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Case report

Multiple circular pleural metastases of renal cell carcinoma

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ABSTRACT

A 91-year-old woman was admitted with persistent pyrexia, anorexia and weight loss. A chest radiograph showed multiple circular masses of various sizes. Chest computed tomography revealed multiple pleural tumors without any lung lesion. The ultrasound-guided biopsy specimens demonstrated diffusely-proliferated tumor cells with clear or vacuolated cytoplasm, which were positive for CD10, PAX8, vimentin and CAM5.2, but were negative for mesothelial cell markers such as HBME-1 and thrombomodulin. These findings indicated metastatic clear cell carcinoma of the kidney, and a solitary renal tumor was observed on abdominal computed tomography. It has been reported that pleural metastases constituted 12% of patients with progressive renal cell carcinoma, and most of the pleural metastases occurred secondary to lung metastasis. This was a rare case of renal cell carcinoma with an unusual chest image via an intriguing metastatic pathway, which was limited to pleura.

1. Introduction

Renal cell carcinoma metastasizes most frequently to the lungs, and can present with various pulmonary manifestations. The pulmonary manifestations include endobronchial, pleural, parenchymal or lymph node lesions, or pleural effusion or hemothorax. A previous study showed that pleural metastases took place in about 12% of renal cell carcinoma patients, but all of them occurred secondary to pulmonary involvement [1]. We present here a rare case of renal cell carcinoma that presented with multiple and circular-form pleural metastasis without any pulmonary involvement.

2. Case report

A 91-year-old woman was admitted with intermittent pyrexia (> 39 °C), anorexia and weight loss. The patient had no significant medical history. The patient's peripheral white blood cell count was not increased (6300/μL; neutrophils 71%), but the serum level of C-reactive protein was elevated (10.5 mg/dL). The serum levels of immune-globulin G, cytokeratin subunit 19 fragment and soluble interleukin-2 receptor were elevated (2643 mg/dL, 4.3 ng/mL and 1254 U/mL, respectively). Occult blood in urine was negative. A chest radiography showed multiple circular masses of various sizes (Fig. 1). Transverse computed tomography (CT) images showed multiple well-defined nodules with low density regions and the extrapleural sign, as well as an oval nodule in the right interlobar pleura (Fig. 2). All lesions were in contact with the pleura, including the interlobar pleura, and some lesions were accompanied by mild pleural thickening without pleural effusion on chest CT. Parenchymal nodules could not be seen at all.

The transbronchial lung biopsy using a flexible bronchoscopy did not reach a diagnosis. The ultrasound-guided transcutaneous biopsy specimens obtained from the pleural mass demonstrated the diffuse proliferation of tumor cells with a clear or vacuolated cytoplasm (Fig. 3), which were positive for CD10, PAX8, vimentin, and CAM5.2, but negative for mesothelial cell markers such as HBME-1 and thrombomodulin. The specimens did not involve the lung tissues. These findings indicated metastatic clear cell carcinoma of the kidney, and a solitary left renal tumor was observed on abdominal CT (Fig. 4). Based on these findings, we diagnosed the patient with metastasis of renal cell carcinoma localized to the pleura. There was no evidence of infection on various examinations, which suggested that the patient's pyrexia was a paraneoplastic presentation caused by renal cell carcinoma.

3. Discussion

It has been reported that metastatic disease from renal cell carcinoma is a result of the unique accessibility of the kidney to lymphogenous, lymphohematogenous, and hematogenous-renal veins pathways [2]. The pulmonary manifestations of metastatic renal cell carcinoma include endobronchial, pleural, parenchymal, and lymph node metastasis [3]. Pleural metastasis is only reported in 12% of autopsies performed on patients with renal cell carcinoma, and metastasis

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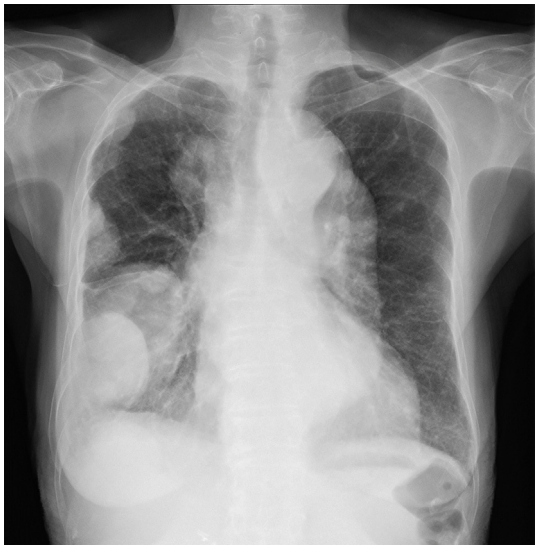

Fig. 1. A chest radiography showing multiple circular masses of various sizes.

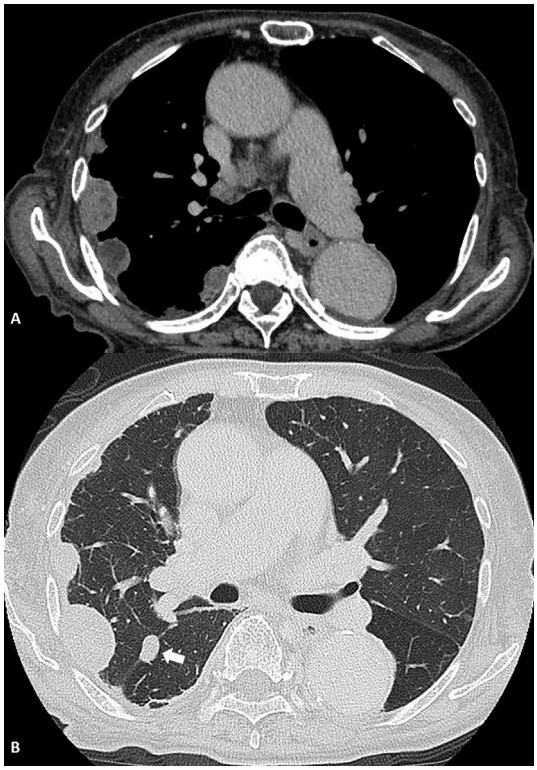

Fig. 2. Transverse thin-section enhanced computed tomography image (thickness: 1 mm) from 15 mm (A) and 25 mm (B) below the tracheal carina, showing well-defined nodules with the extrapleural sign and an oval nodule in the right interlobar pleura (arrow).

to the pleura might be a late event [1]. Because the hematogenous-renal veins flow into the bronchial and intercostal veins via Batson's plexus, in addition to spreading to the lung parenchyma, renal cell carcinoma can also spread to the mediastinum, the pleura, or all three locations [2]. Pleural metastasis from renal cell carcinoma without pulmonary involvement is a rare condition, as most of the pleural metastases occur secondary to lung metastasis [1,3]. Yasuda et al. [4] reported a case of carcinomatous pleuritis due to renal cell carcinoma, which occurred 10 years after nephrectomy. Although they reviewed 7 case reports of

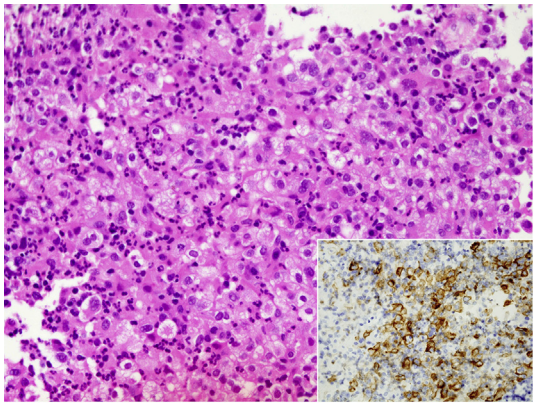

Fig. 3. Ultrasound-guided biopsy specimens showing the diffuse proliferation of tumor cells with a clear or vacuolated cytoplasm, which were positive for CD10 (inset).

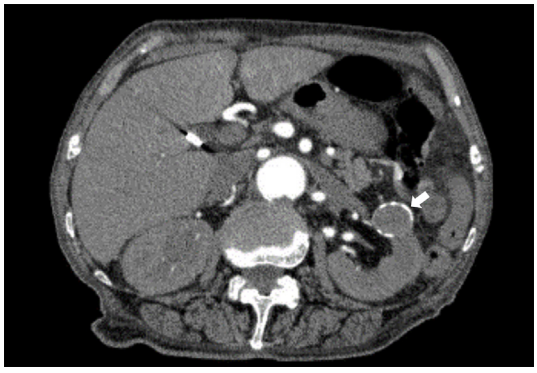

Fig. 4. Abdominal computed tomography image showing a solitary left renal tumor (arrow).

localized pleural metastases of renal cell carcinoma, all patients did not have pyrexia but dyspnea and showed pleural effusion on chest image. The present case, in which the patient presented with multiple and circular-form metastasis, without any pulmonary involvement or pleural effusion, seems to be an extremely rare case of renal cell carcinoma with an intriguing metastatic pathway, which was limited to the pleura.

The present case suggests that clinicians should be aware of the various thoracic manifestations of metastatic renal cell carcinoma with or without pyrexia as a primary symptom when patients present with paraneoplastic manifestations. We think that these findings can lead to a high index of suspicion of metastatic renal cell carcinoma and can facilitate the administration of appropriate treatment at an early stage.

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