Clinical Case Report

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Rare ectopic metastasis from clear cell renal cell carcinoma to the chest wall after 10 years

A case report

Chunyang Jiang, MD[a,*], Shan Zhao, MD[b], Bingjun Yang, BD[a], Tao Tang, MM[c], Ruipeng Hou, MD[d], Xiaoqin Liu, MM[e,*], Hui Zhao, BD[a,*]

Abstract

Rationale: Clear cell renal cell carcinoma (CCRCC) is an aggressive tumor associated with a high risk of metastasis and very low survival rate. In addition, it can cause extensive blood metastasis to the lungs, bones, and other organs. Chest wall metastatic tumors from primary CCRCC are rare.

Patient concerns: In this report, we present a case of metastatic chest wall tumor that originated from a CCRCC.

Diagnoses: An 86-year-old man was diagnosed with chest wall tumor using chest computed tomography. After collecting tissues from the chest wall tumor via needle biopsy, the pathological examination was combined with positive immunoreaction of CD10, epithelial membrane antigen, and vimentin, and the patient was diagnosed with metastatic CCRCC in the chest wall deposits.

Interventions: The patient received radiotherapy at 2.0 Gy per time for 25 times.

Outcomes: Following 2 months of treatment, the chest wall tumor had shrunk by about one-third of its size.

Lessons: Our patient developed a metastatic chest wall tumor that originated from a CCRCC for which right nephrectomy had been performed 10 years previously. Although as per the literature, chest wall metastasis from CCRCC is very rare, it is important to consider tumor metastasis after several years of treatment for precise diagnosis and proper treatment.

Abbreviations: CCRCC = clear cell renal cell carcinoma, HE = hematoxylin-eosin, RCC = renal cell carcinoma.

Keywords: chest wall, clear cell renal cell carcinoma, diagnosis, metastatic tumor, tissue biopsy

1. Introduction

Among all types of kidney cancers, renal cell carcinoma (RCC) is the most common and accounts for 85% to 90% of all renal malignancies.[1,2] RCC was responsible for almost 3% of all adult malignancies, ranking as the 7th most common type of cancer in men and the 9th most common in women.[3] At the time of initial diagnosis of the primary tumor, up to 30% of RCC patients have metastases and poor prognoses.[4] According to previous records, the lung is the most common site of metastasis in RCC patients, accounting for 45% to 50% of all cases of metastatic RCC, even up to 60% of all cases.[5] Other commonly involved metastatic sites include the lymph nodes in >30% patients, bone in nearly 30%, and liver in 20%.[6] Clear cell renal cell carcinoma (CCRCC) is the most common subtype of RCC and is more likely to metastasize. Similar to RCC, CCRCC metastasis is usually focused on the lung, bone, and lymphatic nodes. CCRCC patients have a higher incidence of metastasis and a very low survival rate, contributing to their worse prognosis.[7] A literature review revealed that CCRCC with only chest wall metastasis is very rare. Here, we report a case of metastatic chest wall tumor that originated from CCRCC 10 years after the patient was treated for it.

2. Case presentation

This patient was an 86-year-old Chinese Han man diagnosed with left chest wall lump using computed tomography in March 2017 (Fig. 1). He had a 1-month history of left anterior chest wall bulge with mild pain. His medical record showed that he had undergone right nephrectomy for CCRCC and received radiotherapy (1.8 Gy per time for 26 times) 10 years previously. Thereafter, there had been no indication of tumor recurrence or metastasis to other organs for a considerable period.

The main finding of his physical examination was a 6.0 × 6.0-cm mass in front of the left upper chest wall under the skin. The related detections were finished before biopsy operation for chest wall tumor. The evaluations of serum tumor markers showed a slightly elevated level of Cyfra21–1 and neuronspecific enolase

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[a] Department of Thoracic Surgery, Tianjin Union Medical Center, Hongqiao District, Tianjin, [b] Department of Medical Oncology, The Second Hospital of Hebei Medical University, Xinhua District, Shijiazhuang, [c] Department of Pathology, [d] Department of Urology Surgery, Tianjin Union Medical Center, Hongqiao District, Tianjin, [e] Department of Nephrology, Hongqi Hospital, Mudanjiang Medical College, Aimin District, Mudanjiang, Heilongjiang, People's Republic of China.

[*] Correspondence: Xiaoqin Liu, Department of Nephrology, Hongqi Hospital, Mudanjiang Medical College, 5 Tongxiang Road, Aimin District, Mudanjiang 157011, Heilongjiang, People's Republic of China (e-mail: 413078159@163.com); Chunyang Jiang and Hui Zhao, Department of Thoracic Surgery, Tianjin Union Medical Center, 190 Jieyuan Road, Hongqiao District, Tianjin 300121, People's Republic of China (e-mails: chunyangjiang@126.com, 805379297@qq.com).

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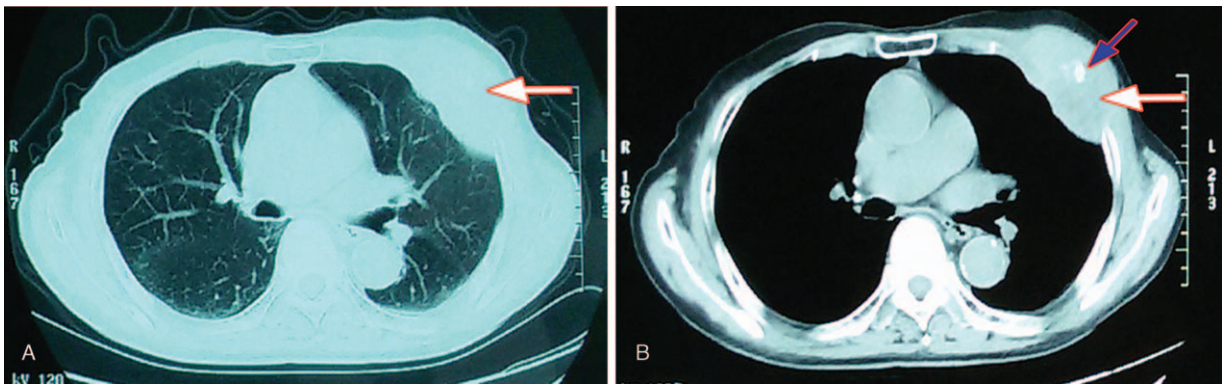

Figure 1. The chest computed tomography (CT) image of the left chest wall lesion. The lesion (measuring 6.7 × 6.0 × 4.3 cm) is indicated by white arrows, and rib bone destruction is indicated by a blue arrow. These are representative images. (A) Lung window, (B) mediastinum window.

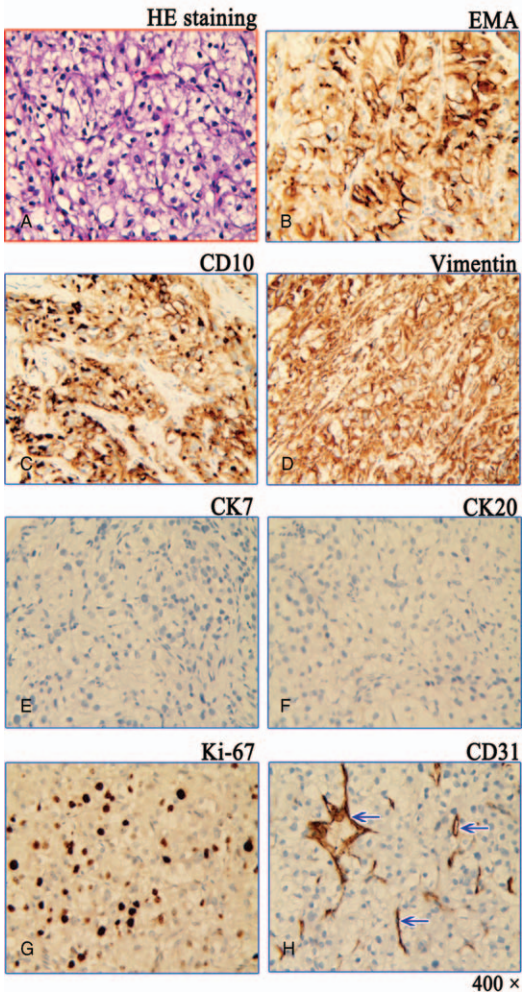

Figure 2. The pathological and immunohistochemical results of the chest wall tumor. The tissue's histopathology changes were observed under a light microscope (Nikon Eclipse 80i, Tokyo, Japan), and photographs were taken. The representative image of the tumor tissue is shown (A). The immunoreaction results of the chest wall tumor tissue are shown in (B) to (H); these are EMA, CD10, vimentin, CK20, CK7, Ki-67, and CD31. EMA, CD10, and vimentin had positive expressions. CK20 and CK7 were had negative expressions. Ki-67 was positive at a rate of 20%. CD31 had a positive expression only around blood vessels (pointed by blue arrows). The magnifications for these figures are 400×. EMA = epithelial membrane antigen.

(4.54 ng/mL, 0–2.08 ng/mL and 18.6 ng/mL, 0–16.3 ng/mL, respectively). The serum alkaline phosphatase level was 76 U/L (45–125 U/L).

Subsequently, the biopsy for the chest wall tumor was performed with biopsy needle, and the collected tumor tissues were subjected to pathological evaluations. The pathological results indicated clear cell carcinoma with hematoxylin-eosin (HE) staining. Results of the related immunohistochemical detection (Fig. 2) suggested over expression of CD10, epithelial membrane antigen, and vimentin in the tumor tissue. Ki-67 exhibited intense positivity at a rate of 20%. However, CK7, CK20, and CD31 were negative in the tumor tissue. The diagnosis was metastatic chest wall tumor that originated from CCRCC, according to the HE staining, the results of immunohistochemical test, and CCRCC history.

The patient received radiotherapy (2.0 Gy per time for 25 times), the main treatment for metastatic CCRCC.[8] Following 2 months of treatment, the chest wall tumor had shrunk by about one-third of its size. Thereafter, half-yearly follow-up check-ups have been regularly conducted (for nearly a year, until the time of writing this report) using chest computed tomography and have shown no significant change in the disease status.

The Tianjin Union Medical Center scientific committee approved this study. The patient and his family members were informed and consented for the publication of this report. Written informed consent was obtained from the patient for the publication of this report and any accompanying images.

3. Discussion and conclusions

Chest wall metastasis is most commonly observed in the ribs and often causes local damage or pathological fracture. The main treatment includes local resection or radiotherapy. Metastatic tumors of the chest wall are often metastasized from the neoplasms of malignant tumors of the lymphatic system; they may also originate in the lung, thyroid, breast, colorectum, prostate, and kidney cancers.[9]

RCC cells, mainly by hematogenous metastasis, enter the inferior vena cava and spread to the right atrium, lungs, bones, and other organs.[10] As the most common subtype of RCC, CCRCC easily metastasizes and is associated with a very low survival rate.[11,12] However, according to previous reports, chest wall metastases originating from CCRCC are very rare.

In the present case, the primary CCRCC was previously detected in the right kidney and was removed; no recurrence or

metastases occurred for 10 years. The pathological diagnosis, using HE staining, was clear cell carcinoma. Furthermore, tumor cells displayed a positive immunoreaction for the CCRCC markers, including CD10, epithelial membrane antigen, and vimentin, that are frequently expressed in CCRCC and help to confirm the diagnosis.[13] Therefore, we confirmed that the metastatic tumor of the left chest wall had metastasized from the CCRCC.

In this report, we presented a rare case of metastatic chest wall tumor that originated from CCRCC that had developed 10 previously. Thus, although rare, such metastases should be considered in patients with a history of CCRCC who have had no recurrence or metastases for a considerable period in order to ensure precise diagnosis and treatment for such rare ectopic metastasis.

Author contributions

All cited authors qualify for authorship according to the ICMJE guidelines.

Conceived, designed, and drafted the report: Chunyang Jiang, Xiaoqin Liu, Shan Zhao, Bingjun Yang.

Cared for the patient and performed the biopsy operation: Bingjun Yang, Hui Zhao, Chunyang Jiang.

Performed pathological and immunohistochemical detections, and analyzed these results: Tao Tang.

Prepared all figures: Chunyang Jiang.

Helped to draft the manuscript: Ruipeng Hou.

All authors discussed the results, reviewed and approved the report.

Data curation: Bingjun Yang, Ruipeng Hou.

Formal analysis: Chunyang Jiang, Ruipeng Hou, Xiaoqin Liu, Hui Zhao.

Investigation: Chunyang Jiang, Tao Tang, Hui Zhao.

Methodology: Tao Tang.

Project administration: Chunyang Jiang, Shan Zhao, Bingjun Yang, Xiaoqin Liu.

Writing – original draft: Chunyang Jiang, Tao Tang, Ruipeng Hou, Xiaoqin Liu, Hui Zhao.

Writing – review & editing: Chunyang Jiang, Shan Zhao, Bingjun Yang, Xiaoqin Liu.

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