

Renal Clear Cell Carcinoma Acrometastasis. An Unusual Terminal Condition

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Received: 12 December 2013 / Accepted: 17 March 2014 / Published online: 7 May 2014
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Keywords Acrometastasis · Hand metastasis · Bone metastasis · Renal clear cell carcinoma

Introduction

Hand metastasis represents between 0.007 and 0.2 % of all metastatic lesions [1, 2]. Renal cell carcinoma accounts for only 10–12 % [3, 4] of these infrequent lesions. Finger metastases are commonly misdiagnosed due to their low frequency and because they can resemble an infectious condition [5]. We report a case of renal clear cell carcinoma with distal phalangeal metastasis and review the related literature. This case highlights the need to consider acrometastasis in the differential diagnosis of digital lesions in patients with renal clear cell carcinoma.

Case Report

A 53-year-old right-handed man was seen by his family physician for pain and swelling in right fifth finger after a minor trauma; he had a history of disseminated renal clear cell carcinoma (RCC) with radiation-resistant metastases in lung and fourth lumbar and was under combined treatment with sunitinib and everolimus. The initial diagnosis was an infection, which was unsuccessfully treated with NSAIDs, cloxacillin and topic anti-septics, observing a continued increase in the swelling and the development of ulcers and necrotic areas (Fig. 1).

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Plain radiographs of the right hand revealed a permeative osteolytic lesion in the distal phalanx of the right hand fifth finger with an ill-defined radiolucent mass. The cortex was thinned out and destroyed in places, but the adjacent joint surface was uninvolved and the remaining bones were unremarkable (Fig. 2). Serum levels of rheumatoid factor, uric acid, calcium, phosphate, and alkaline phosphatase were within normal limits, and puncture-aspiration samples were cultured without bacterial growth.

Six weeks after the initial local symptoms, the patient was referred to our hand surgery unit for assessment. Metastatic involvement was strongly suspected and, because the finger was not viable, it was amputated through the proximal phalanx without previous biopsy. Specimen samples were sent for microbiologic and pathologic studies. The bacterial cultures were negative. Histopathological study revealed metastasis of renal clear cell carcinoma that caused distal phalanx destruction and partial skin ulceration. The features of the acrometastasis were similar to those of the primary tumor diagnosed 5 years earlier. The lesion was composed of multiple nodules of cells with clear cytoplasm, moderate nuclear atypia, poor vascular proliferation,



Fig. 1 Clinical appearance of distal phalangeal metastasis of renal clear cell carcinoma. Swollen fifth finger with necrotic and fibrinous areas resembling an infectious process



Fig. 2 Plain radiographs confirm the presence of an expansile, lytic lesion at the distal phalanx of the right fifth finger with diffuse cortical break. The radiologic appearance is consistent with metastasis or infection

and scant mitosis (2/10 high power fields). Surgical margins were negative (Fig. 3).

There was a good recovery from the amputation, with an improvement in the hand pain. However, new lesions were observed on the third right hand finger tip, facial skin, and lips within a few weeks post-surgery, and the patient died after 3 months due to respiratory failure related to metastatic lung disease.

Discussion

Acrometastasis, which may be the first manifestation of an occult cancer [6, 7], can mimic other skeletal diseases and receive inappropriate treatment [8].

Around 20 % of patients with RCC present with metastasis at diagnosis, and 40–50 % of those with localized advanced

disease progress to metastatic disease. Novel targeted therapy approaches have improved the survival of patients with advanced RCC, but a cure is extremely unlikely without aggressive surgical resection, which can achieve long-term survival in some cases [9].

Because patients with hand metastasis often present with pain, tenderness, heat, swelling, and erythema, as in the present case, their correct diagnosis can be delayed by confusion with an infectious disease [10], and whitlow [11, 12], osteomyelitis [13], rheumatoid arthritis, tenosynovitis [14], and gout must be ruled out in the differential diagnosis.

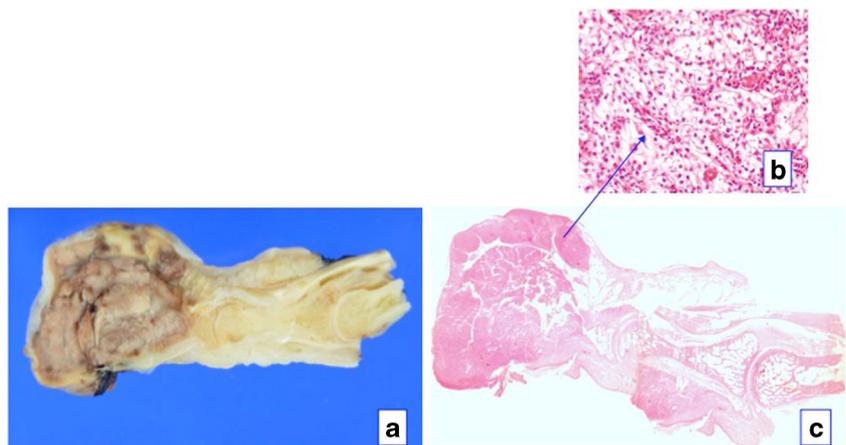
In the most extensive review to date, Flynn et al. [4] gathered 257 cases of acrometastasis, including 31 (12 %) from a primary kidney carcinoma. The disease was two-fold more frequent in males than in females, and most frequently involved the fifth finger and distal phalanx. The authors concluded that the mechanism responsible for the presence of metastatic tumour cells in the hand has not been established, although there is continued support for the role of a preceding physical injury [4].

Amputation was the preferred treatment in the majority of reported cases. Because skeletal metastases of RCC are relatively resistant to radiation and chemotherapy [15, 16], amputation is recommended in terminal lesions of the hand and distal phalanges for pain palliation [17]. Although wide resection or amputation is supported in an attempt to prolong the survival, this outcome can be expected only in solitary metastases with a long latency period since nephrectomy [3].

Survival data are not always reported in published reports, but metastatic spread to the hand generally carries a poor prognosis, with most patients surviving for less than 6 months [18], as confirmed in the present case.

Fig. 3 Cross-section of proximal phalanx with metastasis of renal clear cell carcinoma causing proximal phalanx destruction and partial skin ulceration (a).

Panoramic image of histological section of the lesion stained with hematoxylin and eosin (H and E) (b). The lesion is composed of cells with clear cytoplasm, moderate nuclear atypia, and poor vascular proliferation (H and E, original magnification $\times 200$) (c)



Acknowledgments The authors are grateful to Richard Davies for assistance with the English version.

Declaration of No Conflicting Interests All named authors hereby declare that they have no conflicts of interest to disclose.

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