

An unusual presentation of metastatic disease: Cutaneous metastases from pulmonary adenocarcinoma manifesting as widespread plaques

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Key words: cutaneous metastasis; pulmonary adenocarcinoma.

Lung cancer is the leading cause of cancer mortality in the United States.¹ Adenocarcinoma is the most common histologic subtype of lung cancer and most frequently metastasizes to the brain, bone, liver, and adrenal glands, respectively.² Five-year survival for stage IV nonsmall-cell lung cancer is 1%.³ Rarely, lung cancer may exhibit cutaneous metastases.

CASE REPORT

A 63-year-old man with stage IV pulmonary adenocarcinoma presented with shortness of breath, weakness, and a 3-month history of a rash on his right chest. Prior positron emission/computed tomography scan demonstrated hilar, mediastinal, neck, and axillary adenopathy along with brain metastasis. He had received whole brain radiation and 6 cycles of carboplatin and pemetrexed. He recently had 2 episodes of pneumonia, and 10 days before this presentation, he had been found to have a pulmonary embolism and rivaroxaban was started.

On admission, a chest x-ray revealed a right-sided pleural effusion. A computed tomography scan showed a stable right upper lung mass, progressive metastatic disease, a growing malignant pleural effusion, and muscular and subcutaneous involvement. Involvement of the pectoralis major muscle and sternocleidomastoid muscle along with a 1.8- × 1.4-cm subcutaneous nodule in the right subareolar region was seen (Fig 1).

A right axillary node biopsy specimen demonstrated poorly differentiated carcinoma, which was

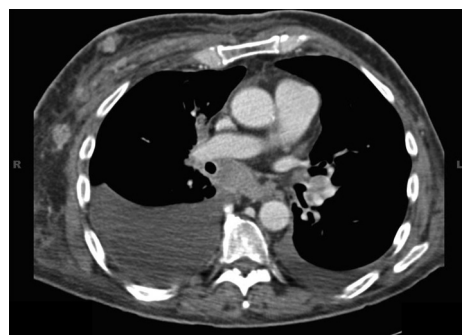


Fig 1. Computed tomography scan of the thorax: malignant pleural effusion, involvement of the pectoralis major muscle and sternocleidomastoid muscle, and a 1.8- × 1.4-cm subcutaneous nodule in the right subareolar region.

negative for epidermal growth factor receptor gene mutation, signifying the cells lacked this transmembrane protein that is typically present in over half of nonsmall-cell lung cancers,⁴ and negative for anaplastic lymphoma kinase gene rearrangement, which is seen in roughly 4% of nonsmall-cell lung cancers, most frequently adenocarcinomas.⁵ Both epidermal growth factor receptor gene mutations and anaplastic lymphoma kinase gene rearrangements, when present, are therapeutic targets. A therapeutic and diagnostic thoracentesis was conducted, and 2.1 L of pleural fluid were removed. The level of lactate dehydrogenase in the pleural fluid was 261, meeting Light criteria for classification as an exudative pleural effusion, which is seen in conditions such as infection, malignancy, or

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Funding sources: None.

Conflicts of interest: None declared.

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JAAD Case Reports 2015;1:378-80.

2352-5126

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<http://dx.doi.org/10.1016/j.jidcr.2015.09.002>

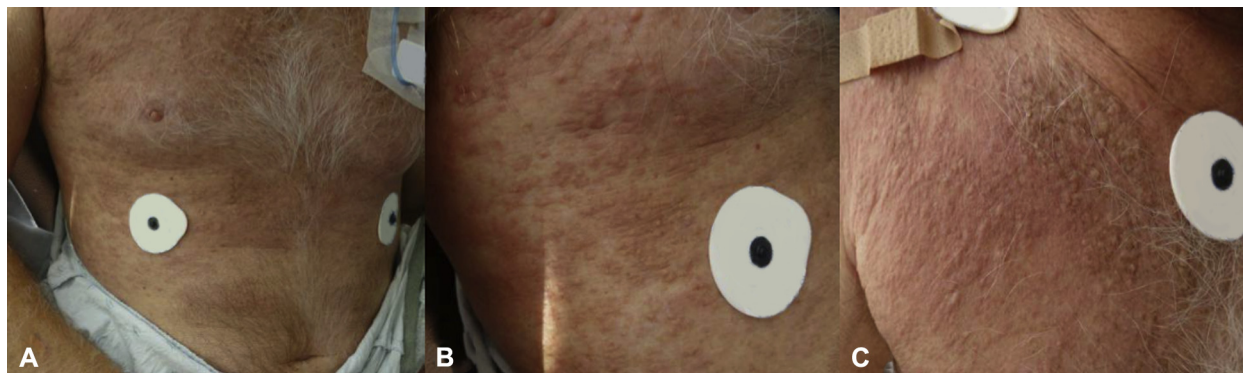


Fig 2. Cutaneous findings. **A**, Erythematous, indurated, papillomatous plaques extending from right shoulder to right side of trunk and flank. **B**, Lesions on right flank. **C**, Biopsied area on right upper aspect of chest.

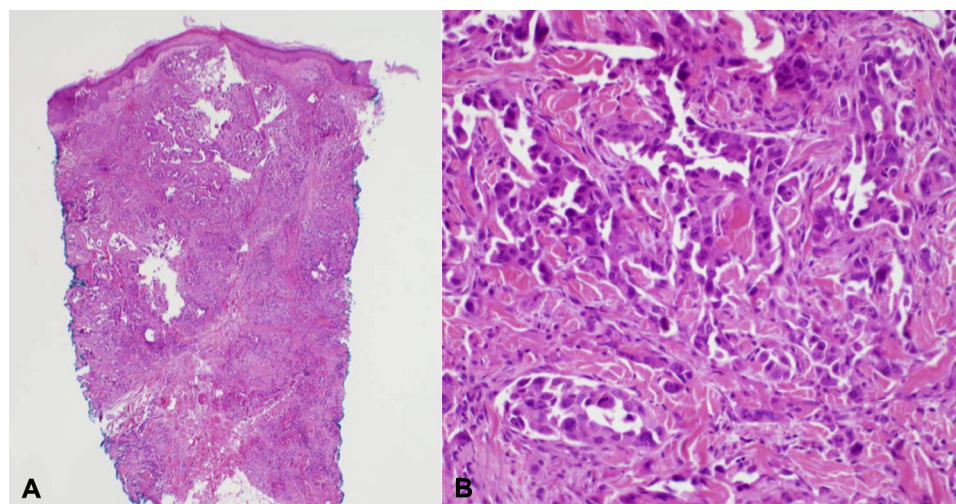


Fig 3. Histopathologic findings from skin overlying right upper aspect of chest. Atypical epithelial cells in infiltrative tubular formations surrounded by fibromyxoid stroma. (**A** and **B**, Hematoxylin-eosin stain; original magnifications: **A**, $\times 2$; and **B**, $\times 20$.)

coronary artery bypass surgery. Given the patient's history, the exudative pleural effusion raised a high level of suspicion for a malignant cause, which was confirmed by cytologic studies that showed metastatic adenocarcinoma.

Dermatologic examination was notable for erythematous, indurated, papillomatous plaques extending from his right shoulder to his entire right trunk and flank (Fig 2). The rash was nonpainful, nonpruritic, and had initially been thought to be a drug rash.

A 4-mm punch biopsy specimen was taken of the skin overlying the right side of his chest. There were atypical epithelial cells in infiltrative tubular formations associated with a fibromyxoid stroma (Fig 3). The diagnosis of metastatic adenocarcinoma, compatible with the patient's known lung adenocarcinoma, was made.

DISCUSSION

The overall incidence of cutaneous metastases from internal malignancies is roughly 5.3%.⁶ This dissemination can occur through hematogenous, lymphatic, direct or iatrogenic, spread.⁷ Of internal malignancies with the tendency to metastasize to the skin, breast cancer, in women, and lung cancer, in men, are the most common origins.⁸ Rates of lung metastases to skin have been estimated at 1.7% to 3% with a median survival of less than 5 months.^{7,9} One study showed that 0.3% of lung cancers are found initially after cutaneous manifestations.⁶ Most lesions of cutaneous lung metastases are asymptomatic, moveable, firm nodules that are flesh-colored, pink, or violaceous.^{6,9} These lesions occur as solitary or multiple lesions. There have been isolated cases of cutaneous metastases from lung adenocarcinoma presenting as carcinoma erysipeloides or carcinoma en cuirasse.¹⁰

Our patient's shortness of breath regressed after his thoracentesis. He was scheduled for outpatient follow-up in the dermatology clinic for possible radiation treatment if the cutaneous metastases became symptomatic. However, he died within 2 weeks of his dermatologic diagnosis, which was 3.5 months from the initial development of his rash.

This case highlights the variation that can be exhibited by cutaneous metastatic disease from pulmonary adenocarcinoma. Nonpruritic, indurated lesions in patients with a diagnosis of lung cancer should always raise suspicion for cutaneous metastases and undergo biopsy. Rarely, these lesions may be the initial presentation of lung cancer. Cutaneous metastases from lung cancer represent advanced disease and are associated with a very poor prognosis.

REFERENCES

1. US Cancer Statistics Working Group. *United States cancer statistics: 1999-2011 incidence and mortality Web-based report*. Atlanta (GA): Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute; 2014.
2. Quint LE, Tummala S, Brisson LJ, et al. Distribution of distant metastases from newly-diagnosed non-small cell lung cancer. *Ann Thorac Surg*. 1996;62:246-250.
3. Ries LAG, Melbert D, Krapcho M, eds. SEER Cancer Statistics Review, 1975-2004, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2004/, based on November 2006 SEER data submission, posted to the SEER web site, 2007.
4. da Cunha Santos G, Shepherd FA, Tsao MS. EGFR mutations and lung cancer. *Annu Rev Pathol*. 2011;6:46-49.
5. Solomon B, Varella-Garcia M, Camidge R. ALK gene rearrangements: a new therapeutic target in a molecularly defined subset of non-small cell lung cancer. *J Thorac Oncol*. 2009;4(12):1450-1454.
6. Krathen RA, Orengo IF, Rosen T. Cutaneous metastasis: a meta-analysis of data. *South Med J*. 2003;96:164-167.
7. Lookingbill DP, Spangler N, Sexton FM. Skin involvement as the presenting sign of internal carcinomas. *J Am Acad Dermatol*. 1990;22:19-26.
8. Brownstein MH, Helwig EB. Patterns of cutaneous metastasis. *Arch Dermatol*. 1972;105:862-868.
9. Terashima T, Kanazawa M. Lung cancer with skin metastasis. *Chest*. 1994;106:1448-1450.
10. Lee J, Won C, Kim E. Carcinoma erysipeloïdes from adenocarcinoma of the lung. *Ann Dermatol*. 2013;25(3):273-275.