

Distant Lung Metastasis of Basal Cell Carcinoma; A Case Report and Review of Literature

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Abstract

Background: Basal cell carcinoma (BCC) is the most common non-melanoma cutaneous neoplasm. It is a locally invasive malignant tumor that exhibits an extremely limited potential for distant metastasis. There are several histological variants of basal cell carcinoma, which differ significantly in their microscopic features, clinical behavior, and prognosis. **Case Presentation:** A 72-year-old man presented with a history of a left cheek nodular basal cell carcinoma that had been previously resected with free margins. Four years later, the patient complained of difficulty breathing. Radiological evaluation revealed pleural thickening and multiple pulmonary nodules. Histopathological examination of an incisional core biopsy demonstrated a neoplastic proliferation of atypical epithelial cells arranged in sheets and nests within a dense desmoplastic stroma. These tumor nests exhibited prominent peripheral cellular palisading with central, haphazardly arranged primitive cells, alongside scattered foci of squamous differentiation. Consequently, a diagnosis of metastatic basal cell carcinoma was established. **Conclusion:** Although basal cell carcinoma is a locally aggressive cutaneous neoplasm with an extremely low metastatic potential, factors such as a large primary tumor size and the presence of occult aggressive variants may significantly augment its metastatic capability.

Keywords: Metastatic Basal Cell Carcinoma- Basal Cell Carcinoma- Rodent Ulcer

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Introduction

Basal cell carcinoma (BCC) is the most common skin malignancy [1]. It represents approximately 80% of all non-melanoma skin tumors [2]. Its incidence has markedly increased over the last three decades [1]. While BCC carries low mortality and an extremely low metastatic potential, it has a high morbidity rate due to extensive local tissue destruction [3].

There are many variants of BCC, and mixed variants may coexist within the same tumor. The predominant variant must be specified in pathology reports to predict the potential risk of recurrence and determine the most suitable treatment strategy [1]. Several variants follow an indolent course with a low risk of recurrence; these include nodular, superficial spreading, and pigmented variants, as well as BCC with adnexal differentiation. Conversely, variants with a potentially aggressive course and a high risk of recurrence include the micronodular, infiltrating, sclerosing, and basosquamous types [3].

Nodular BCC is characterized by large nests or masses with peripheral palisading and central, haphazardly arranged cells featuring primitive, hyperchromatic nuclei. Superficial spreading BCC is characterized by proliferating small nests and nodules of neoplastic cells within the superficial dermis, set against an inflammatory cell-enriched myxoid stroma. Micronodular BCC is associated with a high rate of recurrence because the neoplastic cells proliferate deep into the dermis and may reach the subcutaneous tissue. Infiltrating and sclerosing variants are characterized by thin nests and cords of deeply invasive neoplastic epithelial cells. Pigmented BCC is distinguished by the presence of melanin pigment due to an increased number of dendritic melanocytes interspersed between tumor cells. BCC with adnexal differentiation frequently affects the skin of the head and neck, with tumor cells displaying differentiation toward follicular, eccrine, apocrine, or sebaceous lineages. Finally, basosquamous

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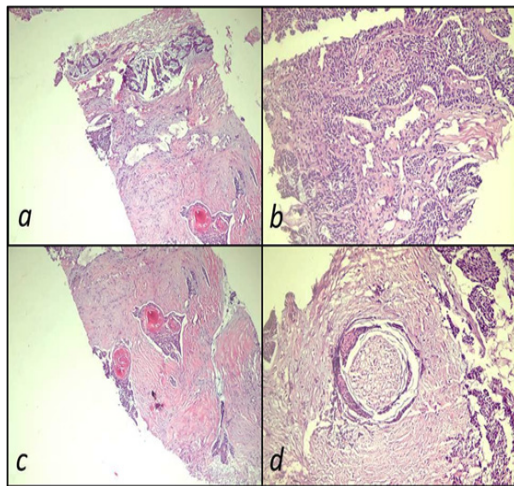


Figure 1. Metastatic Basal Cell Carcinoma. a; X 40 & b; X 100): neoplastic epithelial cells are arranged in anastomosing sheets and nests. c; X 40): foci of squamous differentiation. d; X 100): abundant desmoplastic stromal reaction.

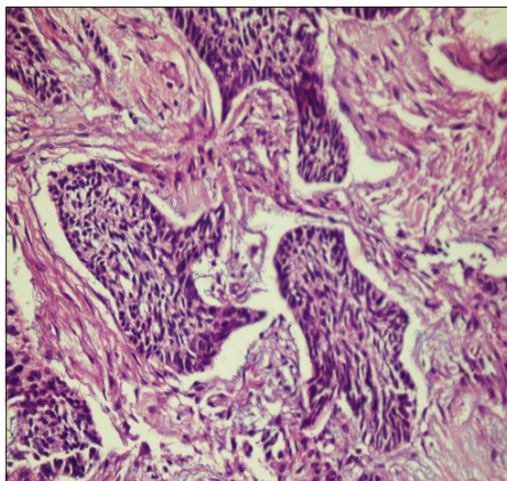


Figure 2. This Tissue Section Shows Dominant Peripheral Cellular Palisading and Retraction Clefts between Tumor Cells and the Stroma, X 200.

BCC is characterized by the intermingled presence of both basal cell carcinoma and squamous cell carcinoma features [1, 3].

Case Presentation

A 72-year-old man was admitted to the Plastic Surgery Department at Sohag University Hospital in 2021 due to an ulcerative lesion on his left cheek. The ulcer measured 2.5 cm in its largest diameter and featured a necrotic floor, an indurated base, and beaded edges. Wide local excision of the lesion with safety margins was performed, and the specimen was sent to the Pathology Laboratory of Sohag University Hospital. The ulcerative lesion was diagnosed as basal cell carcinoma (BCC) with free margins; no perineural or lymphovascular invasion was detected.

The patient did not return for subsequent follow-up. In 2025, he presented with difficulty of breathing. Clinical examination revealed decreased air entry, especially on the right side. Radiological evaluation demonstrated pleural thickening and pulmonary

nodules. A core biopsy of the lung lesion showed neoplastic proliferation of dysplastic epithelial cells with hyperchromatic and pleomorphic nuclei arranged in nests and sheets. Frequent peripheral cellular palisading and a few foci of squamous differentiation were noticed. The stroma exhibited a dense desmoplastic reaction (Figure 1 and 2). Based on these histopathological findings and clinical history, the case was diagnosed as metastatic basal cell carcinoma.

Discussion

Basal cell carcinoma (BCC) is the most common non-melanoma skin malignancy, and its incidence has markedly increased over the last three decades. BCC is a locally aggressive tumor that exhibits an extremely limited metastatic potential [1]. Consequently, metastatic BCC (MBCC) is an exceptionally rare condition, with an estimated incidence ranging from 0.003% to 0.55% [4].

The first case of MBCC was described by Beadles in 1894. Later, Lattes and Kessler established specific diagnostic criteria for MBCC: both the primary and metastatic lesions must exhibit the histopathological features of BCC without being predominantly of squamous histogenesis. They also stipulated that the primary BCC must originate from the skin rather than from mucous membranes or salivary glands. Finally, direct local extension of the primary tumor must be definitively excluded to confirm a diagnosis of MBCC [5, 6].

Several risk factors increase the metastatic potential of BCC. These include the histological variant, large primary tumor size, male sex, specific tumor sites, and the presence of perineural or lymphovascular invasion [3]. It is well established that micronodular, sclerosing, infiltrating, and basosquamous variants exhibit more aggressive behavior and higher rates of recurrence [1].

There is a robust correlation between MBCC and the size of the primary tumor [5]. Snow et al. evaluated 238 cases of BCC and determined that lesions larger than 30 mm in diameter carry a 2% risk of metastasis. They also noted that 80% of MBCC cases occurred in tumors exceeding 50 mm in diameter. Furthermore, the risk of metastasis is higher for tumors located in the head and neck regions, which may be attributed to the thin skin and rich vascularity characteristic of these anatomical sites [7].

Here, we reported a case of MBCC presenting as pulmonary nodules in a 72-year-old man. The metastatic nodules demonstrated classic features of BCC interspersed with foci of squamous differentiation. Interestingly, the patient's primary skin lesion had been diagnosed as a purely nodular variant. While nodular BCC typically follows an indolent course with extremely low metastatic potential, multiple histological variants frequently coexist within a single tumor. Therefore, thorough tissue sectioning and extensive sampling are mandatory to rule out any occult aggressive components.

Globally, the most frequent sites of MBCC are the lymph nodes, followed by the lungs and bones [2, 5]. The current case highlights a rare instance of pulmonary involvement. Literature reviews underscore

this distribution; for instance, Lau et al. evaluated 6 cases of MBCC over a 16-year period, reporting 3 cases in the lungs, 2 in the bones, and one in the lymph nodes [5]. Similarly, Casey et al. reported 2 cases of MBCC: one localized to a cervical lymph node and the other presenting with widespread pulmonary, hepatic, and subcutaneous nodules [2]. Ahmad et al. described MBCC in a middle-aged man presenting with a giant anterior chest wall BCC and multiple pulmonary nodules [8], while Pena et al. documented 2 cases of pulmonary MBCC occurring in 67- and 48-year-old men [4].

In conclusion, Basal cell carcinoma (BCC) is a locally aggressive, non-melanoma skin neoplasm with an extremely low metastatic potential. However, factors such as a large primary tumor size and the presence of aggressive histological variants may significantly augment its metastatic capability.

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Authors' contribution

Conception or design; Maisa hashem mohammed.

Acquisition, analysis or interpretation of data; Maisa hashem mohammed.

Drafting the manuscript; Maisa hashem mohammed.

Approval of the manuscript version to be published; Maisa hashem mohammed.

Agreement to be accountable for all aspects of the work; Maisa hashem mohammed.

Conflict of interest

The author declares that she has no conflict of interest to disclose.

Data availability

Included in the manuscript.

Ethical considerations

This case report was approved by the Ethics Committee of Sohag Faculty of Medicine, Sohag, Egypt. Verbal consent was obtained from the patient as she was discharged from the hospital one day after curettage of the mandibular lesion.

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Study registration

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