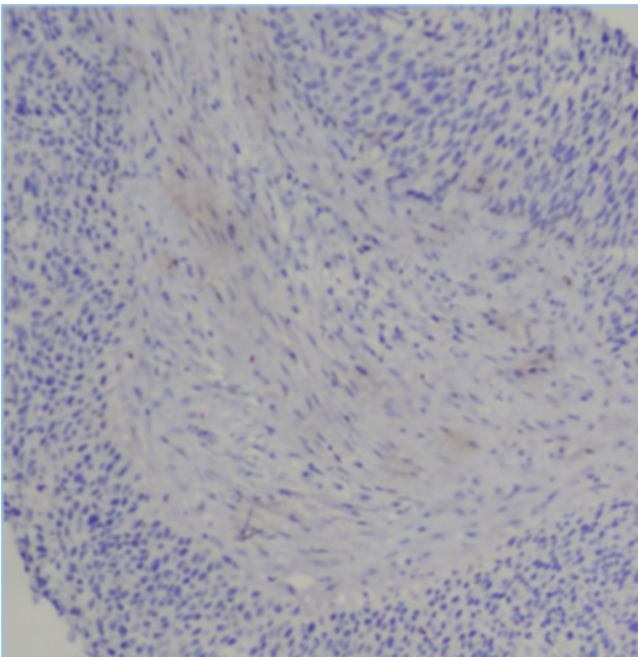


Fig. 10. Pathologic examination showing the immune-negativity of tumor cells for CK 20.

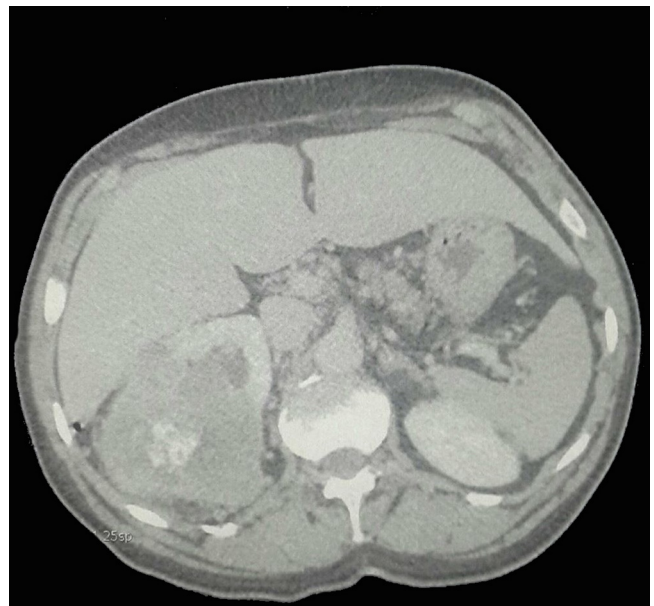


Fig. 12. Axial section of a Pelvic and abdominal CT scan revealing a large mass on the left kidney with irregular contours and poor definition.

rologic signs when located in front of eloquent cerebral regions [15].

The standard of care for metastatic RCC includes resection of the skull's tumor and a radical nephrectomy [8]. At present, metastatic deposits have been known to disappear following resection of the primary lesion [16]. Complete spontaneous regression of pulmonary and bone metastases after removal of the primary tumor has been described, which occurred due to immunologic reactions [17]. Nevertheless, this statement has not been yet proved for head and neck metastases of RCC [8].

The initial presence of metastatic RCC is suggestive of a widely disseminated disease, providing a median survival of 1 year [18]. Moreover, synchronous detection of solitary metastasis with primary tumor is considered an unfavorable feature [19].

However, aggressive surgical treatment can still produce the best palliative results in this particular subset of patients, and even long-term survival in some cases [20].

Our patient was operated for resection of the skull metastases that allowed orientation towards the renal primitive tumor. He underwent then nephrectomy followed by adjuvant chemotherapy. A follow up of one year have not highlighted a recurrence of the tumor.

4. Conclusions

Although metastases to the head and neck occur infrequently, they should be considered when evaluating any unusual subcutaneous mass in the head and neck. Because metastases have unpredictable timing and clinical behavior, any unusual lesion should be thoroughly evaluated whether the patient has a prior history of cancer or not. RCC should not be discounted when sites as unlikely as the calvaria are evaluated. Treatment of metastatic renal cell carcinoma is complex, and the optimal regimen for achieving a lasting response without severe toxicity has not been defined.

Conflicts of interest

No conflicts of interests are to be declared by the authors.

Funding

No sources of funding are to be declared.

Ethical approval

Ethical approval is not required by our institution.

Consent

For this article we have a patient consent.

Author contribution

Mohamed Badri and Ghassen Gader wrote the manuscript.
Kamel Bahri did the bibliographic search.
Ihsèn Zammel corrected the manuscript.

Guarantor

Mohamed Badri and Ghassen Gader accept full responsibility for the work.

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