

## Case Report

# Cutaneous metastasis of renal cell carcinoma: a report of two cases

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**Abstract:** Cutaneous metastasis of renal cell carcinoma (RCC) is very rare. The author herein report two cases of RCC with cutaneous metastasis. Case 1: is a 75-year-old man with right lumbago. Imaging modalities including CT and MRI revealed a right renal tumor. Nephrectomy was performed. Pathological diagnosis of the renal tumor was RCC of clear cell type (Fuhrman's grade II). He denied follow-up. Nine years later, he (at the age of 84 years), a neck skin tumor emerged. Clinical diagnosis was hemangioma. Imaging modalities including CT and MRI showed several tumors in both lungs. The resection of the neck tumor was performed. The tumor was composed of clear cell type arranged in a trabecular pattern. Immunohistochemically, the tumor cells were positive for pancytokeratins, cytokeratin 18, CD10, Ki-67 (labeling=13%), but negative for CD34, factor-VIII-related antigen, CEA, EMA, melanosome (HMB45), S100 protein, p53, and HepPar-1. Metastatic RCC was diagnosed. Despite interferon therapy, he died of 6 months after the second admission. Case 2 is a 66-year-old man with gross hematuria. Imaging modalities revealed left renal tumor. A nephrectomy was performed. The pathological diagnosis was RCC of clear cell type (grade II). The tumor was invasive into the renal pelvis. He was treated by chemoradiation, but metastases of lungs, skin (thigh), and lib emerged, and died of cachexia 9 months after the admission. Necropsy of the skin tumor was performed. The skin tumor was composed of clear cells arranged in a trabecular pattern. Immunohistochemically, the tumor cells were positive for pancytokeratins (AE1/3, CAM5.2), CD10, p53, and Ki-67 (labeling=20%), but negative for CD34, factor-VIII-related antigen, CEA, melanosome (HMB45), S100 protein, and HepPar-1. A diagnosis of RCC (grade II) was diagnosed.

**Keywords:** Skin, metastasis, renal cell carcinoma, immunohistochemistry

### Introduction

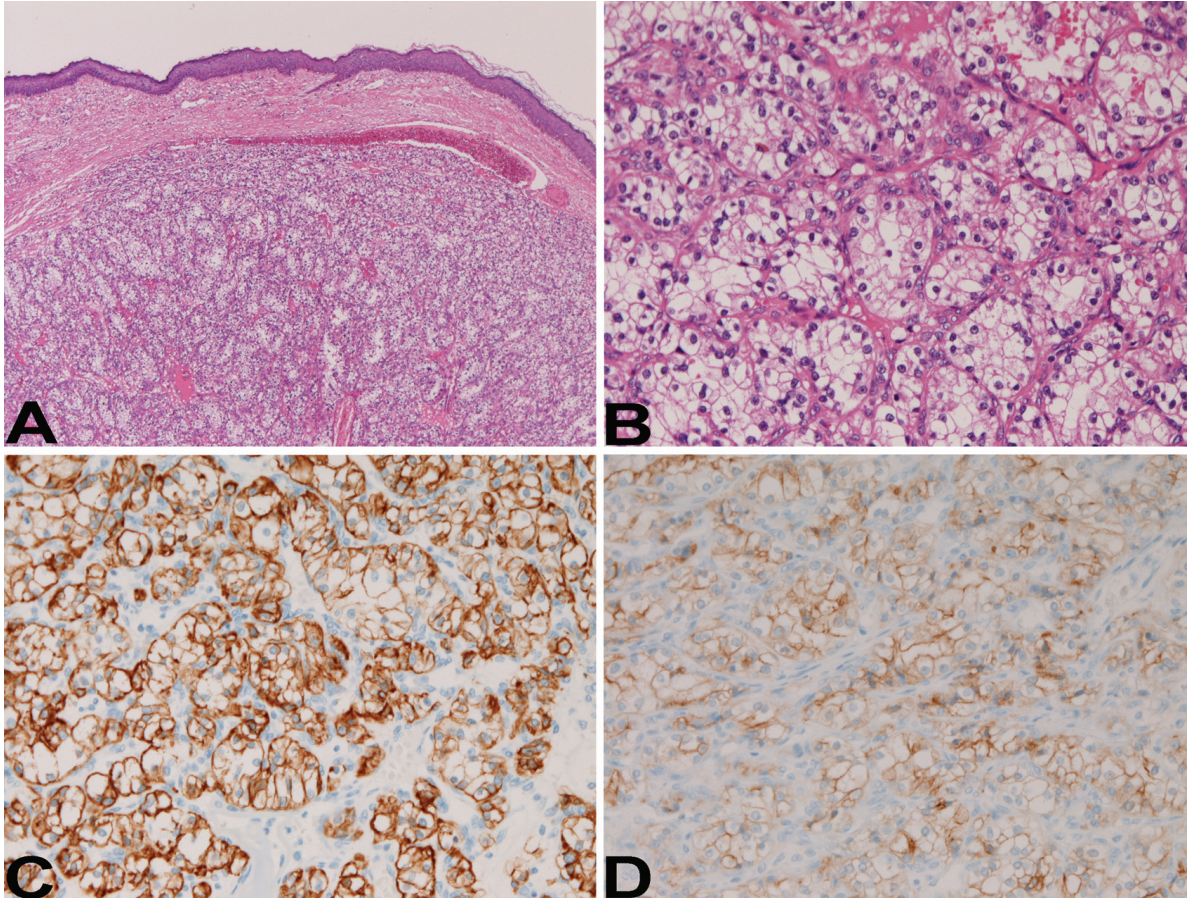
Metastatic renal cell carcinoma (RCC) of the skin is very rare. Patients with renal cell carcinoma (RCC) develop metastasis in approximately 30% of cases [1]. Common sites of metastasis of RCC are lungs, liver, bone, brain, and adrenal glands, but RCC can metastasize to any organs [1]. Metastatic RCC of the skin was very rare, and approximately 80 cases have been reported in the English literature [2]. Comprehensive studies of case series of cutaneous metastatic RCC have not been performed. On the other hand, cutaneous metastasis of visceral organs is a late event. In a large western study, only 77 cases were found to have cutaneous metastasis among 100,453 cases [3]. The primary sites of cutaneous metastasis of 72 cases were as follows; lung (29%), melanoma (18%), gastrointestinal tract (14%), RCC (6%),

genitourinary tracts other than RCC (4%), head and neck (9%), hematologic (5%), breast (5%), and others (2%) [3]. In contrast, in a large oriental study, no cutaneous metastasis of RCC was recognized [4]. Herein reported were two cases of RCC with cutaneous metastasis.

### Case reports

**Case 1:** A 75-year-old man presented with right lumbago, and consulted to a hospital. Imaging modalities including CT and MRI revealed a right renal tumor. Nephrectomy of the right kidney was performed. Pathological diagnosis of the renal tumor was RCC of clear cell type (Fuhrman's grade II). He denied follow-up. Nine years later, he (at the age of 84 years) was admitted to our hospital because of brain infarction. A physical examination revealed a neck skin tumor. Clinical diagnosis was hemangioma.

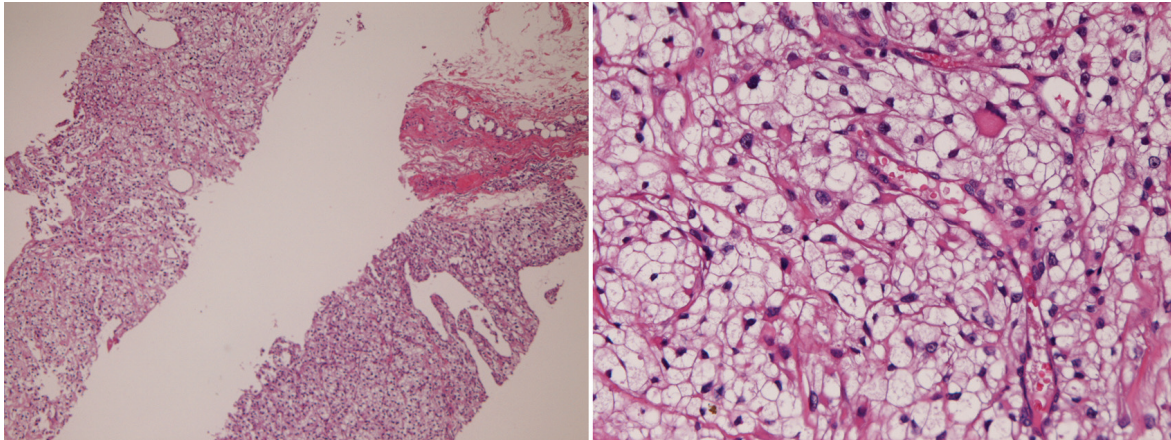
## Metastatic RCC in skin



**Figure 1.** Pathologic findings of case 1 (Excision). A. Low power view of the skin tumor. The tumor is medullary and composed of clear cells arranged in a trabecular and pseudoglandular pattern. HE:  $\times 40$ . B. High power view of the skin tumor. The tumor cells have clear cytoplasm. The nuclear atypia is mild. The blood sinusoids of the trabecular pattern is recognized. HE:  $\times 200$ . C. The tumor cells are positive for pan-cytokeratin. AE1/3. Immunostaining:  $\times 200$ . D. The tumor cells are positive for CD10. Immunostaining:  $\times 200$ .

Imaging modalities including CT and MRI showed several tumors in both lungs. The resection of the neck tumor was performed. The tumor was composed of clear cell type arranged in a trabecular pattern (**Figure 1A** and **1B**). An immunohistochemical study was performed with the use of Dako's EnVision Method, as previously reported [5, 6]. Immunohistochemically, the tumor cells were positive for pancytokeratins (AE1/3, CAM5.2) (**Figure 1C**), cytokeratin 18, CD10 (**Figure 1D**), Ki-67 (labeling=13%), but negative for CD34, factor-VIII-related antigen, CEA, EMA, melanosome (HMB45), S100 protein, p53, and HepPar-1. Metastatic RCC was diagnosed. Despite interferon therapy, he died of 6 months after the admission.

Case 2: A 66-year-old man was admitted to our hospital because of gross hematuria. Imaging modalities including CT and MRI revealed left renal tumor. A nephrectomy of the left kidney was performed. The pathological diagnosis was RCC of clear cell type (grade II). The tumor was invasive into the renal pelvis. He was treated by chemoradiation, but metastases of lungs, skin (thigh), and lib emerged, and died of cachexia 9 months after the admission. Necropsy of the skin tumor was performed. The skin tumor was composed of clear cells arranged in a trabecular pattern (**Figure 2A** and **2B**). Immunohistochemically, the tumor cells were positive for pancytokeratins (AE1/3, CAM5.2), CD10, p53, and Ki-67 (labeling=20%), but negative for CD34, factor-VIII-related antigen, CEA, melanosome



**Figure 2.** Pathologic findings of case 2 (necropsy). A. Low power view of the cutaneous tumor. The tumor is medullary and composed of clear cells arranged in a trabecular pattern. HE:  $\times 40$ . B. High power view of the cutaneous tumor. The tumor cells have clear cytoplasm. The nuclear atypia is mild. HE,  $\times 200$ .

(HMB45), S100 protein, and HepPar-1. A diagnosis of RCC (grade II) was diagnosed.

#### Discussion

Metastases of RCC may be found at diagnosis or at some interval after nephrectomy [1]. About 20-50% of patients with RCC will eventually develop metastasis after nephrectomy [1]. The prognosis of patients with metastatic RCC is worse. The pathological diagnosis of the present cases was relatively difficult. However, the characteristic clear cell RCC features were seen in HE section. Immunohistochemically, the tumor cells were positive for cytokeratins, indicating epithelial nature of the tumor. Although p53 was negative in case 1, Ki-67 labeling was relatively high, indicating malignant nature of the tumor cells in both cases. The CD10 positivity in both cases was indicative of metastatic RCC [7]. Melanoma was denied because the tumor cells were negative for S100 protein and melanosome (HMB45) in both cases. The tumor is not hepatocellular carcinoma, which also shows a trabecular pattern, because of HE histology and negative HepPar1 which is a marker of hepatocellular carcinoma. Vascular tumors were also denied because the tumor cells are positive for cytokeratins and negative for CD34 and factor VIII-related antigen. Clear cell adenocarcinoma of various organs was denied by positive CD10 and negative CEA. In the present case 1, the interval of nephrectomy for RCC and emergence of cutaneous metastasis was as long as 9

years. This 9 years' duration is long [4]. In general, metastasis after nephrectomy occurs within 5 years [8]. The development of metastasis depends on many factors. In the present study, the RCC is clear cell RCC and Fuhrman's nuclear grade was grade II in both cases. This type of RCC shows relatively lower possibility of metastasis [9]; however the present cases showed cutaneous metastasis 9 years after the nephrectomy in case 1 and 9 months after the nephrectomy in case 2. The findings in case 1 indicate that long term follow-up is needed in patients with RCC. The prognosis of patients with metastatic RCC is worse. The survival ranged from 10.2 months to 22 months [10, 11]. In the present cases also, the prognosis was worse.

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