



CASE REPORT

Bone metastases from renal cell carcinoma: 4 years after aggressive surgeries and anti-angiogenic therapy

Mouadh Nefiss^{1,2}  | Hichem Abid^{1,2}  | Mohamed Amine Gharbi^{1,2}  |
Ramzi Bouzidi^{1,2}  | Anis Teborbi^{1,2} 

¹Department of Orthopaedic Surgery,
Mongi Slim University Hospital, La
Marsa, Tunisia

²Tunis El Manar University, Tunis,
Tunisia

Correspondence

Mouadh Nefiss, Orthopedic Surgery
Department, Mongi Slim Hospital, 2046
Sidi Daoued, La Marsa, Tunisia.
Email: mouadhnefiss2@gmail.com

Abstract

Management of bone metastases from renal cell carcinoma (RCC) has significantly changed after the era of targeted therapy that improved the overall survival (OS). Surgical decision-making remains a subject of controversy. We report a case of pelvic bone metastasis from RCC, 2 months after nephrectomy and surgery of a revealing clavicular metastasis.

KEYWORDS

bone metastases, renal cell carcinoma, surgery, targeted therapy

1 | INTRODUCTION

Bony metastases revealing renal cell carcinoma (RCC) is a common situation since bone is the second site of metastasis after the lung for this tumor.^{1,2} Because of its low sensibility to radiotherapy (RT) and chemotherapy, management of such malignant tumor and its spread to bone is still problematic especially in case of multiple metastases.² Improvement of overall survival (OS) and quality of life, tumor control, and to a lesser degree, eradication of the disease is the main therapeutic goals in such case. Recently, the use of targeted therapies coupled or not with surgery has changed the prognosis of this pathology through the improvement of OS, which prompted oncologists and surgeons to push surgical indications while taking into account the benefit-to-risk ratio for the patient.

We report a case of a young adult with metachronous bony metastases of clear-cell RCC, which had a good outcome after aggressive surgeries coupled to anti-angiogenic therapy.

2 | CASE REPORT

A 39-year-old man, Taxi Driver, presented to our emergency department with pain and swelling of the right shoulder. These signs were present and gradually evolving for 2 months. No history of trauma was reported.

Physical exam revealed a soft mass on the outer third of the right clavicle and the acromio-clavicular joint. The mass was 4 cm large × 5 cm long, it was tender, mobile and did not adhere to the skin. The peripheral pulses were present, and there was no sensitive or motor deficit of the right upper extremity. Plain radiographs showed bone lysis in the clavicle (Figure 1A).

On CT scan, the mass was heterogeneous (Figure 1B,C).

MRI of the right shoulder showed hyper-vascularized tissular mass measuring 41 × 47 × 40 mm. The mass was well limited with an intact gleno-humeral joint and no extension to the vascular nor nervous axis (Figure 1D).

We performed a biopsy that revealed a clear-cell RCC. The extension assessment of the tumor including a body

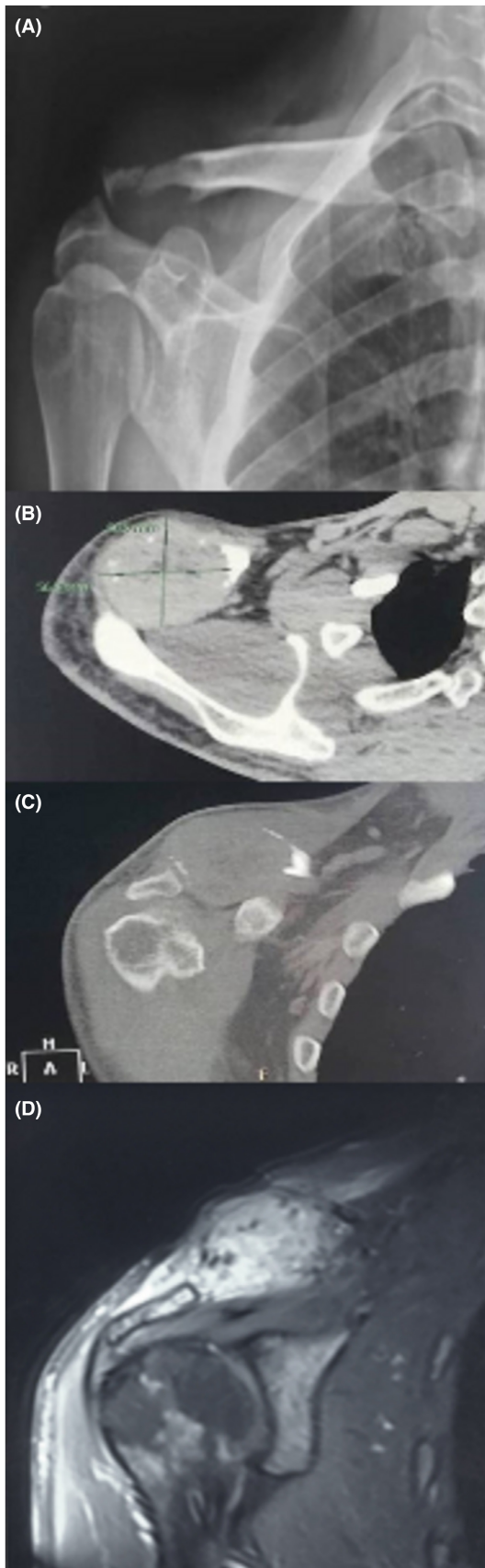


FIGURE 1 (A) Standard X-ray of the shoulder revealing a lytic lesion in the outer third of the right clavicle and the acromioclavicular joint. (B, C) CT scan showing a well-limited lytic mass affecting the outer third of the clavicle. (D) MRI of the right shoulder showing a hyper vascularized tissular mass with an intact gleno-humeral joint and no extension to the vascular nor nervous axis.

scan and a bone scintigraphy, showed no other metastatic sites.

Cytoreductive nephrectomy (CN) was done as a first step. Then we performed an embolization followed by a wide resection of clavicular metastasis. Pathological examination of the final piece showed healthy resection limits.

Two months later, the patient reported inflammatory left hip pain. Imaging showed a new metastasis in the left coxal bone (zone I according to Enneking classification) (Figure 2).

This localization had endo- and exo-pelvic extensions and was not present on the TAP scan performed 2 months ago.

A pluridisciplinary meeting was held to discuss the therapeutic plan. Surgical treatment was adopted unanimously in front of a healthy young adult with preserved general status. Then, resection of left hemipelvis with arthrodesis of the left hip was performed in the absence of means to acquire a total reconstruction hip prosthesis. Anti-angiogenic treatment based on Sunitinib 50 mg per day was initiated 1 month postoperatively until today.

Follow-up at 4 years was uneventful apart from complications of Sunitinib such as taste changes, loss of appetite, and skin rash. Patient has recovered near-normal daily life activities including driving his own car. The shoulder range of mobility was fair. However, unfortunately, he could not recover his function as a taxi driver (Figure 3).

3 | DISCUSSION

Bone metastasis is the second most common site following lung in patients with RCC. About 30% of patients with advanced RCC in modern randomized trials following targeted therapies have bone metastases.² In Tunisia, the RCC remains rare, representing 2% of cancers in adults with an incidence of 2.75/100,000 and in more than 60% of case, diagnosis is made in locally advanced or metastatic stage.³ The presence of bone metastasis is associated with poor prognosis and can cause substantial morbidity through skeletal-related events such as bone pain



FIGURE 2 (A) Standard X-ray showing supra-acetabular lytic lesion. (B–D) CT scan and MRI of the metastasis in the left coxal bone revealed during the systematic imaging control.

requiring RT, pathologic fracture, spine cord compression, and hypercalcemia.⁴

The main therapeutic objectives are the prevention of disease-related skeletal complications, pain palliation, and the maintenance of quality of life.⁴ Before the era of targeted therapy and since radiation and chemotherapy do not affect survival rates with a response rate <10%, a median survival of 8 months, and a 5-year survival <10%, surgery was considered as the primary treatment of skeletal metastases from renal cell carcinoma.^{4,5} Surgical approach with curative intent was recommended especially for patients with solitary bone metastasis who seem to have the best prognosis, with a 5-year survival rate between 35% and 60%.^{6–8}

Fottner et al.⁵ believe that surgery when it is technically possible remains the preferred therapy even for patient with multiple metastases and a limited survival time to restore function and prevent local tumor progression. They found in their study that the status of “free of disease” gave the patients the best chance to become long-term survivors.

According to Bex et al.,⁹ tumor nephrectomy is potentially curative only if all tumor deposits can be excised. Thus, for most patients with metastatic disease, CN is palliative and systemic treatments such as immunotherapy and targeted agents are necessary. Recent publications and current guidelines of the European Association of Urology recommended CN in metastatic RCC patients with good performance status, large primary tumors, and low metastatic volume.^{9,10}

Given the hypervascularity of RCC metastatic disease, preoperative planning to minimize blood loss is critical and preoperative embolization performed within 48 h of surgery to prevent revascularization is of great help.¹¹

However, some authors are against this tendency to aggressive surgeries and consider that significant technological advances in radiotherapy (RT) such as stereotactic radiosurgery stereotactic body RT, intensity modulation RT, and image-guidance RT can represent a noninvasive treatment alternative to surgery.⁴

Nowadays, targeted therapy such as anti-angiogenic treatment has revolutionized the treatment of metastatic RCC. Improvement of OS was confirmed through randomized controlled trial.^{12,13} Research for better treatment associations and about genetic predisposition and its relationship to response to treatment is currently underway.

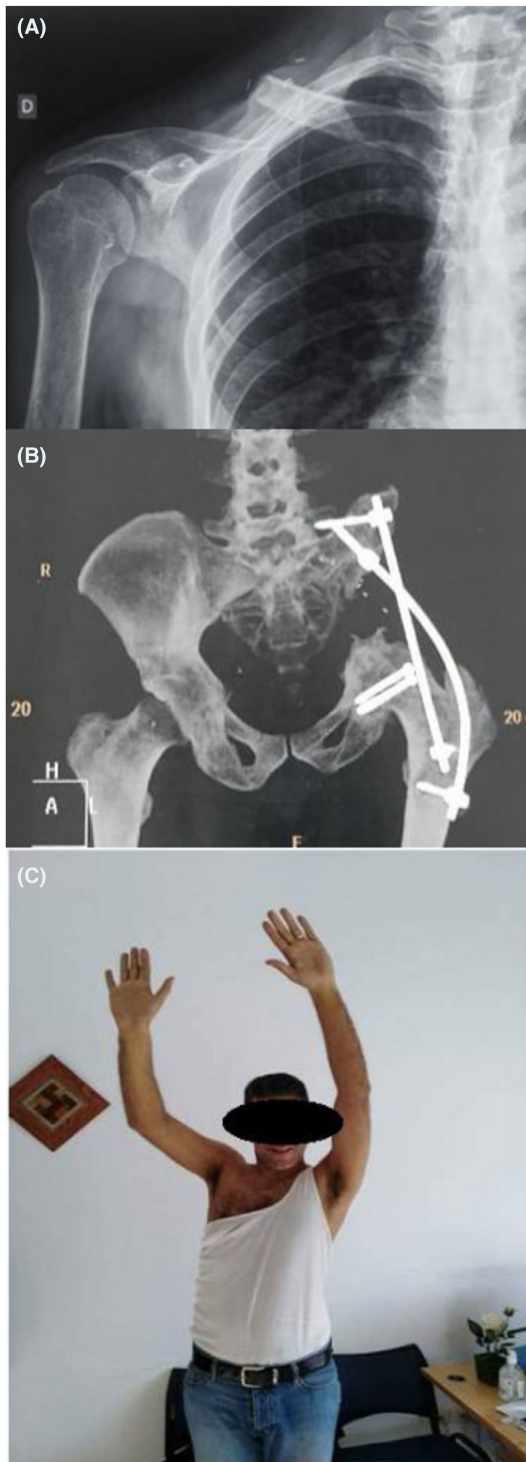


FIGURE 3 X-ray of the shoulder (A) and of the pelvis (B) and clinical result (C) after 4 years of follow-up.

Immunotherapy has been considered for a long time as the reference treatment of patients with metastatic RCC. However, only 20% of patients presented an objective response.⁸ The use of Zoledronic acid or Denosumab has shown confirmed efficacy in reducing skeletal events, but they do not cure the disease or improve survival.^{4,14}

Decision about when to go for surgery for the second metastasis and when not to should be discussed in multidisciplinary team and with patient to identify the best strategies, integrating local options and systemic treatments according to criteria such as age, sex, condition, comorbidities, life expectancy, the heaviness of the surgery, and the consequences expected in case of failure.^{11,15}

4 | CONCLUSION

Patients with a solitary metastasis or a limited number of resectable metastases are candidates for wide resections. Associated to targeted therapy, surgery is a good option to reach curative outcome, achieve local tumor control, and increase survival. Decisions must be made within a multidisciplinary team and after discussion with the patient before starting such a heavy surgery.

AUTHOR CONTRIBUTIONS

Mouadh Nefiss, Hichem Abid, and Mohamed Amine Gharbi: contributed to the first draft of the manuscript. Mouadh Nefiss, Ramzi Bouzidi, and Anis Teborbi: contributed to the literature search, analysis, and interpretation of the data. Ramzi Bouzidi: critically revised the manuscript and gave final approval. All authors read and approved the final manuscript and agree to be fully accountable for ensuring the integrity and accuracy of the work.

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None.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this article. Further enquiries can be directed to the corresponding author.


CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ORCID

Mouadh Nefiss  <https://orcid.org/0000-0002-5557-9860>

Hichem Abid  <https://orcid.org/0000-0001-7568-0459>

Mohamed Amine Gharbi  <https://orcid.org/0000-0003-0081-1543>

[org/0000-0003-0081-1543](https://orcid.org/0000-0003-0081-1543)

Ramzi Bouzidi  <https://orcid.org/0000-0002-6894-4425>

Anis Teborbi  <https://orcid.org/0000-0003-4412-7006>

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