

**Case Report**

Skin Mass as a Presenting Feature of Renal Cell Carcinoma: Need for High Index of Suspicion

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Abstract

Introduction: Renal cell carcinoma is the most common form of malignant renal tumor. Clinical presentation of Sarcomatoid Renal Cell Carcinoma (sRCC) varies widely and is dependent on the stage at which the diagnosis has been reached. At the time of diagnosis, about one-third of patients develop metastasis affecting the lung, lymphatic, liver, bone, contralateral kidney, adrenal glands, and brain.

Case Presentation: A 46 year old Hispanic female with no significant past medical history presents to the Emergency department with recurrent episodes of dizziness, difficulty breathing, dry mouth, weakness, and productive cough without blood. She initially presents with a rare initial dermatological finding related to her current condition.

Conclusion: Sarcomatoid Renal Cell Carcinoma is a rare variant of RCC with stage-dependent outcomes. Initial presentations may not be very obvious in suspicion of sRCC. However, in this particular case, the external findings happened to be the initial presentation, prompting further evaluation of the patient. Delving into the features of sRCC and maintaining all possibilities may allow future workup of the more common variants of RCC to be included in the investigation of sentinel lesions seen in the more rare variants.

Keywords: Renal cell carcinoma; Sarcomatoid; Cutaneous metastasis

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Consent: We confirm that the patient has given the informed consent for the case report to be published.

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Introduction

Renal cell carcinoma is the most common form of malignant renal tumor, it accounts for 3% of all adult malignancies and it is extremely lethal. Variations of presentation of sarcomatoid Renal Cell Carcinoma (sRCC) depend on the stage of diagnosis. About one third of patients at the time of diagnosis develop metastasis affecting the lung, lymphatic ganglions, liver, bone, contralateral kidney, adrenal and ipsilateral glands, and brain skin metastases. However metastasis from RCC to the skin is much less common. [1, 2]. Sarcomatoid renal cell carcinoma is a form of dedifferentiated carcinoma, seen in high-grade renal cell carcinoma. Here, a patient presents with a less common variant in which the metastasis appears to have initiated as a dermatological finding.

Case Presentation

A 46 year old female with no past medical history presents to the ED with recurrent episodes of dizziness, dyspnea, xerostomia, dry lips, generalized weakness, and productive non-bloody cough. Five months prior to admission she noticed a small painless mass on her right shoulder, which she attributed to consequence of her rigorous weight training. One month later, she noticed that the mass increased in size. She was had insomnia, loss of interest, low energy, loss of concentration, loss of appetite, and irritability. Three months after the initial mass, she noticed three more masses. First one on her left posterior hip, second on the sole of her right foot, and last one in her right axillary area. Her vital signs: temperature: 98.4^oF, RR 18/min, HR 90/min, and BP 110/70mmHg. Laboratory studies showed hemoglobin 7.9 g/dL, hematocrit 25.8%, platelets 568x10³ per μ L, MCV 63.1fL, BUN 29mg/dL, Creatinine 1.7 mg/dL, calcium 17.9 mg/dL, and Alkaline Phosphatase 367 U/L. Physical exam revealed a left upper arm mass, a right supraclavicular mass, bilateral breast masses, a left hip swelling and tenderness and right sole of the foot soft tissue mass (Figure 1 & 2). Chest x-rays showed suspicion of metastatic lesions in the lungs. Patient was admitted to the ICU for hypercalcemia. Bone density scan was performed which was negative for any osteolytic lesions however, CT scan of abdomen pelvis showed mass in the upper pole of the left kidney (Figure 3) as well as a breast ultrasound verifying a 2.9 cm mass in the right breast axillary area. Incisional biopsy was performed which showed sarcomatoid renal clear cell carcinoma with metastasis (Figure 4, 5& 6).



Figure 1



Figure 2

Figure 1 showing Initial presenting mass on Right Shoulder. **Figure 2** showing second mass on Left Arm



Figure 3 CT scan of abdomen pelvis showing mass in the upper pole of the left kidney.

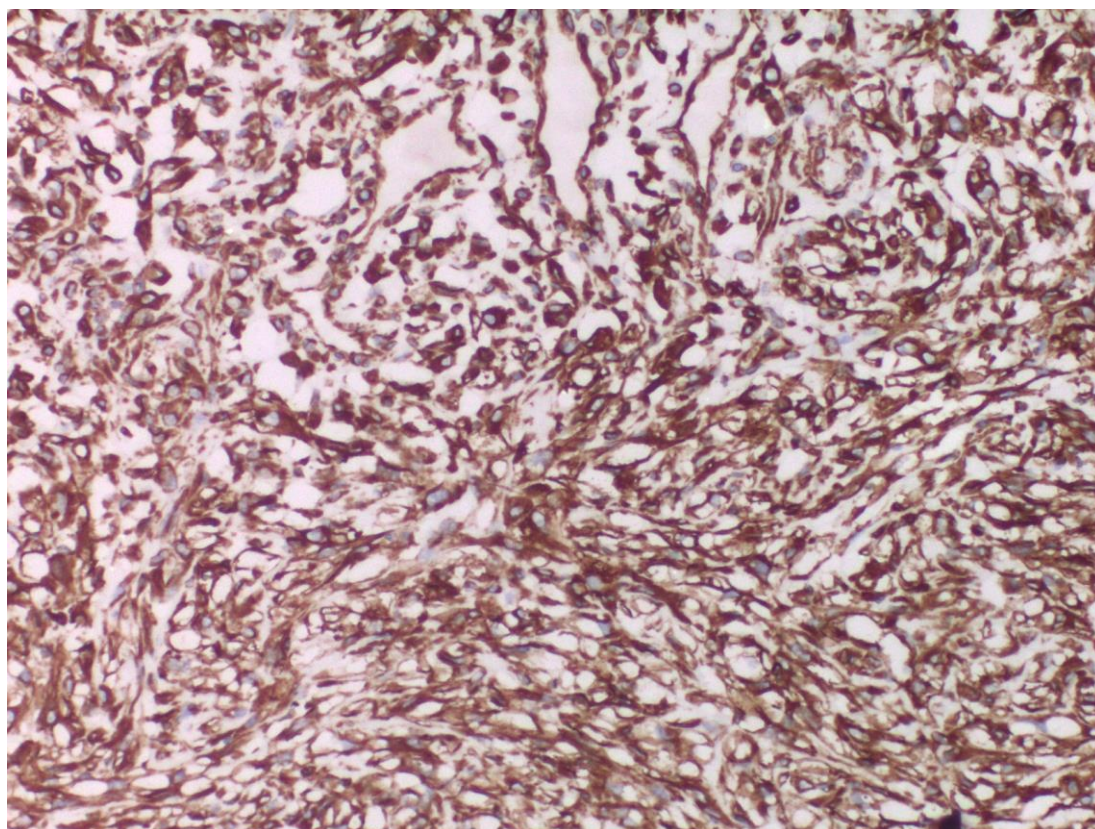


Figure 4 showing Immunohistochemical stain Positive for Vimentin.

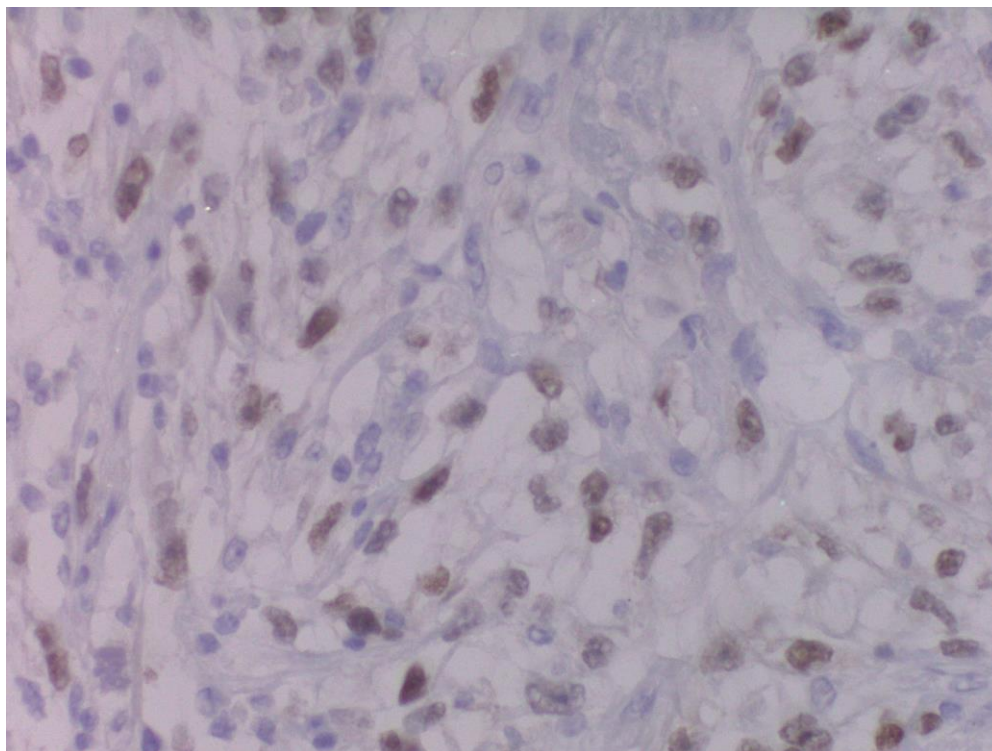


Figure 5 showing Immunohistochemical stain positive for PAX 8.

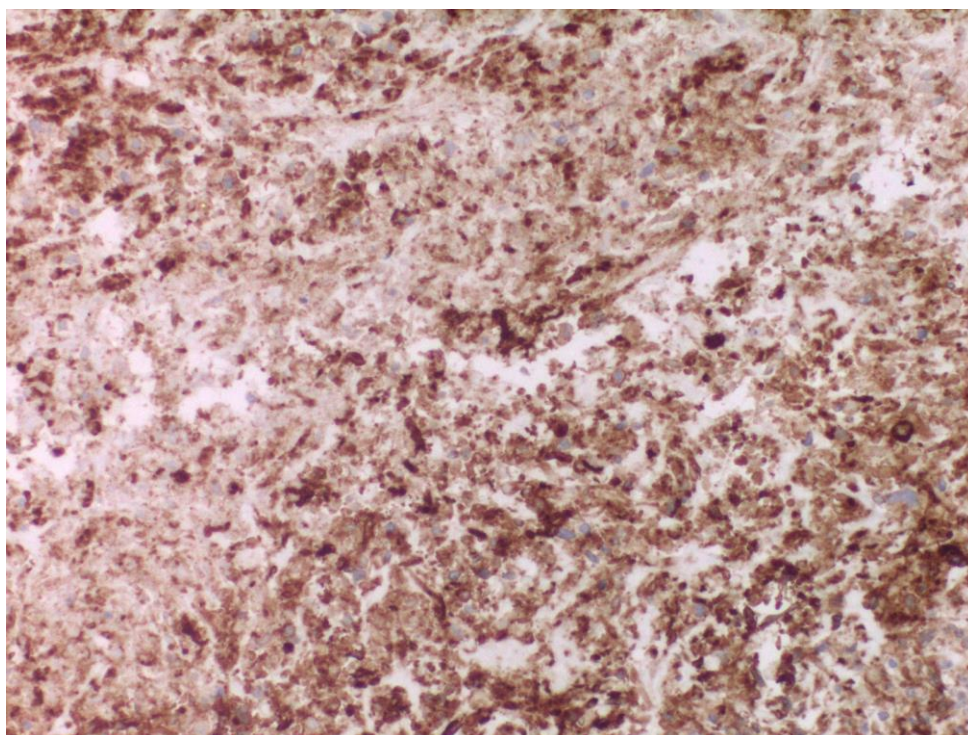


Figure 6 showing Immunohistochemical stain positive for CD 10.

Discussion

Sarcomatoid renal cell carcinoma is an uncommon, but not rare, neoplasm consisting of typical renal cell carcinoma associated intimately with sarcomatoid component. It is important to note that sarcomatoid renal cell carcinoma is no longer considered a separate tumor type because it can occur with all histologic subtypes. Additionally, according to the World Health Organization, of all the renal cell carcinoma's, the clear cell histologic subtype is by far the most common, comprising 70% of all cases [3]

Although accounting for only 5% of RCCs, the aggressive nature and advanced stage of presentation makes sarcomatoid RCC fairly common to practitioners who manage patients with metastatic disease. Researchers later termed sarcomatoid characteristics the “final common dedifferentiation pathway” for renal tumors [4].

The clinical presentation of kidney cancer varies widely and is dependent on the stage at diagnosis. In most published series, sarcomatoid tumors are usually extremely large, with a mean size of 9 –10 cm, and 90% are symptomatic at presentation. The incidence of metastatic disease is extremely high at presentation, with 45%– 84% having evidence of systemic disease. Metastases occur at similar locations as with other renal tumors, with the most common sites of distant disease being the lungs, bone, nodes, liver, and brain, respectively. One series did report a high incidence of bone metastases, but a recent series showed a similar 29% rate of bone involvement for sarcomatoid RCCs and nonsarcomatoid RCC. A significant laboratory abnormality was microscopic hematuria [4], to which our patient was absent of at the time of admission.

The classical signs of RCC, including hematuria, flank pain, and a palpable abdominal mass, are detected in only 10% of RCC cases. Consequently, most cases are diagnosed during examination for other causes or by the appearance of metastatic lesions. The breast is an unusual site for metastasis from renal cell carcinoma. The reported cases have been of the classic clear cell type. However, sarcomatoid renal cell carcinoma can occur and in theory could present as a metastatic. Cutaneous metastasis in RCC is rare; accounting for between 1 and 3% of all metastases incidence. The most usual location of skin metastases in these patients is the scalp, face, and trunk and they are usually single lesions that grow rapidly, are bluish-red in color and sometimes pulsating, differential diagnosis performed macroscopically is necessary. Surprisingly, all reported cutaneous metastasis cases associated with RCC have occurred high in males [1, 5]. In certain cases diagnosis of this condition is made at a late stage of the disease when the cancer is widespread and has metastasized in different areas of the body. In most of the cases published regarding patients with RCC, the development of skin metastases takes place within six months to five years of the initial diagnosis and after performing the nephrectomy, except in some cases in which RCC has been diagnosed after removing the skin lesion. We should highlight the importance of a precise histological diagnosis to permit the correct identification of the skin lesion in order to complete an extension study, since in up to 75% of cases; concomitant organic metastases develop [1].

The pathological studies indicated that our patient's tumor cells are immunoreactive to vimentin, CD10, PAX8 and beta-catenin, focal positive to EMA, MUC-1, FLI-1, CD99, SMA and Factor VIII; they were negative to RCC, PAX2, CK7, s100, MYOD-1, myogenin, CD57, CD34, CD31, CD117, ER, Inhibin, HMB-45 and Melan-A.

The common sites for skin metastases were the trunk (40%), followed by the scalp (25%) and face (8%); of whom 24% had skin metastases at the time of diagnosis. A large Indian study, reviewing a total of 306 patients with RCC seen over a 12-year period found only 10 cases (3.3%) with skin metastasis, of whom, half of the patients presented with skin metastasis during follow-up after nephrectomy. In only one case the skin nodule was actually the presenting symptom [6]. Our patient had skin metastases as presenting complaint. Other authors have reported single cases. Skin metastasis is considered as a poor prognostic factor for survival. Metastasis at the time of diagnosis frequently occurs in RCC, with the skin not infrequently involved. Clinicians should be aware of the possibility of primary malignancy in patients presenting with cutaneous lesions, therefore a careful examination of the skin is required in patients with RCC. Prompt diagnosis and treatment may affect outcome [2].

Tumor-related growth factors, such as parathyroid-related protein and truncated fibronectin growth-promoting substance, may also play an important role in the localization of cutaneous metastasis in this region. RCC-related cutaneous metastasis often presents as a solitary, shiny skin lesion that is red-to-purple in color. In some cases, however, the lesions are scattered, plaque-like, or nodular. The rich vascular component of cutaneous metastasis in RCC may cause clinical confusion with hemangiomas, pyogenic granulomas, and Kaposi's sarcoma. The morphological appearance of the lesion's surface can also imitate cutaneous cysts, cutaneous horns, lymphomas, or abscesses. RCC has been diagnosed through cutaneous metastasis when the primary tumor was too small to be detected or had an involution. [5]

The differential diagnosis of metastatic skin lesions may raise important clinical and histopathological issues. The detection of the disease's primary focus and histopathological analysis are important when making decisions about treatment. Cutaneous metastasis in RCC is often characterized by intradermal nodules with a thin dermal tissue space between the epidermis and the tumor tissue [5, 6, and 7].

The sarcomatoid variant of renal cell carcinoma is very aggressive; many clinical trials are using chemotherapy drugs as a treatment. Some of these include a treatment trial at Dana Farber Cancer Institute and Beth Israel Deaconess Medical Center where sunitinib in combination with gemcitabine are being used in patients with either sarcomatoid histology or poor-risk features. Another clinical trial at MD Anderson Cancer Center involving bevacizumab, capecitabine, and gemcitabine is under investigation. However, understanding sRCC will lead to better and more specific therapies [3].

Abbreviations

sRCC, Sarcomatoid renal cell carcinoma; RCC, Renal Cell Carcinoma

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