

Vascular Nodule on the Upper Chest

Joshua Cantos, BS; Cynthia Serabyn, DO



A 45-year-old man presented to the dermatology clinic with a bleeding nodule on the upper chest of 2 months' duration. He had a history of a low-grade mucoepidermoid carcinoma of the left parotid gland that was diagnosed 14 years prior and was treated via parotidectomy with 1 positive lymph node removed. Two months prior to the current presentation, the patient presented to the emergency department with unintentional weight loss and fatigue and subsequently was diagnosed with clear cell renal cell carcinoma that was treated via radical nephrectomy.

At the current presentation, the patient denied any recent fatigue, fever, weight loss, shortness of breath, or abdominal pain but reported neck stiffness. Physical examination revealed a solitary, smooth, vascular, 1.5×1.5 cm nodule on the left upper chest with no overlying skin changes. The remainder of the skin examination was unremarkable. A shave biopsy of the nodule was performed.

WHAT'S YOUR DIAGNOSIS?

- a. basal cell carcinoma
- d. Kaposi sarcoma
- c. metastatic mucoepidermoid carcinoma
- d. metastatic renal cell carcinoma
- e. pyogenic granuloma

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Joshua Cantos is from Southern Adventist University, Collegedale, Tennessee. Dr. Serabyn is from the Department of Internal Medicine, Jerry L. Pettis Memorial Veterans Hospital, Loma Linda, California.

The authors have no relevant financial disclosures to report.

Correspondence: Cynthia Serabyn, DO, 11201 Benton St, Loma Linda, CA 92357 (clserabyn@gmail.com).

Cutis. 2025 March;115(3):E21-E23. doi:10.12788/cutis.1192

THE DIAGNOSIS: Metastatic Renal Cell Carcinoma

The shave biopsy revealed large cells with prominent nucleoli, clear cytoplasm, and thin cell borders in a nestlike arrangement (Figure 1). Immunohistochemical examination was negative for cytokeratin 5/6 and positive for PAX8 (Figure 2), which finalized the diagnosis of metastatic renal cell carcinoma (RCC). Later, our patient had a core biopsy-proven metastasis to the C6 spinous process, with concern for additional metastasis to the liver and lungs on positron emission tomography. Our patient's treatment plan included pembrolizumab and axitinib to manage further cutaneous metastasis and radiation therapy for the C6 spinous process metastasis.

Renal cell carcinoma denotes cancer originating from the renal epithelium and is the most common kidney tumor in adults.¹ Renal cell carcinoma accounts for more than 90% of kidney malignancies in the United States and has 3 main subtypes: clear cell RCC, papillary RCC, and chromophobe RCC.² About 25% of cases metastasize, commonly to the lungs, liver, bones, lymph nodes, contralateral kidney, and adrenal glands.³

Cutaneous metastasis of RCC is rare, with an incidence of approximately 3.3%.⁴ Notably, 80% to 90% of

patients with metastatic skin lesions had a prior diagnosis of RCC.² Skin metastases associated with RCC predominantly are found on the face and scalp, appearing as nodular, swiftly expanding, circular, or oval-shaped growths. The robust vascular element of these lesions can lead to confusion with regard to the proper diagnosis, as they often resemble hemangiomas, pyogenic granulomas, or Kaposi sarcomas.⁴

Many cutaneous metastases linked to RCC exhibit a histomorphologic pattern consistent with clear cell adenocarcinoma.² The malignant cells are large and possess transparent cytoplasm, round to oval nuclei, and prominent nucleoli. The cells can form glandular, acinar, or papillary arrangements; extravasated red blood cells frequently are found within the surrounding fibrovascular tissue.⁵ The presence of cytoplasmic glycogen can be revealed through periodic acid–Schiff staining. Other immunohistochemical markers commonly used to identify skin metastasis of RCC include epithelioid membrane antigen, carcinoembryonic antigen, and CD-10.¹

Various mechanisms are involved in the cutaneous metastases of RCC. The most common pathway involves infiltration of the skin directly overlying the malignant renal mass; additional potential mechanisms include the introduction of abnormal cells into the skin during surgical or diagnostic interventions and their dissemination

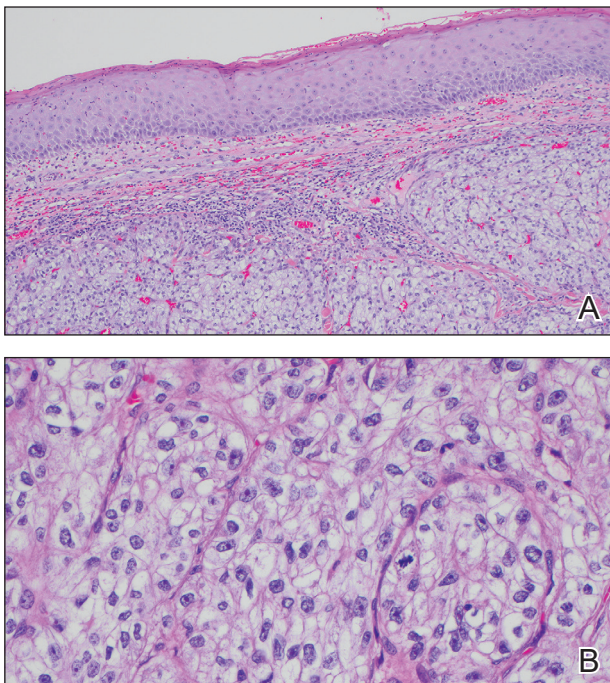


FIGURE 1. A and B, The biopsy specimen illustrated large tumor cells with clear cytoplasm and prominent nucleoli arranged in a nestlike pattern characteristic of renal cell carcinoma metastasis (H&E, original magnification $\times 10$ and $\times 40$).

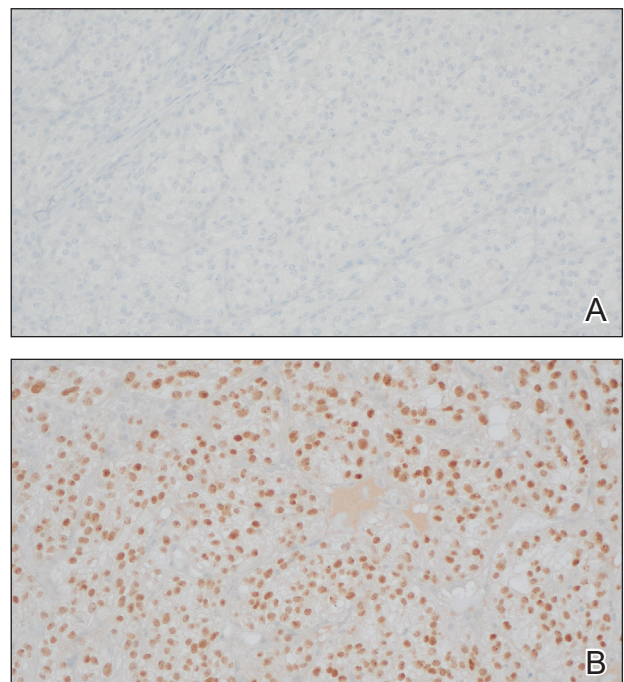


FIGURE 2. A and B, Immunohistochemistry showed CK5/6 negativity and PAX8 positivity, respectively (original magnification $\times 20$ and $\times 20$).

through the lymphatic system or bloodstream.¹ Among urogenital malignancies other than RCC, skin metastases predominantly manifest in the abdominal region.² Conversely, the head and neck region are more frequently impacted in RCC. The vascular composition of these tumors plays a role in facilitating the extension of cancer cells through the bloodstream, fostering the emergence of distant metastases.⁶

The development of cutaneous metastasis in RCC is associated with a poor prognosis, as most patients die within 6 months of detection.³ Treatment options thus are limited and palliative. Although local excision is an alternative treatment for localized cutaneous metastasis, it often provides little benefit in the presence of extensive metastasis; radiotherapy also has been shown to have a limited effect on primary RCC, though its devascularization of the lesion may be effective in metastatic cases.⁵ Immune checkpoint inhibitors such as nivolumab and ipilimumab have improved progression-free

survival in patients with metastatic RCC, though uncertainty remains regarding their efficacy in attenuating cutaneous metastasis.^{5,6}

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