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Oncology

A Case of Pulmonary Pleomorphic Carcinoma With Renal Metastasis☆

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ABSTRACT

A 62-year-old man was referred to our hospital for an axillary mass. Computed tomography (CT) revealed a right axillary tumor and a left renal tumor. Needle biopsies of lung tumor and renal tumor were performed, but a definite diagnosis was impossible. Because his performance status worsened and the lung tumor grew day by day, chemotherapy with gemcitabine and cisplatin was started without definite diagnosis. However, the chemotherapy could not be continued because of interstitial pneumonia and the patient died because of the progression of disease. The final histopathologic diagnosis was pulmonary pleomorphic carcinoma based on immunohistochemical staining.

Introduction

Pulmonary pleomorphic carcinoma is defined as a group of poorly differentiated non–small cell carcinoma that contains a component of sarcoma or sarcoma-like elements and shows carcinomatous as well as spindle and/or giant cell components. Pulmonary pleomorphic carcinoma is an infrequent tumor with an incidence rate ranging from 0.1% to 0.3% of all lung tumors. Because of its rarity and histological heterogeneity, cytopathologists might suspect pleomorphic carcinoma only difficultly on the basis of its tissue biopsy sample. Metastasis from pulmonary pleomorphic carcinoma to other organs, including the gastrointestinal tract, brain, liver, adrenal tissue, and bone have been reported. However, metastasis to kidney is relatively rare. We report a case of a patient with renal metastasis from pulmonary pleomorphic carcinoma.

Case presentation

A 62-year-old man was referred to our hospital for an axillary mass. He was an active smoker with 60 pack-year smoking history. Physical examination revealed a palpable right axillary tumor. Laboratory studies revealed a carcinoembryonic antigen level of 179 mg/dL (normal range [NR], <5.0 mg/dL), cytokeratin 19 fragment level of 9.5 mg/dL (NR, <3.5 mg/dL), and progastrin-releasing peptide level of 32.6 pg/dL (NR, <80 pg/dL). Chest x-ray revealed a large mass with a cavity occupying the right upper lung field. A chest computed tomography (CT) scan showed a 7.6-cm diameter irregularly shaped mass in the right upper lobe to the axilla (Fig. 1A). An abdominal CT showed a 5.5-cm diameter mass in the inferior pole of left kidney with hypervascular area and a central low attenuation area and enlarged abdominal para-aortic lymph nodes (Fig. 1B). Needle biopsies of lung tumor and renal tumor were performed; however, a definite diagnosis was impossible. The possible differential diagnosis of renal tumor was renal cell carcinoma, Bellini duct carcinoma, renal pelvis carcinoma, and metastasis from lung cancer. His performance status worsened and the lung tumor grew day by day. Without missing the chance for treatment, the chemotherapy with gemcitabine and cisplatin that was a standard regimen for urothelial carcinoma of renal pelvis carcinoma and Bellini duct carcinoma was started. However, the chemotherapy could not be continued with interstitial pneumonia and the patient died because of the progression of disease. Autopsy revealed tumors in the right lung, left kidney, small intestine, pancreas, right adrenal gland, and bone marrow. Microscopic examination of the specimen of the lung and kidney tumor revealed the growth of poorly differentiated malignant cells, including spindle cells and giant cells (Fig. 2A,B). The final histopathologic diagnosis was pulmonary pleomorphic carcinoma based on immunohistochemical staining.

Discussion

Pleomorphic carcinoma accounts for 0.1%-0.3% of all the pulmonary malignancy. The male to female ratio of pleomorphic carcinoma varies from 3:1 to 6:1, with the median age of presentation

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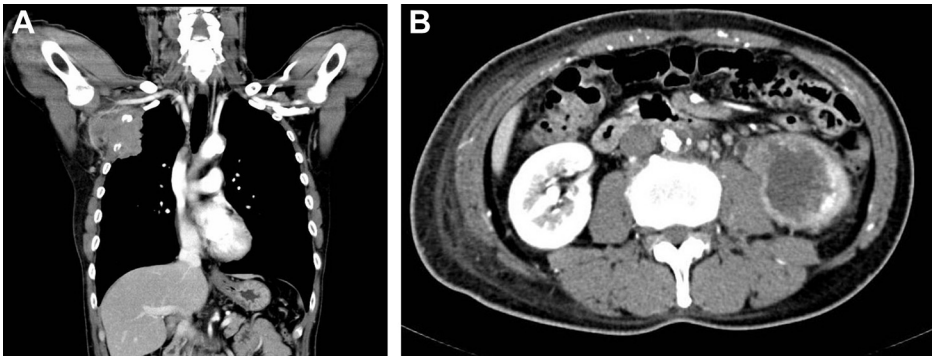

Figure 1. Chest computed tomography (CT) scan revealed a large mass with a cavity occupying the right upper lung field **(A)**. Abdominal CT showed a mass in the inferior pole of left kidney and enlarged abdominal para-aortic lymph nodes **(B)**.

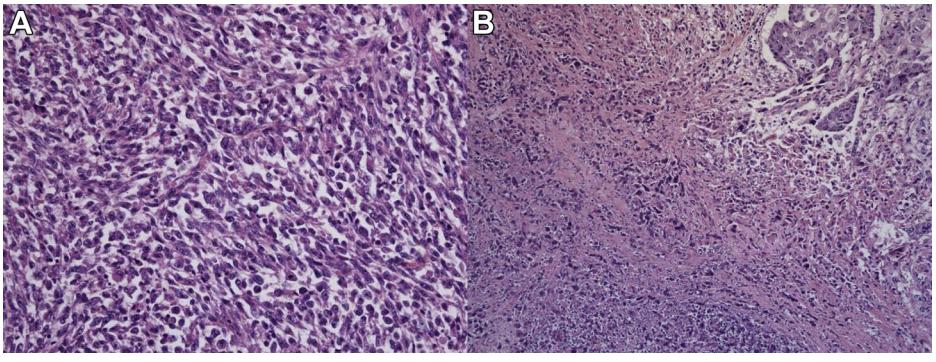

Figure 2. Microscopic examination of the specimen of lung **(A)** and kidney **(B)** tumor revealed the growth of poorly differentiated malignant cells, including spindle cells and giant cells.

being 59 years.[1] The disease is strongly associated with smoking. The prognosis is poor with a median survival of 8 months.[2] Pleomorphic carcinoma has a tendency to grow rapidly and invade adjacent structures in the early stage. According to Ito et al,[3] recurrence after surgical treatment is common and systemic metastases are frequently observed. Metastasis from pulmonary pleomorphic carcinoma to other organs, including the brain, liver, adrenal tissue, and bone have been reported; however, metastasis to kidney is relatively rare. Chest x-ray shows pleomorphic carcinoma as round or oval masses, often lobulated, and usually located at the lung periphery. On chest CT scanning, a central low attenuation area is depicted within the tumor, which aggressively invades adjacent structures such as the chest wall or the pleura. Central low attenuation areas corresponding to regions of central necrosis are also frequently observed.[4] In addition to these aggressive features, the efficacy of chemotherapy and/or radiotherapy is limited. There were some cases treated by carboplatin and paclitaxel with some effect; however, no chemotherapeutic regimens for pleomorphic carcinoma have been established.

Metastatic renal tumors are rarely manifested clinically. Lung cancer is the most common primary tumors of metastatic renal tumor, following esophageal and thyroid cancer. Abdominal plain CT scanning shows multiple tumors with low density area; the contrast-enhanced CT scan shows hypovascular tumor.[5] Angiography shows hypovascular tumor with no vascularization.

In our case, the patient was a current male smoker. A large mass lesion invading adjacent structures and central low attenuation areas corresponding to regions of central necrosis were observed. All these findings are concordant with the characteristics of pleomorphic carcinoma. However, an abdominal CT scan shows a hypervascular tumor, which is not corresponding with the characteristics of metastatic renal tumor. In addition, a definite diagnosis was impossible by needle biopsy of the tumor of lung and kidney. This result suggested the difficulty of definitive diagnosis and pathologic complexity of pleomorphic carcinoma.

Conclusion

Pleomorphic carcinoma of lung is a rare pulmonary neoplasm that has a poorer prognosis than other non–small cell lung cancers, and metastasis to kidney is very rare. In the case of atypical renal tumor, metastatic renal tumor must be considered.

Conflict of interest

None declared.

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