Cutaneous Metastases from Lung Adenocarcinoma: An Important Dermatologic Clue to Advanced Disease

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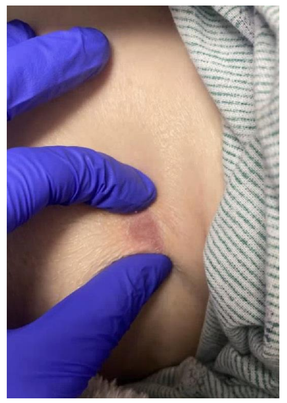
Introduction

- Cutaneous metastases involve the spread of malignant cells from internal organs to the skin, occurring in approximately 0.7%-9% of malignancies, and usually signifies advanced systemic disease with poor prognosis [1].
- Lung cancers account for approximately 3.4% of all cutaneous metastases, with adenocarcinoma being the predominant subtype [2].
- Clinical presentations vary widely, often subtle or deceptive, resulting in delayed diagnosis and treatment.
- Early recognition is crucial, particularly in known malignancies, as skin lesions may indicate disease progression, recurrence, or resistance to treatment [3].

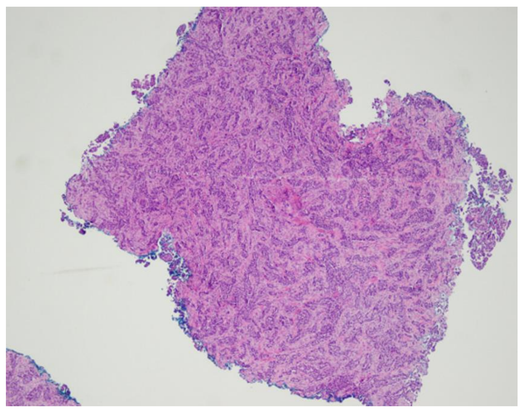
Case Description

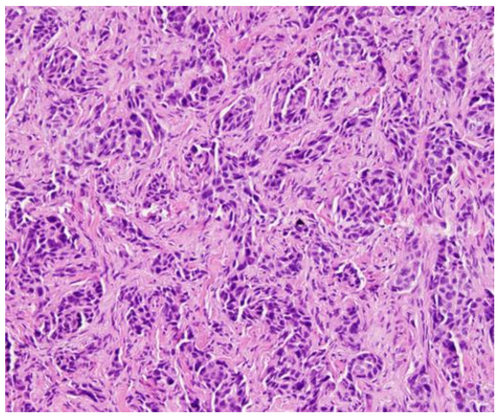
- A 65-year-old Caucasian woman with a four-year history of stage IV EGFR-positive lung adenocarcinoma presented in August 2022 with a new violaceous, firm, nodular skin lesion on the left lower chest wall (Fig 1&2).
- Her oncologic history was notable for metastases to the brain and bones, which had been managed with craniotomy and targeted therapy with osimertinib.
- Imaging revealed progression of her disease, including enlarging right hilar and pretracheal lymph nodes and a malignant pleural effusion.
- A punch biopsy of the lesion revealed dermal lymphatic carcinomatosis consistent with metastatic adenocarcinoma of the lung (Fig 3&4). This cutaneous lesion was the first sign of further systemic progression despite ongoing targeted therapy.
- The patient was subsequently transitioned to a chemotherapy regimen of carboplatin and pemetrexed. However, her condition deteriorated rapidly, culminating in hypoxic respiratory failure. She was transitioned to comfort care and passed away on September 4, 2022.

Clinical and Pathological Images



Figures 1 and 2. Clinical images featuring the firm, violaceous, nodular skin lesion below the patient's left breast.





Figures 3 and 4. Histopathology of infiltrating tumor composed of polygonal cells with variable hyperchromatic nuclei, enlarged nucleoli, and luminal vacuoles arranged in nests and glandular patterns within the dermis.

Discussion

- Typical cutaneous metastases from lung adenocarcinoma present as rapidly growing nodules on the chest, abdomen, or scalp [1,3].
- Rarely, as in this case, malignant cells infiltrate dermal lymphatics, leading to a presentation known as dermal lymphatic carcinomatosis. This can resemble inflammatory conditions such as cellulitis or inflammatory breast cancer, complicating diagnosis [2,4].
- Cutaneous metastases signify poor prognosis with median survival of four to six months post diagnosis [3].
- Presence often indicates aggressive metastatic disease, therapeutic resistance, or refractory disease, necessitating rapid reassessment of treatment. Dermatologists play a key role in the multidisciplinary management of cancer patients, especially in early identification and biopsy [5].
- Prompt biopsy with immunohistochemical staining (TTF-1, Napsin A) can accurately confirm pulmonary origin:
  - TTF-1 is highly specific for primary lung adenocarcinoma.
  - Napsin A, a cytoplasmic proteinase expressed in type II pneumocytes, further aids in diagnosis [2,6].
- Cutaneous metastases are uncommon but critical clinical indicators of advanced lung adenocarcinoma and widespread systemic disease. Their presence typically correlates with a poor prognosis.
- This case highlights the crucial role dermatologists play in early detection through clinical suspicion and biopsy. Early recognition and coordinated care with oncology can lead to informed management, improved diagnostic discussion, and enhanced patient-centered outcomes.

References

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