Clinical Case Report

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Solitary renal metastasis from squamous cell carcinoma of the lung

A case report

Jiantao Wang, MD, PhD[a], Li Wang, MD, PhD[b], Lang Long, MD[b], Qing Tao, MD[c], Feng Xu, MD[b], Feng Luo, MD, PhD[b,*]

Abstract

Rationale: Non-small cell cancer with isolated unilateral renal metastasis is rare, and the role of radical nephrectomy has not been determined. In the present study, a case of a patient with solitary kidney metastasis from squamous cell lung cancer who underwent radical nephrectomy is reported.

Patient concerns: A 74-year-old patient diagnosed with pulmonary squamous cell lung cancer who had undergone radical pulmonary lobectomy and mediastinal lymph node dissection revealed a solitary mass in the right kidney during the follow-up.

Diagnoses: Unilateral isolated kidney metastasis originated from squamous cell lung cancer.

Interventions: The patient underwent radical right nephrectomy and squamous cell cancer metastasis was confirmed by the postoperative pathology results.

Outcome: Lung cancer relapse was diagnosed and the patient died of cancer progression 10 months after the right nephrectomy.

Lessons: Solitary renal metastasis is rare and squamous cell lung cancer might be the primary disease. Abdominal computed tomography (CT) is important in detecting solitary kidney metastasis during the follow up of patients with squamous cell lung cancer. Due to the rareness of isolated renal metastasis, the role of radical nephrectomy needs to be further investigated.

Abbreviations: CT = computed tomography, NSCLC = non-small cell lung cancer, SBRT = stereotactic body radiation therapy.

Keywords: kidney metastasis, nephrectomy, squamous NSCLC

1. Introduction

Lung cancer is the most common malignant lung tumor and the leading cause of cancer-related death in China.[1] Non-small cell lung cancer (NSCLC) accounts for more than 80% of all lung cancers. Despite the advanced progress made in the treatments of NSCLC, the prognosis is still not satisfactory and the 5-year survival rate is lower than 20%.[2]

Distant metastases in patients with NSCLC, which are often missed due to difficulties in early detection, are key factors that lead to negative clinical outcomes. The most common sites of metastasis in patients with NSCLC are brain, bone, adrenal gland, and lungs.[3] However, solitary unilateral kidney metastasis from primary lung cancer is rather rare. In the present study, a case of lung squamous cell carcinoma causing isolated unilateral renal metastasis is reported.

2. Case presentation

A 74-year-old Chinese male complained of coughing and bloody sputum at the first visit. An enhanced chest computed tomography (CT) was performed and revealed a mass in the right lower lobe. The patient underwent bronchoscopy, followed by biopsy, which revealed lung squamous cell carcinoma. He underwent right lower lobectomy and mediastinal lymph nodes dissection, and the postoperative pathology confirmed moderately differentiated squamous cell carcinoma, with one metastatic lymph node in station 11 (pT3N1M0, stage IIIA). The patient received 4 cycles of postoperative adjuvant chemotherapy with Cisplatin plus Paclitaxel liposome (Cisplatin 75 mg/m^2, Paclitaxel liposome 135 mg/m^2, q3w).

After the chemotherapy, follow-up was by regular examination every three months. After approximately 16 months of disease-free interval, an enhanced abdominal CT scan showed an irregular mass in the right kidney, which was significantly unevenly enhanced (Fig. 1), while the enhanced chest CT and the enhanced brain MRI scans showed no other metastases. It was difficult to distinguish an incidental renal cell carcinoma from renal metastases on the basis of radiologic studies alone. Therefore, the patient underwent right radical nephrectomy without any complications, and the postoperative pathological diagnosis of metastatic lung squamous cell carcinoma was

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Informed consent of the patient was obtained in this case report.

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[a] Department of Lung Cancer Center, West China Hospital, [b] Department of Lung Cancer Center, Cancer Center of West China Hospital, [c] Department of Pathology, West China Hospital, Sichuan University, Sichuan, China.

[*] Correspondence: Feng Luo, Sichuan University West China Hospital, ChengDu, Sichuan China (e-mail: hxluofeng@163.com).

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Figure 1. Enhanced abdominal CT revealed a solitary mass in the right kidney. CT scan (A), enhanced scan (B), and coronal scan (C). CT = computed tomography.

confirmed (Fig. 2). Unfortunately, cancer relapse occurred on the lungs 2 months after the nephrectomy, and systematic chemotherapy with Gemcitabine and Oxaliplatin was given. The patient died of lung cancer progression 10 months after the radical right nephrectomy.

3. Discussion

NSCLC is the major subtype of lung cancers. Squamous cell carcinoma, a common subtype of NSCLC, accounts for about 40% of all NSCLC. Distant metastasis is the leading cause of treatment failure in the patients with lung cancer who underwent complete cancer resection. The most common sites of distant metastasis are brain, bones, and the adrenal gland. Despite the fact that the renal blood flow accounts for approximately 20% of the total cardiac output, the kidneys are not likely to develop blood-borne metastases. Clinically diagnosed isolated metastasis to the kidney from NSCLC is extremely rare.[4] To the best of our knowledge, most of the studies concerning renal metastasis are case reports. Previous reports were reviewed and revealed that the most common primary malignant tumor responsible for metastasis to kidney is the lung, followed by the colorectum, breast, soft tissue, and thyroid.[5]

Renal metastasis can be detected by abdominal CT scans, magnetic resonance imaging, positron emission tomography/CT, ultrasonography, and, although not usually performed, renal angiography. It has been reported that most renal metastases are asymptomatic. Adamy et al (2011) reported 15 renal metastases from different types of primary cancer, where only 15% of them had gross haematuria, and in most cases metastasis was detected by radiological devices.[6] In the present case, the patient did not have any symptoms, and renal metastases were detected by enhanced abdominal CT. Therefore, the routine postoperative radiological examination was extremely important. Honda et al (1992) reported the clinical features of metastatic renal cancer on radiological images. They suggested that renal metastases can be characterized as small, multiple, bilateral, wedge-shaped, less exophytic, and located within the renal capsule. However, the current case did not meet any of these characteristics, and presented as large size (8.0cm*7.5 cm), solitary, unilateral, and breakthrough of the renal capsule.[7] Therefore, diagnosis of isolated renal metastasis on the CT scan was difficult for this patient.

Treatment patterns for solitary renal metastases are not clear. Adamy et al (2011) investigated the role of nephrectomy in solitary renal metastatic patients and concluded that surgical resection might be an aggressive approach, which positively affects the survival of selected patients with isolated metastasis.[6] Stereotactic body radiation therapy (SBRT) might be an alternative option for solitary metastases to the kidney in patients with NSCLC. Recently, Verma et al (2017) reported four cases of solitary renal metastasis in patients with lung cancer who underwent SBRT, and they concluded that SBRT is a safe and effective treatment for renal metastases, able to spare the surrounding tissues and be delivered in a convenient treatment course.[8] However, there was no perspective randomized comparison study between surgical versus nonsurgical treatments in the management of solitary metastatic disease. Karagkiouzis et al (2012) reported that factors that are in favor for a satisfactory outcome in patients who have developed solitary metastasis from lung cancer include control of primary site, good performance status, metachronous lesions, and longer disease-free interval.[9] The patient of the present study, whose

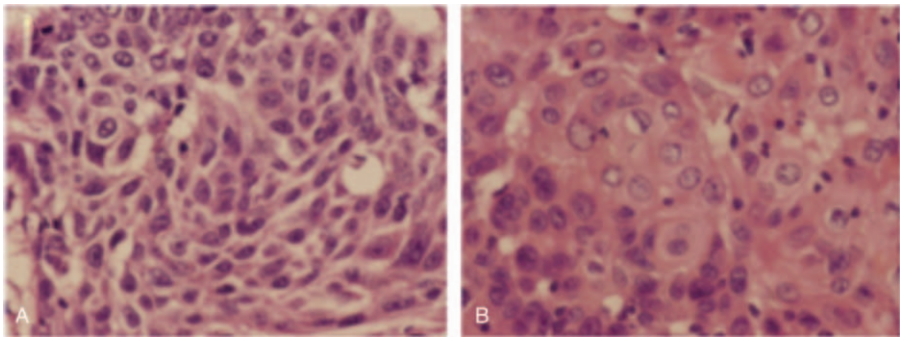

Figure 2. Morphologic image of the right kidney mass histopathology showed squamous cell cancer morphologically similar to those seen in postoperative pathology of the lung. HE staining, 400x. Postoperative squamous cell lung cancer (A), and squamous cell cancer of the right kidney (B). HE = hematoxylin-eosin.

primary cancer was completely resected with no other metastasis than in the right kidney, in good performance status, underwent radical nephrectomy. Unfortunately, due to lung cancer relapse, the patient died of cancer progression 10 months later.

4. Conclusion

Solitary renal metastasis in patients with squamous cell lung cancer is rare. Routine radiological examination is important and whenever a mass in the kidney is identified in patients with a prior history of resected localized NSCLC, renal metastases should be considered. Nephrectomy and SBRT might be useful options in the treatment of solitary renal metastasis in patients with NSCLC.

Author contributions

Data curation: Lang Long, Qing Tao.
Investigation: Li Wang.
Supervision: Feng Xu.
Writing – original draft: Jiantao Wang.
Writing – review & editing: Feng Luo.

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