CASE REPORT

TOTAL CLEIDECTOMY FOR A SOLITARY METASTASIS OF THE CLAVICLE

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The clavicle is a fairly common site of metastases of renal cell carcinoma. We report the cases of two patients with undiagnosed renal cell carcinoma who were first seen for shoulder pain secondary to a solitary clavicular metastasis. Wide resection was performed in both cases. Functional and cosmetic results were good, with no shoulder pain or neurovascular deficits.

We suggest wide surgical resection of a solitary bony metastasis from renal cell carcinoma, associated with appropriate systemic treatment, because the survival may be increased.

Keywords : cleidectomy ; bone metastasis ; renal cell carcinoma ; clavicle.
Mots-clés : cléidectomie ; métastase osseuse ; carcinome rénal ; clavicule.

INTRODUCTION

Renal cell carcinoma accounts for approximately 2% of all malignant tumors. However, the classic triad of hematuria, abdominal mass and flank pain is uncommon, and the first symptoms may be related to a metastasis. Only 40 to 50% of patients with this tumor have localized disease at the time of diagnosis ; 30 to 45% of patients have bony metastases. The clavicle and proximal humerus are involved in 18% and 13%, respectively (1).

Wide resection of the clavicle has been recommended for localized malignancy, but it is rarely indicated. Technical variations related to the site and nature of the tumor make this surgery highly individualized. Reported series usually include only three or four cases with different types of tumors (3).

The authors report two cases of renal cell carcinoma presenting with a solitary clavicular metastasis. Radical nephrectomy for the primary tumor was complemented by wide clavicular resection. The resulting shoulder function was good.

CASE DESCRIPTIONS

Patient 1

A 58-year-old man was seen for a two-month history of pain in the right shoulder. Physical examination revealed swelling, tenderness and pain over the acromioclavicular and sternoclavicular joint. He had a soft-tissue mass over the sternoclavicular joint that measured 4×6 cm. There were no systemic complaints, and his past medical history and physical examination were unremarkable.

Roentgenograms and magnetic resonance imaging (MRI) revealed two lesions in the same clavicle : a 6×3 cm osteolytic lesion in the proximal end of the clavicle near the sternoclavicular joint and another lesion, 1×2 cm, close to the acromioclavicular joint.

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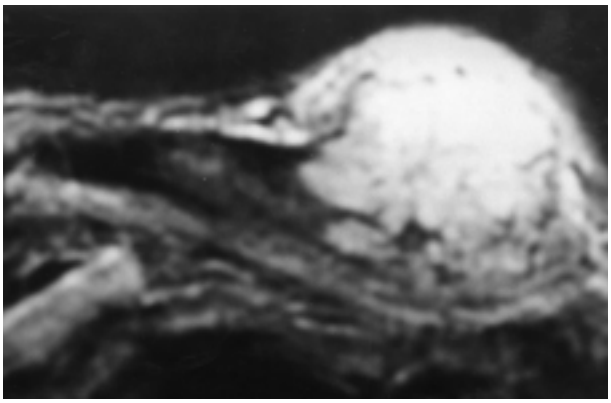
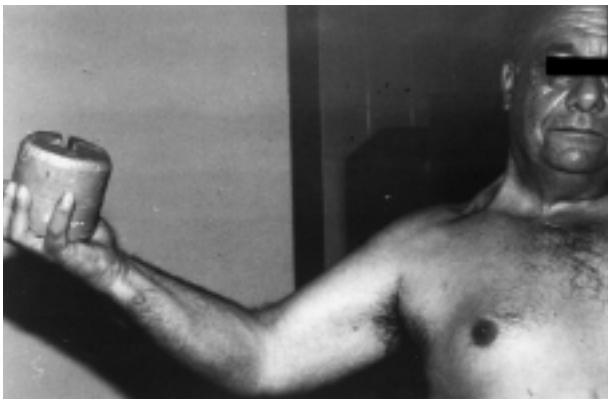


Fig. 1. — *Patient 1* : Coronal- T2- MRI : Osteolytic lesion with a soft-tissue component close to the acromioclavicular joint.

Fig. 2. — *Patient 2* : Radiograph showing a pathological fracture in an osteolytic lesion in the middle third of the clavicle.



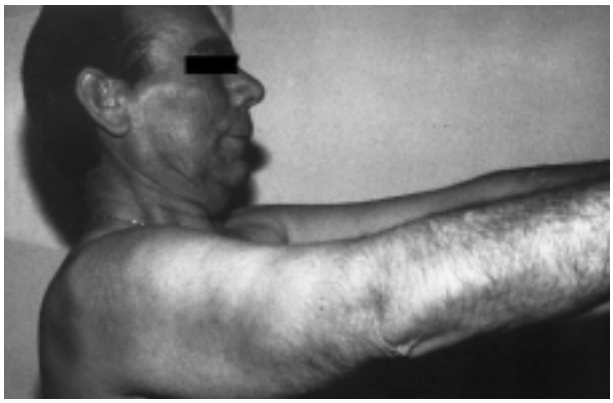


Fig. 3 and Fig. 4. — *Patient 1 and patient 2*: Their range of passive shoulder motion, total active elevation is full, external and internal rotation are weaker with weight or against added resistance.

In the clinical staging of the tumor, computerized tomography (CT) of the abdomen demonstrated a right kidney tumor with spread to the adrenal gland. ^{99}Tc bone scintigraphy showed areas of increased uptake in the right clavicle. A specimen of the clavicle obtained by open incisional biopsy revealed metastatic renal cell carcinoma.

Radical right nephrectomy with adrenalectomy was performed. Clavicular arteriography was performed, but occlusion was not accomplished because of the profuse vascularization of the bone metastasis.

Wide excision of the clavicle with resection of the acromioclavicular and sternoclavicular joints was performed as described by Lewis (3). There were no technical problems. The patient remains symptom-free after 6 years of follow-up.

Patient 2

A 62-year-old man consulted for a 5-month history of vague pain in the right shoulder that had become progressively more intense. There was no history of previous trauma, and analgesic treatment failed to alleviate his symptoms. He noted a prominence over the middle third of the right clavicle.

Physical examination revealed swelling, tenderness and pain over the middle third of the clavicle. There were no systemic complaints, and the rest of the history and physical examination was negative.

Roentgenograms and MRI revealed a pathological fracture in a destructive lesion with well-defined borders. ^{99}Tc bone scintigraphy showed increased uptake in this area. Abdominal CT demonstrated a tumor of the right kidney and a 2-cm increase in adrenal size. The histological diagnosis of a specimen obtained by open incisional biopsy of the right clavicle was metastatic renal cell carcinoma.

Arteriography of the clavicular region revealed a well-vascularized bone metastasis. Catheter embolization was performed. Radical right nephrectomy and bilateral adrenalectomy were performed. The clavicle was resected as described by Lewis (3) ; there were no technical problems. The patient remains symptom-free after six and a half years of follow-up.

DISCUSSION

Analysis of cumulative survival rates revealed that nephrectomy significantly increased survival in patients with bone metastases (4), whereas it did not alter survival for patients with pulmonary and/or soft tissue metastases. Patients with renal cell carcinoma develop skeletal metastases in 42-52% of cases. In 10-27% of patients, the secondary tumor leads to diagnosis. Of these, between 0.7% and 2% will have a solitary bony metastasis.

Excision of the metastatic lesion is especially important for patients with solitary bony metastases. The five-year survival after resection has been reported to be as high as 45%.

Involvement of the shoulder region has been reported by several authors (5). Solitary metastases have been noted to the humerus in 13%, to the clavicle in 18% and to the scapula in 23% of patients. Therefore, although scapulohumeral periarthritis, bursitis, and other conditions are extremely common in order persons, “shoulder arthritis” may sometimes be renal cell carcinoma.

With respect to surgical treatment, we know that the thorax, scapula, clavicle and humerus function synchronously to ensure mobility and stability. This mechanical unit, when intact, acts in a closed, continuous manner. Clavicular resection disturbs the dynamic and static forces of this mechanism, resulting in an open system. Abduction, flexion, and adduction may be impaired as a result of the reduction in the length of the lever on which these muscles act and because of partial deltoid resection. The rotator cuff is not affected.

Clavicular resection produced good functional and cosmetic results in our two patients. They experienced no shoulder pain, neurovascular deficit, or paresthesias. Their range of shoulder motion was full, but shoulder movement was somewhat weaker, as reported by other authors (2, 3). Cleidectomy carries a risk of damaging important vascular structures, particularly near the sternoclavicular joint, which may require immediate thoracotomy.

Metastases from renal cell carcinoma are highly vascular, like the primary tumor, with larger and more numerous vessels than would be expected for a metastasis. Catheter arterial embolization before the surgical resection may reduce the morbidity and blood loss at the time of surgery (6).

CONCLUSIONS

Cleidectomy is an appropriate treatment for metastatic disease of the clavicular bone in selected patients and does not impair normal daily life activities. Resection of renal metastases should be considered as a procedure similar to removal of a primary bone tumor with wide margins.

We suggest wide surgical resection of a solitary bony metastasis from renal cell carcinoma, associated with appropriate systemic treatment because the survival may be increased.

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SAMENVATTING

J. TABUENCA DUMORTIER, E. ORTIZ CRUZ, J. OLIVAS OLIVAS. Uitgebreide resectie van de clavicula voor solitaire beendermetastase.

Het sleutelbeen is geen zeldzame localisatie voor metastases van niercarcinoma.
Wij rapporteren de casus van twee patiënten met schouderpijn te wijten aan niercarcinoma uitgezaaid naar de clavicula, voordat de de diagnosis van de oorspronkelijke tumor was gesteld. In beide gevallen was de behandeling uitgebreide resectie van de clavicula. Het functioneel en cosmetisch eindresultaat was bevredigend met verdwijnen van de schouderpijn. Er waren geen neurovasculaire verwikkelingen.
Derhalve stellen wij voor elke solitaire beendermetastase van het niercarcinoma breed te reseceren in associatie met een aangepaste systemische behandeling. De overlevingskansen kunnen alzo verbeterd worden.

RÉSUMÉ

J. TABUENCA DUMORTIER, E. ORTIZ CRUZ, J. OLIVAS OLIVAS. Cléidectomie pour métastase unique de la clavicule.

La clavicule est une localisation rare de métastases du cancer rénal.
Nous rapportons le cas de deux patients qui présentaient un cancer du rein non diagnostiqué, révélé par une métastase unique dans la clavicule. Ils ont subi une résection complète de la clavicule. Les résultats fonctionnels et esthétiques ont été bons, sans douleur résiduelle et sans déficit neurovasculaire.
Nous suggéron une résection radicale de la clavicule en cas de métastase osseuse solitaire de carcinome rénal, associée à un traitement systémique approprié, car cela offre une chance d'améliorer la survie.