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Basal Cell Carcinoma Metastatic to the Kidney: A Case Report

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ABSTRACT

Metastases to the kidney are uncommon and usually seen in the setting of widespread disease. Furthermore, these metastases are usually clinically silent and therefore often detected only on autopsy. The most common primary sites are, in descending order, the lung, breast, and gastrointestinal tract. Basal cell carcinoma (BCC) rarely metastasizes; however when BCC does metastasize, the lung and bone are the most likely sites of involvement. BCC metastatic to the kidney is an extremely rare occurrence, with only several cases reported in the literature. The present case is a 61-year-old female with past medical history of BCC, who presented with a right gluteal mass and had an irregular hypodensity in the left kidney. Biopsy of the renal lesion showed tumor cells morphologically identical to the patient's prior BCC, and subsequent immunohistochemical findings were consistent with BCC.

INTRODUCTION

Metastases to the kidney are uncommon and almost always associated with widespread disease [1]. Furthermore, renal metastases are usually clinically silent and often detected only on autopsy [1,2]. Basal cell carcinoma (BCC) metastatic to the kidney is an extremely rare occurrence, with only several cases reported in the literature [3,4].

CASE REPORT

Clinical Summary

A 61-year-old female presented to the emergency department with a several-month history of severe low back pain and a right buttock mass. The patient is a heavy smoker (65 packyears) but not otherwise immunodeficient, and her past medical history is significant for extensive BCC of the face. The BCC was treated more than 3 years prior with wide local excision, including craniofacial resection, and adjuvant radiation. Follow-up computed tomography (CT) of the head, performed 10 months after BCC resection, showed no tumor recurrence. In the emergency department on the current visit, CT scan showed a 6.0 cm x 9.0 cm necrotic mass lesion in the right gluteus, as well as an irregular hypodensity in the left kidney that was concerning for a metastatic lesion (Figure 1a; Figure 1b).

Pathological Findings

A CT-guided core biopsy was obtained from both the left renal mass and the necrotic gluteal mass. Cytologic examination was positive for BCC from both sites. The tumor cells from the renal lesion were morphologically identical to the patient's prior BCC of the face (Figure 2a through Figure 2d). In both sites, tumors cells form infiltrative narrow strands surrounded by dense fibrous stoma. By immunohistochemistry, the tumor cells isolated from the kidney lesion were focally positive for the p53 homolog p63, negative for epithelial membrane antigen, and weakly/focally positive for BerEP4. These findings were consistent with BCC.

Treatment

Given the patient characteristics and the poor prognosis for distant metastatic BCC, the decision was made not to pursue aggressive therapy with curative intent. Palliative care was initiated.

KEYWORDS: Kidney; Metastases; Basal cell carcinoma

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Abbreviations and Acronyms

BCC = basal cell carcinoma

CT = computed tomography

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Figure 1a. Computed Tomography Image of the Lesion in the Right Gluteus.
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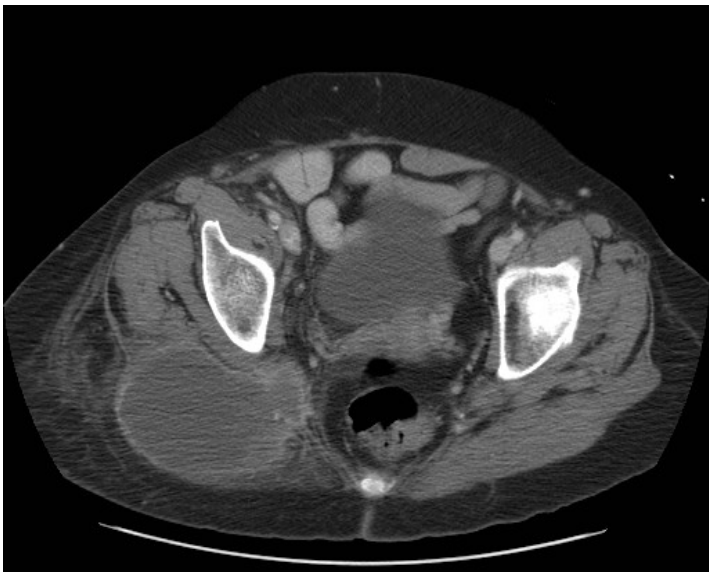

Figure 1b. Computed Tomography Image of Irregular Hypodensity in the Left Kidney.
doi: 10.3834/uij.1944-5784.2010.08.14f1b

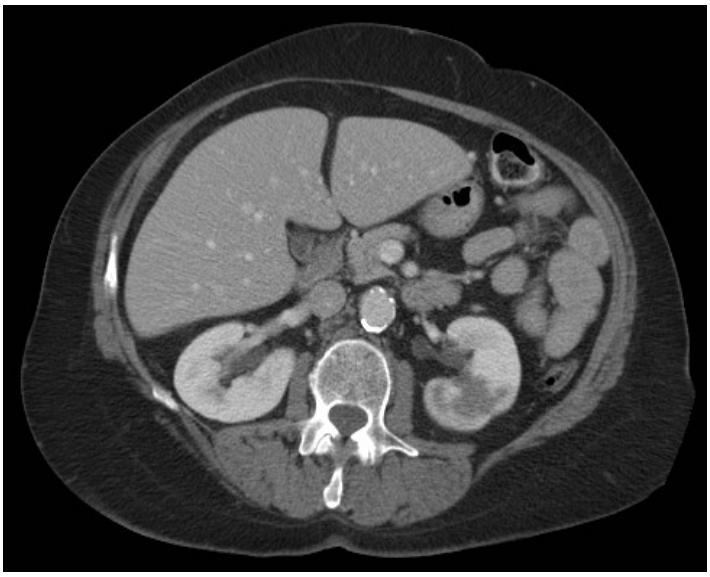

Figure 2a. Original Facial Lesion Biopsy (Hematoxylin and Eosin Stain, 40x).
doi: 10.3834/uij.1944-5784.2010.08.14f2a

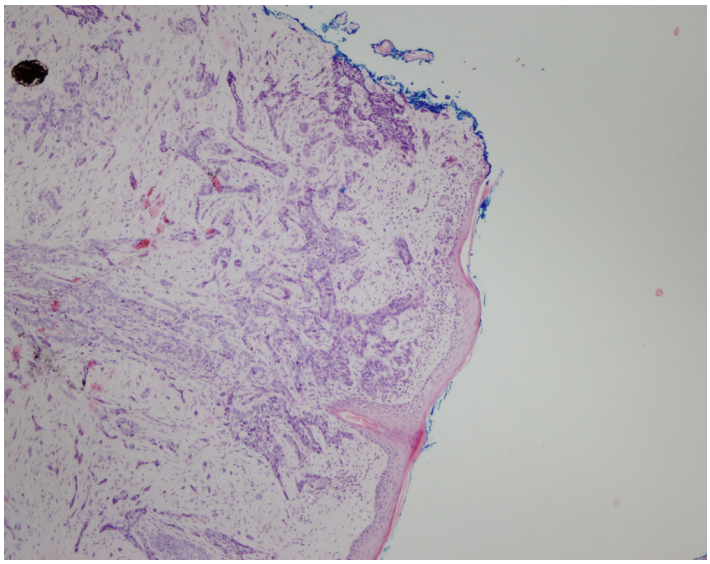

Figure 2b. Original Facial Lesion Biopsy (Hematoxylin and Eosin Stain, 100x).
doi: 10.3834/uij.1944-5784.2010.08.14f2b

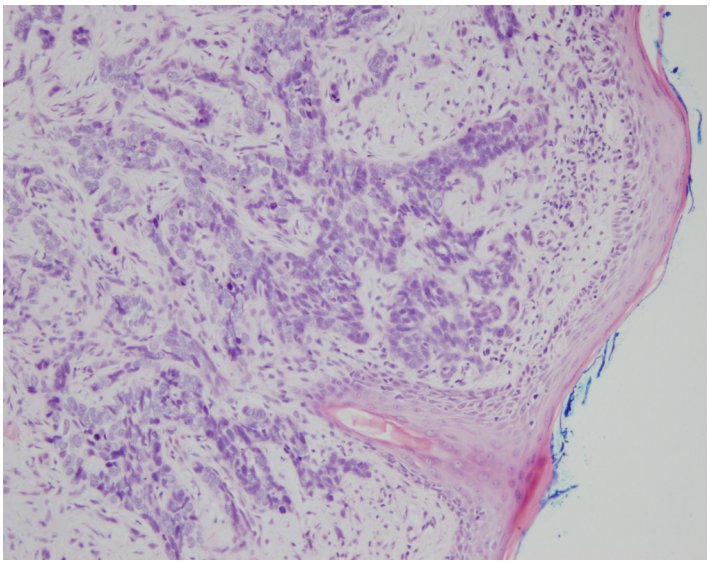

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Figure 2c. Metastatic Lesion to the Kidney (Hematoxylin and Eosin Stain, 40x).
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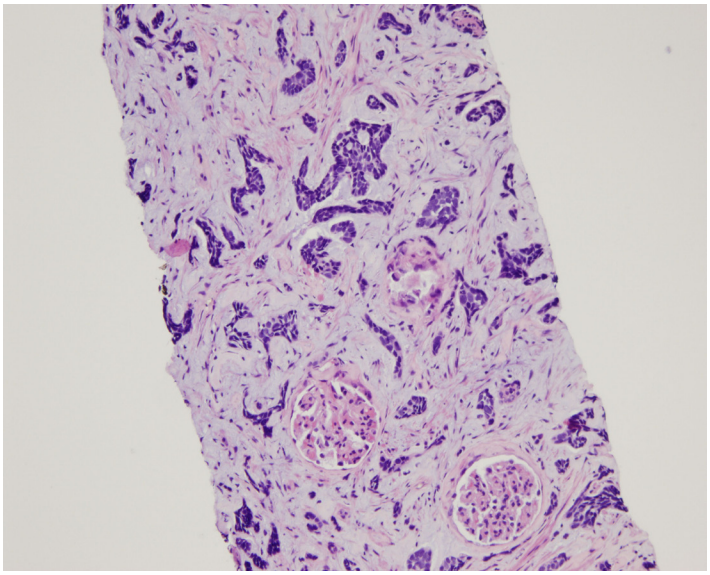
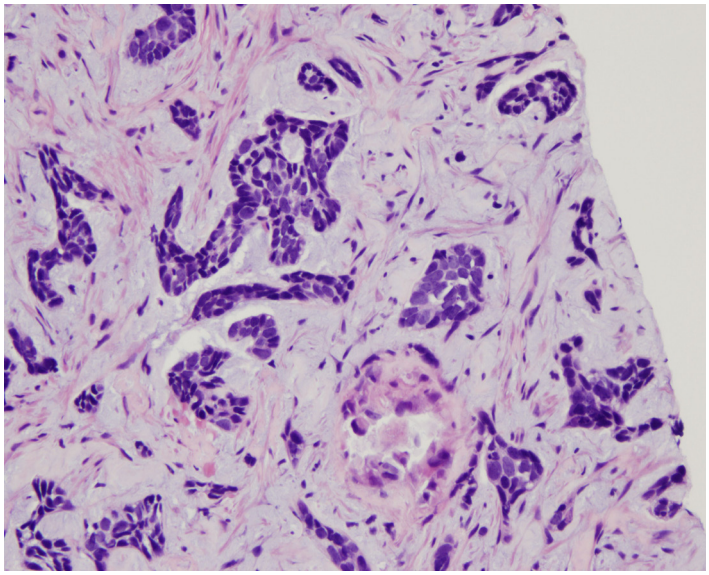


Figure 2d. Metastatic Lesion to the Kidney (Hematoxylin and Eosin Stain, 100x).
doi: 10.3834/uij.1944-5784.2010.08.14f2d



DISCUSSION

Incidence and Sites

Overall, metastases to the kidneys are not common and are usually associated with widespread disease. In patients dying of disseminated disease, the kidneys are only the fifth most common site of metastasis, with no more than 20% of cases showing secondary renal involvement on autopsy [1]. Furthermore, renal metastases are often clinically silent and not evident on laboratory testing, making the incidence of clinically-evident disease significantly lower [1]. As such, secondary renal neoplasms are often detected only on autopsy [2].

With advances in imaging and the increased use of CT imaging, renal metastases are being detected at an increased rate [5]. The most common primary sites are, in decreasing order of frequency, the lung, breast, stomach, pancreas, colon, kidney, and esophagus [6]. Although melanomas notoriously metastasize to the kidneys, melanoma represents only 2% of secondary renal neoplasms due to its relatively low overall incidence [5].

Pathogenesis

Metastatic disease typically involves the kidneys via the hematogenous route. Not surprisingly therefore, renal metastases are typically multiple bilateral lesions [5]. Although renal metastases are most often seen in the setting of widespread multiorgan disease, isolated renal involvement is becoming increasingly frequent, presumably due to the routine use of CT imaging. Furthermore, isolated renal metastases have been reported after a long interval from detection and treatment of the primary malignancy [5].

Metastatic Basal Cell Carcinoma

BCC rarely metastasizes. Published incidences of metastatic BCC range from 0.0028% to 0.55% [3]. Incidences of 0.01% and 0.1% have been reported in pathology specimens and from surgical centers, respectively. The reports of incidences > 0.1% have come from smaller samples of patients [3].

Despite the paucity of cases of metastatic BCC, some conclusions can be drawn regarding this entity. A male-to-female ratio of 2:1 has been reported in multiple studies [3,7], and nearly all affected patients are of light complexion [3,8]. The distribution of the sites of primary tumors in metastatic BCC is similar to that for nonmetastatic BCC, with most cases occurring on the head and neck [3,8]. In case series reports of metastatic BCC, metastatic lesions showed identical histology to the primary tumor [3,8]. As noted by Lo et al [8], there has historically been disagreement regarding possible differences in the metastatic potential of the various histologic subtypes of BCC. Nevertheless 11 of the 12 cases of metastatic BCC reported by Lo et al demonstrated the morpheaform (infiltrative) subtype in at least a portion of the primary tumor. Furthermore, all but 1 of this subset of primaries showed a fibrous reaction around the tumor. Because perineural extension is seen in either

the primary or metastatic focus in almost half of those with metastatic disease [3,7,8] but in < 1% of those with BCC [7], some authors have suggested that perineural involvement may be an important factor in metastatic BCC [3]. Large primary tumors have shown an increased rate of metastases in some studies [7,8]. In a retrospective review, Snow et al [7] found that 91% of metastatic BCC originated from primary tumors ≥ 10 cm^2, and approximately 80% arose from primary lesions > 5 cm in diameter. Overall, primary tumors > 3 cm in diameter showed a metastatic rate of 1.9%. However, as the authors note, the advanced nature of their treatment facility may have imparted selection bias. In the case series by Lo et al [8], 9 of the 12 primary lesions were large (> 20 cm^2). Nevertheless, small BCCs have also been reported to metastasize [7,8].

BCC most commonly metastasizes to regional lymph nodes, followed by the lung, bone, skin, and liver [3,7,9]. Metastatic involvement of the kidney is uncommon [3]. In 1984, Domarus and Stevens reviewed 170 cases of metastatic BCC in the literature and noted 9 cases of metastatic renal involvement [3]. In 1987, Howat and Levick [4] reported 1 case of widely disseminated metastatic BCC with involvement of the kidneys.

Criteria for the diagnosis of metastatic BCC were established by Lattes and Kessler and later by Cotran. They require: (1) the primary tumor to be of skin tissue and not mucous membrane, (2) the metastasis to show identical pathologic conditions to the primary, and (3) the metastasis to be at a site distant from the primary and not the result of direct extension [8].

In the current case, pathological examination of the original sample showed features consistent with the morpheaform (infiltrative) type of BCC. This histologic subtype has been described as aggressive and may be more likely to metastasize [3,10]. The present patient had other risk factors for metastatic disease, including perineural invasion and a large primary tumor (43 cm^2). Furthermore, this patient's primary tumor was deep, 4.8 cm at resection (not shown), and involved underlying facial structures (sinus, medullary cavity of bone, and sclera of the eye). These are features noted in most cases of metastatic BCC [8]. The significant time interval (more than 3 years) between diagnosis of the primary BCC and metastatic disease is typical of metastatic BCC. In fact, the literature reports that the median time interval from primary diagnosis to metastatic disease is 9 years, with a range from < 1 to 45 years [3]. On average, however, survival is only 8 months once distant metastatic disease has been realized [3].

Although metastatic disease to the kidney is not common, it is important to consider this possibility when evaluating renal masses. Given the considerable cardiac output that the kidney receives, the low incidence of metastatic disease to the kidney is surprising; in fact, much remains unknown about the pathogenesis of disease metastatic to the kidney. Because metastatic lesions in the kidney are rarely symptomatic, secondary renal neoplasia is an important consideration in incidentally detected renal lesions, especially in patients with a history of cancer. The present case demonstrates this point well. Had this patient presented with an isolated renal hypodensity (without a gluteal mass), the possibility of metastatic disease may have been ignored, because BCC rarely metastasizes and because the kidney is not often affected by metastatic disease, in general.

REFERENCES

[1] Giashuddin S, Cangiarella J, Elgert P, Levine PH. Metastases to the kidney: eleven cases diagnosed by aspiration biopsy with histological correlation. *Diagn Cytopathol.* 2005;32(6):325-329.

[2] Gattuso P, Ramzt I, Truong LD, et al. Utilization of fine-needle aspiration in the diagnosis of metastatic tumors to the kidney. *Diagn Cytopathol.* 1999;21(1):35-38.

[3] von Domarus H, Stevens PJ. Metastatic basal cell carcinoma. Report of five cases and review of 170 cases in the literature. *J Am Acad Dermatol*. 1984;10(6):1043-1060.

[4] Howat AJ, Levick PL. Metastatic basal cell carcinoma. *Dermatologica*. 1987;174(3):132-134.

[5] Ferrozzi F, Bova D, Campodonico F. Computed tomography of renal metastases. *Semin Ultrasound CT MR*. 1997;18(2):115-121.

[6] Debois JM. *TxNxM1: The Anatomy and Clinics of Metastatic Cancer*. Dordrecht, The Netherlands: Kluwer Academic Publishers; 2002.

[7] Snow SN, Sahl W, Lo JS, et al. Metastatic basal cell carcinoma. Report of five cases. *Cancer*. 1994;73(2):328-335.

[8] Lo JS, Snow SN, Reizner GT, Mohs FE, Larson PO, Hruza GJ. Metastatic basal cell carcinoma: report of twelve cases with a review of the literature. *J Am Acad Dermatol.* 1991;24(5 Pt 1):715-719.

[9] Uzquiano MC, Prieto VG, Nash JW, et al. Metastatic basal cell carcinoma exhibits reduced actin expression. *Mod Pathol*. 2008;21(5):540-543.

[10] Cunneen TS, Yong JL, Benger R. Lung metastases in a case of metatypical basal cell carcinoma of the eyelid: an illustrative case and literature review to heighten vigilance of its metastatic potential. *Clin Experiment Ophthalmol.* 2008;36(5):475-477.