

Renal Cell Carcinoma Presenting as Cutaneous Metastasis- A Case Report

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ABSTRACT

Renal cell carcinoma (RCC) is recognized as an aggressive malignancy that often spreads to distant sites, including the lungs, lymph nodes, bones, liver, and brain. While cutaneous metastasis is rare and has only been documented in a few cases in medical literature, we present the case of a 55 year-old male patient with RCC. Patient was having cutaneous lesion from past 4 months and was a known case of RCC. His treatment approach included surgical removal of the skin lesions and a systemic therapy regimen using sunitinib.

KEYWORDS: RCC, Cutaneous Horn, skin metastasis

INTRODUCTION

Visceral organ malignancies infrequently present with cutaneous metastasis. Cutaneous metastasis develops in 5–10% of high-stage cancer patients, most frequently in association with breast, lung, colon, ovarian, and metastatic malignant melanomas [1]. Although cutaneous metastases rarely develop in cancers of the urogenital system, they can occur in renal cell carcinomas (RCCs). Comprising about 90% of all renal tumors, RCCs are characterized by potential metastatic extension foci in the lymph nodes, lungs, liver, opposite kidney, adrenal glands, brain, and bone [2]. The development of RCC-related cutaneous metastasis in the head and neck region is unusual, given the distance from the anatomical localization and the lymphohematogenous extension pathways of the tumor [3].

The RCC case presented here was cutaneous metastasis in the chin. Such a presentation is rare, and its features are discussed in the context of currently available clinical and histopathological knowledge that informed the differential diagnosis.

CASE REPORT

A 55 year old male patient, who was diagnosed with Renal cell carcinoma 4 years back, was not on any treatment, presented with growth over the chin since 4 months, which started as small nodule of 1cm size but has now progressed in horn like manner of length approximately 5cm. Similar lesion was seen on the scalp which patient has noticed 1 month after the 1st lesion. Patient was diagnosed with RCC 4 years back but because of small size of tumour, he opted for conservative treatment. He missed his follow ups for past 3 yrs because of Covid 19 outbreak and presented to OPD with the complain of skin lesion. During these 3 yrs, patient had 2 episodes of hematuria which lasted for 2-3 days. History of weight loss is present. History of loss of appetite is present. On examination pallor is present, cervical lymphadenopathy is seen, per abdomen shows a palpable lump in right flank region extending to right hypochondrium and right iliac region of size 8x10cm.

Biopsy of lesion was done and it showed adenocarcinoma. CECT abdomen showed a hypoechogenic hyper vascular mass of size 14x12x11 cm was present on upper pole of right kidney infiltrating surrounding structures, large intestine, gall bladder, liver and extension of venous thrombosis in ivc below diaphragm. Skin lesion was excised. Urology and oncology opinion was taken and patient was started on sunitinib therapy, surgery deferred in view of locally advanced tumour.



Picture showing cutaneous horn in a patient of RCC.



Post operative picture of patient, after wide local excision of Skin metastatic lesion and transposition flap was performed.

DISCUSSION

Renal cell carcinoma (RCC) accounts for a small percentage, specifically 2-3%, of all malignancies in adults. The classic symptoms of RCC, such as hematuria, flank pain, and a palpable abdominal mass, are observed in only 10% of cases. Consequently, most cases are diagnosed either incidentally during examinations for unrelated issues or when metastatic lesions become apparent [2, 3]. Cutaneous metastasis in RCC is a rare occurrence, with an incidence of only 3.4%. Interestingly, all documented cases of cutaneous metastasis associated with RCC have been in males [4, 5]. Our findings support previous indications that the likelihood of cutaneous metastasis in RCC is higher in males [2–5].

Various mechanisms can lead to cutaneous metastases in visceral malignancies. The most common route involves direct invasion of the skin tissue covering the malignant mass. Other potential mechanisms include the implantation of cancer cells into the skin during surgical or diagnostic procedures, as well as lymphatic or hematogenous spread [1]. In non-RCC urogenital malignancies, cutaneous metastasis typically occurs in the abdominal region [3–5]. In contrast, RCC tends to affect the head and neck region

more frequently. The extensive vascular structure of these tumors facilitates hematogenous spread and the development of distant metastases. The primary hematogenous route in RCC involves the right atrium, through the vena cava, following the renal vein, eventually affecting the lungs. Arteriovenous and systemic shunts are thought to aid the tumor's journey to the head and neck region by bypassing lung filtration. Tumor-related growth factors, such as parathyroid-related protein and truncated fibronectin growth-promoting substance, may also play a significant role in the localization of cutaneous metastasis in this region [6–9]. In the present case, the postauricular metastatic lesion, containing a vascular-rich tumor tissue, suggests that lymphohematogenous spread was likely. This case may also have followed the previously described pathway in which the primary tumor invades the vertebral veins or Batson's plexus, allowing tumor cells to reach the head and neck region via intracranial venous pathways.

Cutaneous metastasis related to RCC often presents as a solitary, shiny skin lesion with a red-to-purple coloration. However, in some instances, these lesions may appear scattered, plaque-like, or nodular. The substantial vascular component of cutaneous metastasis in RCC can sometimes be confused clinically with conditions like hemangiomas, pyogenic granulomas, and Kaposi's sarcoma [3–5, 10]. The surface morphology of the lesion can also resemble cutaneous cysts, cutaneous horns, lymphomas, or abscesses [11–15]. In cases where the primary tumor is too small to be detected or is undergoing involution, RCC has been diagnosed through cutaneous metastasis [8, 16]. In the present case, the postauricular RCC metastasis was initially clinically diagnosed as a skin adnexal tumor. However, a systemic examination of the patient revealed multiple masses consistent with metastasis in the left adrenal gland, paraaortic region, and iliac bone.

The differential diagnosis of metastatic skin lesions can pose significant clinical and histopathological challenges. Identifying the primary source of the disease and conducting histopathological analysis are crucial for determining appropriate treatment. Cutaneous metastasis in RCC often presents as intradermal nodules with a thin dermal tissue space between the epidermis and the tumor tissue [3–5]. Since epidermotropic metastasis is exceptionally rare in non-melanocytic primary tumors, a punch or excisional biopsy is necessary for accurate diagnosis. A shave biopsy may not be sufficient, as it may miss dermal involvement. In our case, the metastatic lesion was primarily localized in the dermis, with uninvolved dermal tissue beneath the epidermis [7–9]. The tumor also infiltrated the subcutaneous tissue in patches. Complete excision of the lesion allowed for comprehensive histomorphological examination and provided ample tissue samples for an extensive immunohistochemical survey.

Most RCC-related cutaneous metastases, including the case described here, exhibit a histomorphological appearance consistent with clear-cell adenocarcinoma [3]. Typically, the tumor cells are large, with translucent cytoplasm, round-to-oval nuclei, and prominent nucleoli. These cells may form glandular, acinar, or papillary structures, often accompanied by extravasated erythrocytes in the fibrovascular stroma. Cytoplasmic glycogen can be detected with PAS staining [5–9]. The primary histological differential diagnosis is a skin appendage tumor. Benign and malignant sebaceous tumors, eccrine acrospiromas, malignant melanomas with translucent cell features, and soft-tissue sarcomas must be ruled out. In cases involving metastases in the head and neck region, consideration should also be given to salivary gland tumors and odontogenic tumors. Positive immunoreactions of neoplastic cells with cytokeratin, EMA, vimentin, and CD10 contribute to the histomorphological diagnosis of RCC. Given the tumor's histomorphological and immunohistochemical features, the differential diagnosis of other lesions was ruled out, leading to the diagnosis of metastatic RCC [12–19].

The development of cutaneous metastasis in RCC is associated with a poor prognosis, with most patients succumbing within 6 months of detecting cutaneous metastasis. Consequently, treatment options are limited and primarily palliative. While local excision may be considered for localized cutaneous metastasis, it often provides limited benefit due to the presence of extensive metastasis. Although radiotherapy has a limited impact on primary renal cell carcinoma, it may be effective in devascularizing metastatic lesions [2]. In the case presented here, extensive metastasis led to a referral to the medical oncology department, as it was categorized as advanced-stage RCC.

Although rare, cutaneous metastasis can be a significant manifestation of RCC. Given that these lesions can mimic other dermatological conditions, a histopathological assessment of biopsied samples containing sufficient dermal tissue is essential for an accurate diagnosis. When encountering tumors with translucent cell morphology localized in the head and neck region, RCC should be considered in the differential diagnosis.

CONCLUSION

Metastasis frequently occurs in RCC, with the uncommon skin site, and can imitate other dermatological diseases. It is also associated with poor prognosis. The development of this cutaneous metastasis worsens the clinical prognosis and reduces life expectancy. The new targeted therapy used in the treatment of metastatic RCC, especially cutaneous metastasis may ameliorate the prognosis.

Conflict of interest No competing or financial interests

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