CASE REPORT

Lung Metastasis of Renal Cell Carcinoma: A Case Report of Pulmonary Sarcomatoid Carcinoma
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ABSTRACT
Pulmonary sarcomatoid carcinoma (PSC) is a rare malignant cancer composed of sarcoma and sarcoma-like elements with spindle or giant cell features. We report the case of a 60-year-old male with past medical history of right renal cell carcinoma 2 years earlier. A pulmonary nodule was detected in the left upper lobe, 23 months after nephrectomy. Systemic positron emission tomography-computed tomography (PET-CT) revealed one high metabolic mass shadow in the left upper lobe. Chest CT scan with contrast revealed a left upper lobe mass (2.9 x 2.5 cm). The case was suspected to be a lung metastasis of renal cell carcinoma. After surgery, the pathology revealed PSC-giant cell carcinoma. The tumor's pathology and treatment methods are discussed.

Key Words: Pulmonary. Renal cell carcinoma. Second primary cancers. Diagnosis. Treatment.

INTRODUCTION
Renal cell carcinoma (RCC) is an aggressive disease which accounts for 3% of adult solid tumors.¹ RCC is detected in patients aged 50 - 70 years. The most common sites of RCC metastases are the lung (50%), lymph nodes (35%), liver (30%), bone (30%), adrenal glands (5%) and brain.²,³ Of them, lung is the most common and most prone to metastasis. However, not all pulmonary nodules, appearing after kidney cancer, are metastases.

Here, presented is a case of a 60-year male who was suffering from kidney cancer and pulmonary sarcomatoid carcinoma (PSC). Such an occurrence of metachronous dual primary cancer is rarely seen. To the authors' knowledge, this is the first report.

CASE REPORT
A 60-year male, non-smoker, had a 2-year history of hematuria. Contrast-enhanced CT and renal arteriography showed an abnormal tumor in the right kidney (Figure 1 A and B). Head MRI, isotope bone scan, chest CT scan, and laboratory tests showed normal results. There was no surgical contraindication. The patient underwent right kidney resection and lymph node dissection. The final pathology revealed right renal clear cell carcinoma (I-II grade) (Figure 1C), involving the right kidney. Ipsilateral renal vein and ureteral stump showed no cancer. Immunohistochemistry (IHC) showed PCK (+), Vimentin (+), CD10 (+), RCC (+), TFE-3 (+), CK7 (-), ECadherin (-), CD117 (-), PAX2 (-), PAX8 (-), CD15 (-) and CK5/6 (-). No tumor invasion in the lymph nodes (0/15) was seen. Postoperative staging was stage-I (pT1bN0M0). The patient was discharged in view of satisfactory recovery and follow-up in the outpatient.

Unfortunately, the patient presented with non-productive cough and bloody sputum 19 months after nephrectomy. Upon admission, chest CT scan with contrast was done which revealed a left upper lobe mass (2.9 x 2.5 cm), with an impression of malignancy (Figure 1 F and G). Positron emission tomography-computed tomography (PET-CT) revealed one high metabolic mass shadow in the left upper lobe (measuring 2.9 cm in the largest dimension, SUV max 8.9 - 9.5, Figure 1 D and E), but no enlarged mediastinal lymph nodes. Bronchoscopy and laboratory tests showed normal results. The case was suspected to be either a lung metastasis of renal cell carcinoma or second primary cancer of lung.

Since there was no surgical contraindication, the patient underwent left upper lobe resection and hilar mediastinal lymph node dissection. The final pathology revealed right renal clear cell carcinoma (I-II grade) (Figure 1C), involving the right kidney. Ipsilateral renal vein and ureteral stump showed no cancer. Immunohistochemistry (IHC) showed PCK (+), Vimentin (+), CD10 (+), RCC (+), TFE-3 (+), CK7 (-), ECadherin (-), CD117 (-), PAX2 (-), PAX8 (-), CD15 (-) and CK5/6 (-). No tumor invasion in the lymph nodes (0/15) was seen. Postoperative staging was stage-I (pT1bN0M0). The patient was discharged in view of satisfactory recovery and follow-up in the outpatient.

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DISCUSSION

Pulmonary sarcomatoid carcinoma (PSC) is a rare histologic subtype of non-small cell lung cancer (NSCLC), representing less than 1% of all lung tumors. PSC is defined as poorly differentiated NSCLC that contains a component of sarcoma or sarcoma-like elements, according to the 2004 World Health Organization. There are five subgroups of PSC; they are identified as pleomorphic carcinoma, spindle cell carcinoma, giant cell carcinoma, carcinosarcoma, and pulmonary blastoma. Sarcomatoid carcinoma can occur throughout the body; however, PSC in the lung is very rare, accounting for 0.1 - 0.4% of all lung malignancies. Average age of diagnosis for these patients is about 60 years of age, with a male preponderance of 4:1. In this case, PSC and RCC of metachronous double primary origin is an unusual occurrence; to the authors’ knowledge, this is the first report. As we all know, PSC is prone to distant metastasis. Those with stage-III or stage-IV sarcomatoid carcinomas are managed non-operatively and given palliative treatment. These patients are said to have poorer prognosis compared with conventional NSCLCs, with a 5-year survival of only 24.5% versus 46.5% for other NSCLCs. Fortunately, this case was a localized disease. Treatment of localized disease relies on surgical resection, with adjuvant chemotherapy and radiation for patients with bulky tumors, or nodal involvement. Currently, the case was started on chemotherapy with GEMOX. We will evaluate the efficacy after 2 cycles of chemotherapy and then adjust the treatment plan.

In conclusion, not all pulmonary nodules appearing after one primary tumor are metastases. We need the support of pathology in order to make a diagnosis, develop a treatment for a reasonable and consistent with "precision medicine" diagnosis and treatment principles. In addition, there is a need to better understand the epithelial-mesenchymal transition pathways of these cancer cells and hopefully develop targeted therapies, that will improve the survival for these patients.

REFERENCES