Journal of Surgery
Ibrahim A, et al. J Surg 8: 1872
www.doi.org/10.29011/2575-9760.001872
www.gavinpublishers.com
Case Report

Skin Metastasis of Renal Cell Carcinoma Resembling Neurofibromatosis

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Citation: Ibrahim A, Taha SM, Ibrahim N, Mohamed ME (2023) Skin Metastasis of Renal Cell Carcinoma Resembling Neurofibromatosis. J Surg 8: 1872 DOI: 10.29011/2575-9760.001872

Received Date: 02 August, 2023; **Accepted Date:** 16 August, 2023; **Published Date:** 18 August, 2023

Abstract

Skin metastasis from RCC is an infrequent manifestation and is often associated with poor prognosis. We describe a case of a 40-year-old, female patient who presented with multiple cutaneous nodules. The diagnosis of sarcamoid RCC at the stage of T2bNxMx, and the nodules were confirmed as deposit from this renal tumor. This was based on the histopathological, and immunohistochemical examinations. This case report presents a rare occurrence of skin metastasis originating from Renal Cell Carcinoma (RCC). Management strategies and the current literature on skin metastasis of RCC are discussed.

Keywords: Immunohistochemistry; Prognosis; Renal cell carcinoma; Skin metastasis

Introduction

Renal cell carcinoma is a common malignancy of the kidney, often characterized by its propensity to metastasize to various distant sites. Skin metastasis in RCC is an infrequent occurrence, accounting for approximately one percent of cases [1]. Although skin metastasis is typically associated with advanced disease and poor prognosis, its recognition remains crucial for appropriate management and improved patient outcomes. Owing to the clinical and evolutive particularities of the RCC, 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. The development of skin metastases accounting for between 1 and 3% of all metastases. The most usual location of skin metastases in these patients is the scalp and face, and they are usually single lesions that grow rapidly, are bluish-red in colour and sometimes pulsating [2,3], differential diagnosis performed macroscopically is necessary to rule out angioma, cutaneous horns, basal cell carcinoma and microscopically to rule out xanthoma, xanthelasma, sebaceous adenoma, sebaceous carcinoma, sebaceous epithelioma, balloon cell nevi, clear cell hydro adenomas and other skin pathologies characterised by the presence of clear cells [4,5].

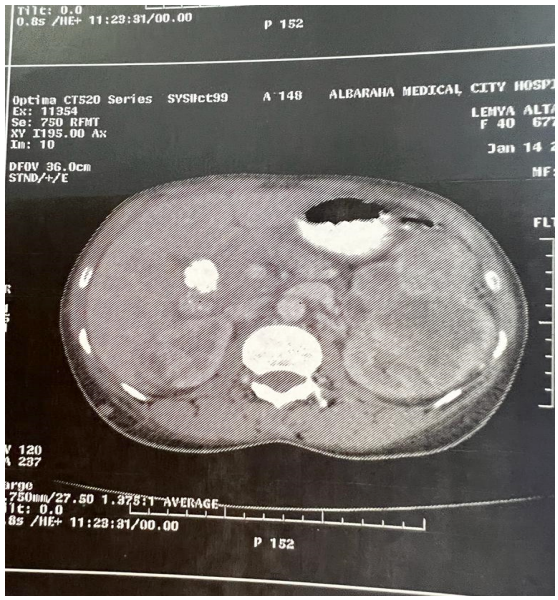
Case Presentation

This case report presents a rare occurrence of skin metastasis originating from Renal Cell Carcinoma (RCC). Skin metastasis from RCC is an infrequent manifestation and is often associated with poor prognosis. We describe a case of a 40-year-old female, patient who presented with multiple cutaneous nodules and presented to the dermatologist who used initially to diagnose her as a case of paniculitis for which she received treatment in vain ,after that the nodules progressively increased in size and there were no lower urinary tract symptoms or hematuria nor loin pain, Searching ultrasound revealed left loin mass followed by contrast CT of the abdomen which showed a heterogeneous enhancing with no lymph node enlargement and the other kidney was normal. The renal tumors and the skin nodules were removed .The diagnosis of

sarcamoid RCC at this stage was T2bNxMx, and the nodules were confirmed as deposit from this renal tumor. This was based on the histopathological, and immunohistochemical examinations. Management strategies and the current literature on skin metastasis of RCC were discussed.

Diagnostic Workup

The histopathological analysis revealed infiltrating tumor cells within the dermis, exhibiting clear cytoplasm and distinct cell borders. Immunohistochemical staining was positive for markers consistent with RCC, including CD10, CA-IX, and PAX-8, confirming the diagnosis of cutaneous metastasis from RCC. Additional investigations, including radiological imaging (e.g., computed tomography, magnetic resonance imaging), were conducted to evaluate the extent of metastasis.



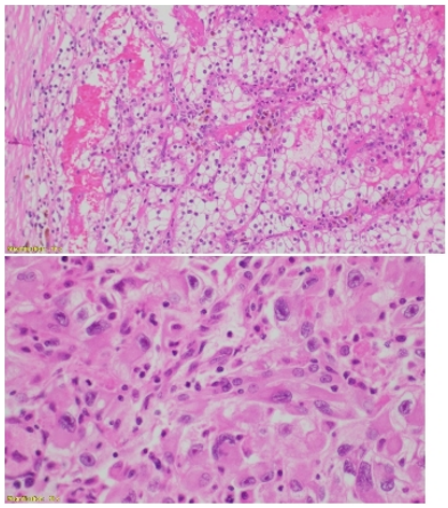


Figure 1: Left: Area of clear cell carcinoma showing trabeculae of cells with clear cytoplasm; Right: Show foci of poorly differentiated sarcomatoid foci.. H&E x 40.

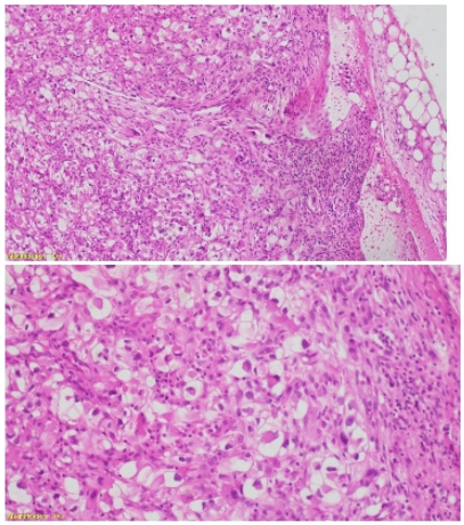
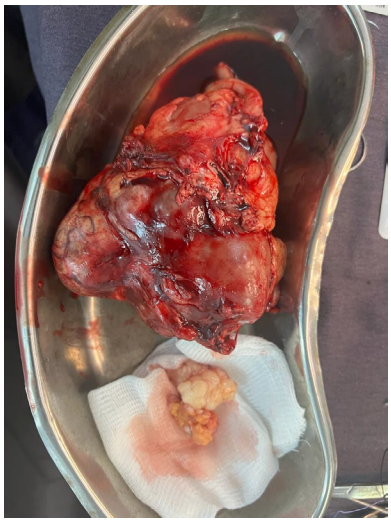


Figure 2: Left show metastatic neoplastic cell in the subcutaneous adipose tissue. H&E x20; Right: Show metastatic neoplastic cells in the subcutaneous adipose tissue. H&E x40.



Treatment and Outcome

Considering the presence of skin metastasis along with evidence of systemic RCC dissemination on imaging, the patient's case was discussed in a multidisciplinary tumor board. A tailored treatment plan was formulated, including targeted therapy with tyrosine kinase inhibitors, and close monitoring for disease progression. However, despite aggressive management, the patient's condition still progressing.

Discussion

RCC is the most common malignant tumor of the adult kidney, accounting for 3.8% of all new cancers [1]. Renal Cell Carcinoma (RCC) is known for its propensity to metastasize to various organs. However, cutaneous metastasis from RCC is considered an unusual presentation. Here, we present a case study highlighting the clinical and pathological features of skin metastasis originating from RCC. RCC skin metastasis reportedly accounts for around 3% of all skin metastatic tumors and has shown a relatively favorable outcome in solitary cases [6]. Skin metastases are classified into several patterns, including nodule pattern, inflammatory pattern, and stiffness pattern, and non-pain nodule pattern is major [6]. The present case showed a non-pain nodule pattern.

Eighty-five percent of metastatic RCC cases developed within 3 years, and the other 15% of cases were reported from 3.4 to 11.4 months from initial nephrectomy [7]. The pathophysiology underlying RCC's affinity for cutaneous dissemination remains uncertain. Various hypotheses, including lymphatic and hematogenous spread, direct invasion, and implantation during surgical procedures, have been proposed. Diagnosis of skin metastasis is primarily based on histological examination, immunohistochemistry, and correlation with clinical findings. Prompt recognition and accurate diagnosis are vital, as skin metastasis from RCC often indicates advanced disease and may warrant a modification in management strategies.

The rich vascular structure of RCCs facilitates hematogenous extension and the development of distant metastases. The most important hematogenous extension route in RCC is the vena cava system, which leads to the lung. Arteriovenous and systemic shunts are thought to facilitate the tumor cells' path to the head and neck region. Tumor-related growth factors such as parathormone-related protein and truncated fibronectin growth factor may play a role in the localization of cutaneous metastasis in this region [8]. The differential diagnoses of cutaneous RCC metastatic lesions are: sebaceous carcinoma, sweat gland tumor, and melanoma [9]. Renal cell carcinoma cutaneous metastasis is known to have a vascular appearance [10] Skin metastasis from RCC is a rare entity that poses diagnostic challenges and signifies an advanced stage of the disease. Early recognition of cutaneous metastasis is crucial for appropriate management and patient prognosis. Further studies are warranted to enhance the understanding of the underlying mechanisms and potential therapeutic targets for this rare manifestation of RCC.

The development of cutaneous metastasis in RCC is associated with poor prognosis and most patients die within 6 months of metastasis detection. Therefore the treatment options are limited and mostly palliative [11]. In Sudan the late presentation due to many factors like poverty, ignorance and missed diagnosis may result in the advanced presentation and poor prognosis [12]. Two points are worth mentioning in our patient: First of all, the cutaneous metastasis heralded the detection of visceral metastasis of RCC. This further emphasizes the role of skin examination in the follow-up of known patients with this malignancy. On the other hand, despite the known poor prognosis of patients with RCC metastases, our patient is still surviving at the time of this report. This may be partly due to the role of the new drugs used in this setting. Therefore, it is important to consider RCC metastasis in the differential diagnosis of new onset nodules, ulcers, or tumors with a vascular appearance in the head and neck, especially in a patient with a past medical history of renal tumor [11].

Conclusion

Skin metastasis in renal cell carcinoma remains a challenging clinical entity, requiring vigilance in diagnosis and appropriate management. Recent studies have shed light on the clinical presentations, diagnostic tools, and treatment options for skin metastasis in RCC. The advancements in targeted therapies and immunotherapies provide hope for improved outcomes in patients with this rare manifestation of RCC. Further research is warranted to explore novel therapeutic approaches and deepen our understanding of the pathophysiology underlying skin metastasis in renal cell carcinoma.

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