Case Report

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Rare intrathoracic metastases of renal cell carcinoma

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Abstract:

Renal cell carcinoma (RCC) can often metastasize to bone, liver and lung, but unusual metastasis may also occur. However, intrathoracic extrapulmonary metastases are rarely being reported. Because RCC is chemo- and radioresistant tumor, early diagnosis of the disease is essential and complete resection of the tumor can provide longer cancer-free survival and better quality of life. We aimed to draw attention to the importance of excision of intrathoracic extrapulmonary metastasis, particularly in asymptomatic patients who had previously undergone radical nephrectomy for RCC. Clinicians should be cautious that delay in the diagnosis of atypical metastasis is associated with poor prognosis. Therefore, early diagnosis and management of unusual localization of a solitary RCC metastasis are of paramount importance for cancer-free survival and better quality of life. Our aim was to report very rare intrathoracic metastases of renal tumors and to discuss their management. We also needed to report that the early diagnosis of such atypical metastases would contribute to patient survival as presented in this report.

Keywords:

Endotracheal metastasis, lymph node, mediastinum, pleura

Introduction

Renal cell carcinomas (RCC) are the most common malignancies prone to metastases and constitute up to 85% of kidney tumors.[1] Late recurrences are frequent at almost all parts of the body due to complicated lymphatic drainage of the kidneys. The current study presents intrathoracic metastasis of RCC in four cases in the absence of lung parenchymal involvement.

Written informed consent was obtained from the patients.

Case Report

Case 1 – Mediastinal lymph node metastasis

Medical history of a 57-year-old asymptomatic male with lymphadenopathies at the paratracheal location [Figure 1a and b] revealed radical right nephrectomy for RCC, 2 years before. There was no remarkable condition in his clinical history other than a smoking history of 15 pack/years. Following surgery, the patient received regular follow-ups with no signs of tumor recurrence or metastasis, but the current evaluation showed mediastinal pathological lymphadenopathies in computed tomography (CT) of the thorax. Positron emission tomography (PET)-CT scan proved the strong clinical suspicion of malignancy, and videomediastinoscopy was performed under general anesthesia conditions for the removal of the paratracheal lymphadenopathies. Histopathological evaluation was compatible with RCC metastasis. The patient was followed up for 2 years until he died due to brain metastasis and hydrocephalus.

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Case 2 – Endobronchial metastasis

A 63-year-old male suffered from effort dyspnea and hemoptysis with a history of radical left nephrectomy 10 years ago without any recurrence due to RCC. His clinical history revealed only a smoking history of 30 packs/year. On his physical examination, prolonged expirium was shown proved by spirometry. Thoracic CT revealed endotracheal tumor 9 mm × 12 mm in size [Figure 2a and b]. Rigid bronchoscopy was performed under general anesthesia, and endotracheal tumor located 2 cm below the vocal cords was removed subtotally [Figure 2c]. Histopathological report was compatible with metastatic RCC. Following metastasectomy [Figure 3], pazopanib 400 mg/day + neck radiotherapy were given. With 24 months of follow-up, the patient is still tumor free.

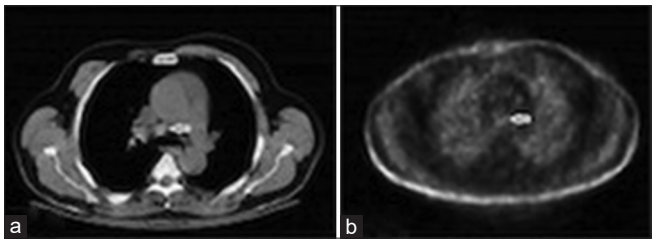

Figure 1: (a) Solitary mediastinal lymph node metastasis on computed tomography scan. (b) Positron emission tomographic appearance of the mediastinal lymph node (arrows)

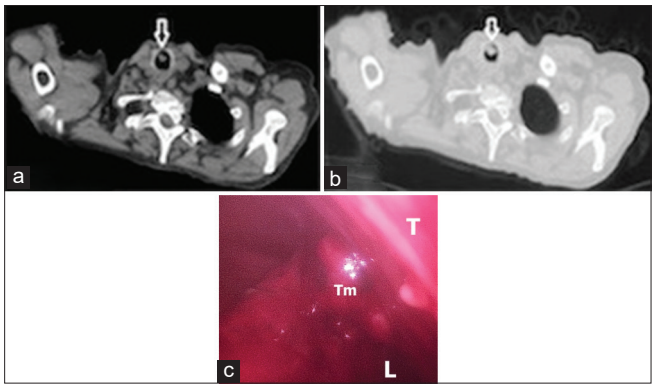

Figure 2: (a and b) Thoracic computed tomography shows endotracheal lesion. (c) Rigid bronchoscopic appearance of the metastatic lesion (T: trachea, Tm: tumor, L: Tracheal lumen)

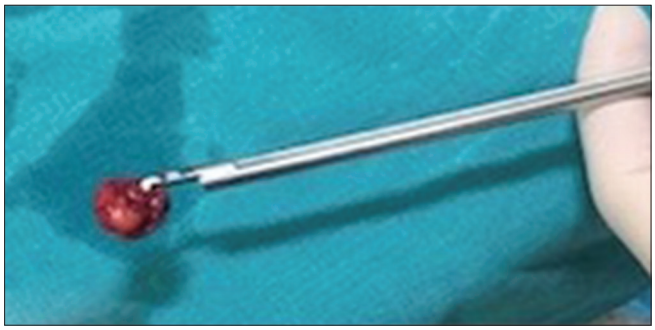

Figure 3: Excisional biopsy specimen of the endotracheal lesion

Case 3 – Hilar lymphadenopathy

A 47-year-old asymptomatic male with radical left nephrectomy 6 months before was referred to our clinic with pathological PET-CT findings. In his clinical history, no smoking habit was recorded. His physical examination was normal. Thoracic CT showed 27 mm × 23 mm left hilar lymphadenopathy. PET-CT revealed left hilar lymphadenopathy with pathological fluorodeoxyglucose uptake (maximum standardized uptake value: 6.45). The lymph node was excised through the left anterior thoracotomy [Figure 4a and b]. Histopathological examination revealed metastatic RCC. The patient is on regular follow-up program with no sign of recurrence.

Case 4 – Pleural metastasis

A 90-year-old male with a history of left nephrectomy for RCC 3 years ago admitted with severe dyspnea. He was an ex-smoker for 35 years, but he had a history of 30 packs/year smoking habit before. Chest X-ray and thoracic CT revealed massive pleural effusion on the left hemithorax. To find out the primary cause, diagnostic thoracoscopy was done and the irregular vegetative lesion was encountered on the parietal pleura [Figure 5a and b]. Pleural effusion was evacuated, and pleural biopsies were taken. Talc pleurodesis was performed to prevent the recurrence of the pleural effusion. Cellular signaling inhibitor sunitinib 25 mg/day was initiated, and the patient is in a close follow-up program.

Discussion

The RCC is chemotherapy- and radiotherapy-resistant tumor. Radical nephrectomy is the most effective therapeutic option, even in metastatic RCC. Lung (50%–60%), lymph nodes, bone, liver, and brain are the most common metastatic sites. Paraneoplastic syndromes, including anemia, erythrocytosis, hypercalcemia, or hepatic dysfunction, may be accompanied.

The RCC can spread via hematogenous and lymphogenic routes. Lymphatic drainage of the kidney is connected to the thoracic duct and finally reaches the mediastinohilar lymph nodes.[2] Cancer cells were shown to pass through a retrograde flow to the peribronchial lymphatics from the thoracic duct via its incompetent valves. Another mechanism is a possibility of occurrence of lymph involvement from lung micrometastases. Hilar and mediastinal lymph nodes are rarely involved. When the literature was reviewed, metastases to the mediastinal lymph node were found together with lung metastasis. Tolia and Whitmore reported the solitary mediastinal lymph node metastasis at the initial diagnosis of RCC only in 1%–3% of patients.[3] When the data of 467 RCC patients from 44 studies were reviewed, only two studies reported mediastinal metastasis, but it was not clear how many

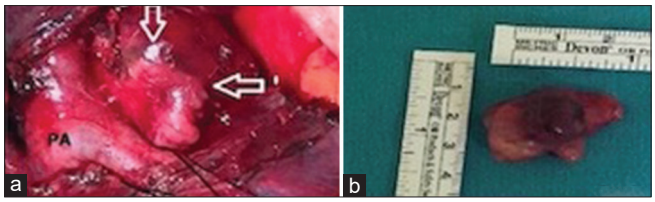

Figure 4: (a and b) The single mediastinal lymph node was excised through the left anterior thoracotomy (PA: pulmonary artery, arrows, lymph node)

of the 45 patients had isolated mediastinal metastases.[4] Intrathoracic extrapulmonary metastases are rarely seen due to RCC. Hemoptysis or atelectasis or rarely complete lung collapse may be accompanied by endobronchial metastasis.[5] Metastasis to lung parenchyma from extrapulmonary solid tumors is common with the rates of 20%–54%. However, endobronchial metastasis rarely occurs in 2%–28% of the cases.[6] Although there was no incomplete atelectasis or complete collapse, our patient had dyspnea and hemoptysis. The clinicians should be careful that lesions may occlude the main bronchus or trachea. Although prognosis is very poor for endobronchial metastasis, immunomodulator pazopanib 800 mg once a day was given to the patient with no sign of recurrence for 7 months.[7]

Pleural effusion due to RCC metastasis is extremely rare, but can be seen in advanced or papillary or clear cell subtypes, which occurs mainly secondary to lung metastasis.[5] Massive hemothorax may develop due to intercostal arterial involvement.[8] Our patient showed only pleural metastasis with the manifestation of dyspnea. The rarity of this condition is reported by Yasuda *et al*. They reported the case of an isolated pleural metastasis without pulmonary involvement and they reviewed seven case reports of localized pulmonary metastasis as in the present report.[9]

Because RCC is radiotherapy- and chemotherapy-resistant tumor, and immunotherapy has only 15%–20% additive effect, complete excision of solitary metastasis is essential. When complete resection is possible, complete resection of the isolated metastatic RCC allows 30%–60% 5-year survival rates.[10]

The low number of the patients limited the power of this study; however, solitary intrathoracic metastases have rarely been reported in the literature.

In conclusion, surgical excision should be considered in the presence of a solitary RCC metastasis for local control

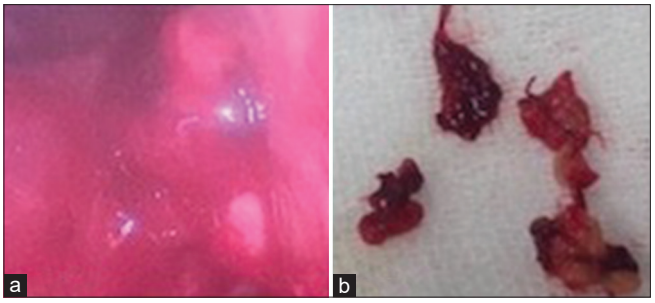

Figure 5: (a) Videothoracoscopic appearance of pleural metastasis.(b) The excisional specimen of the pleural lesion

of the disease. Clinicians should be aware that RCC can metastasize to any organ at any time and that early recognition and removal of metastases will contribute to better survival.

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Conflicts of interest
There are no conflicts of interest.

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