

Rare presentation of cutaneous lung cancer metastasis presenting as carcinoma erysipeloides



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INTRODUCTION

Cutaneous metastasis occurs in 1% to 5% of patients with internal malignancies.^{1,2} Although cutaneous metastases can be the first sign of primary malignancy,¹ most are diagnosed in patients with known history of primary malignancy, with a mean interval between primary diagnosis and metastatic diagnosis of 2.9 years.³ Cutaneous metastases commonly occur near the primary tumor or in the head and neck area.^{4,5} Predilection for the head and neck, especially the scalp, has been associated with greater density of regulatory T cells in these areas.⁵ Because most tumor antigens are self-antigens, regulatory T-cell inhibition of self-antigen-reactive T cells is believed to create a more permissive environment for tumor growth.⁶

Clinical manifestations of cutaneous metastases vary with the type of primary cancer. In particular, carcinoma erysipeloides is an infrequent manifestation that has been more commonly associated with breast cancer. More rarely, it has been associated with other kinds of malignancy including lung, pancreas, rectum, ovary, and parotid gland.⁴ Here we report a case of a rare clinical presentation of extensive but localized erysipeloid-type cutaneous lung cancer metastases to the chest masquerading as cellulitis.

CASE REPORT

The patient is a 57-year-old man with history of stage IV lung adenocarcinoma metastatic to the

brain, radiation, to the right upper lung 1 year prior, and right malignant pleural effusion recently drained via an indwelling pleural catheter. He had right chest erythema initially surrounding the catheter insertion site 1 month after insertion. The patient was prescribed moxifloxacin for 5 days. The patient could not tolerate moxifloxacin and was switched to sulfamethoxazole/trimethoprim for 10 days. Dose 1 of cycle 1 consisted of pemetrexed, carboplatin, and pembrolizumab along with indwelling pleural catheter removal later that week, at which point there was slight improvement of his erythema. He remained afebrile at home but experienced worsening of his erythema and tenderness despite completing his full antibiotic course. He was admitted and started on intravenous vancomycin and intravenous aztreonam for concomitant concern for pneumonia at the time of admission. He again experienced temporary improvement but with subsequent erythema re-expansion by day 6 with another change in antibiotic regimen from vancomycin to doxycycline. He remained afebrile during most of the admission (peak temperature, 38.2°C) and had a white blood count ranging from 3.4 to $7 \times 10^9/L$. The dermatology department was consulted on day 7 for failure to improve despite multiple antibiotic courses, at which time a skin punch biopsy was performed. Physical examination found a large, ill-defined, warm erythematous patch with significant desquamation and marked tenderness extending from the right chest to right back.

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Fig 1. Carcinoma erysipeloïdes. On examination, ill-defined erythema of the right side of the chest with superficial desquamation was noted, with an indurated plaque with irregular hypopigmentation surrounding the placement site of prior pleural catheter.

Pathology findings were suspicious for metastatic carcinoma, showing rare single or clusters of cohesive atypical epithelioid-shaped cells involving the reticular dermis and lymphatic vessels with recommendations for repeat biopsy given the low number of atypical cells. He was discharged on day 12 after improvement with doxycycline, with radiation oncology follow-up scheduled for future considerations of palliative radiation therapy if skin symptoms persisted. He received dose 2 of pemetrexed, carboplatin, and pembrolizumab with continued improvement. At his subsequent outpatient dermatology visit, repeat physical examination found ill-defined erythema with superficial desquamation extending from the right axilla to the waist (Fig 1). The middle and posterior aspect of the right flank, near the placement site of the prior pleural catheter, had an indurated palpable plaque with irregular central hypopigmentation. Repeat punch biopsy 3 weeks after discharge showed an increased number of AE1/3⁺, CK7⁺, TTF-1⁻ large pleomorphic and highly atypical epithelioid cells dissecting collagenous bundles and in blood vessels (Fig 2), confirming the diagnosis of cutaneous lung cancer metastases.

Despite continued treatment, the patient died of progressive disease 4 months later.

DISCUSSION

Excluding melanoma, lung cancer represents the most common source of cutaneous metastases in men followed by colorectal and oral cavity cancers.⁴ For lung cancer in particular, adenocarcinoma has the highest rate of metastases to the skin (2.95%) versus other histologic subtypes (squamous cell carcinoma [1.16%] and small cell carcinoma [0.81%]).² Classically, cutaneous metastases from lung cancer present as either solitary or multiple firm, mobile nodules.⁴ Although little data exist on the prevalence of other subtypes, smaller case reports of cutaneous metastases from lung cancer include descriptions of telangiectatic, erysipelas-like, and zosteriform patterns. Carcinoma erysipeloïdes secondary to lung cancer is rarely described, with our search finding only 7 prior case reports.⁷⁻⁹ In women, skin metastases are overwhelmingly related to breast cancer followed by ovarian and oral cavity cancers.⁴ Cutaneous metastases from breast cancer have been more frequently described to have subtypes, including alopecia neoplastica cancer (12%), telangiectatic carcinoma (8%), carcinoma erysipeloïdes (6.3%), carcinoma en cuirasse (4%), and zosteriform (3.6%).¹⁰

Our patient demonstrates another rare case of carcinoma erysipeloïdes from primary lung cancer. Carcinoma erysipeloïdes closely mimics cellulitis in that it clinically takes the form of an erythematous, warm, and tender patch or plaque usually secondary to lymphatic obstruction.⁹ The mechanism is not completely understood, but it is thought that interventions such as radiation, surgery, or chemotherapy may alter the microenvironment of tumor cells and result in tumor emboli that travel and obstruct lymphatic vessels.⁸ Key distinguishing features in this patient's case were the lack of fever, absent leukocytosis, and failure for complete remission despite 5 antibiotic regimens. In addition to cellulitis, the differential diagnosis included radiation dermatitis and contact dermatitis. However, the patient's radiation had been superior to the area involved, and his symptoms continued to worsen despite changing dressing materials. In our patient, initial response to different antibiotic regimens, particularly doxycycline, may have been confounded by the anti-inflammatory effects of the antibiotics and the anticancer effects of his chemotherapy. As a result, skin biopsy was critical from a diagnostic

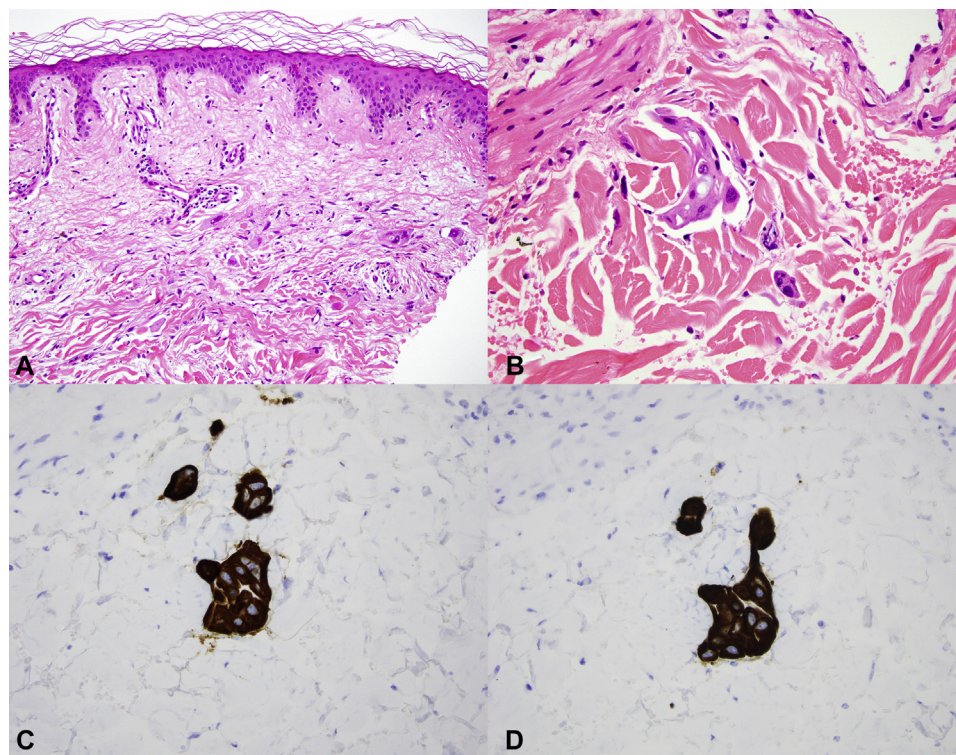


Fig 2. Histopathologic examination was consistent with metastatic carcinoma. **A**, Hematoxylin-eosin–stained skin biopsy section shows single and clustered carcinoma cells within the lumen of dermal vasculature. **B**, High-power view shows a cluster of carcinoma cells within dermal vasculature. **C**, The carcinoma cells within the dermal vessels strongly express cytokeratin (AE1/AE3). **D**, The carcinoma cells within the dermal vessels strongly express cytokeratin 7. (Original magnifications: **A**, $\times 20$; **B-D**, $\times 40$.)

standpoint and allowed for discontinuation of antibiotics in this patient.

Cutaneous metastases portend a poor prognosis, with median survival usually less than 1 year.^{3,4} Type of cancer plays a large role in average survival; cutaneous metastasis from lung cancer are associated with worse survival than other malignancies, with median survival of 5 months.⁴ Generally, treatment centers around organ-specific chemotherapy for the primary tumor with radiation, excision, electrochemotherapy, photodynamic therapy, and intralesional chemotherapy as options for local treatment. However, carcinoma erysi-peloides is classically more resistant to local treatment.¹⁰ As a result, because of the poor prognosis and limited treatment options for carcinoma erysi-peloides from lung cancer, systemic chemotherapy for the primary tumor remains the mainstay of therapy with local treatment focused on palliation of pain and pruritus along with prevention of bacterial superinfection.

Overall, this case highlights a rare but important entity that directly affects patient management. In cases of presumed cellulitis in the setting of

internal malignancy that does not respond to multiple courses of antibiotics, histopathologic examination is critical. Additional skin biopsies may be warranted to determine the definitive diagnosis if initial biopsies show subtle or questionable features.

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