

Cutaneous Metastasis as a First Presentation for Lung Adenocarcinoma

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Abstract

Context: According to the recent World Health Organization reports, lung cancer has become the most common type of malignancy and the leading cause of death from cancer. Lung cancer frequently metastasizes to hilar lymphnodes, brain, adrenal glands, bone, but rarely to skin. **Case Report:** We report a case of a 72-year-old male with a past medical history of pulmonary fibrosis and no prior history of smoking who presented to the emergency room for progressive dyspnea over three weeks. The patient reported having a rapidly growing scalp lesion as well. A computed tomography (CT) scan of the chest showed diffuse fibrotic changes and multiple densities of different diameters; a CT guided biopsy of lung revealed a poorly differentiated adenocarcinoma. Excision of right scalp lesion was performed, and pathology revealed poorly differentiated malignant neoplasm favoring adenocarcinoma. **Conclusion:** We are presenting a rare case of lung adenocarcinoma presenting with skin metastasis, which was simultaneously diagnosed during the same hospitalization. Although cutaneous metastasis from the lung is rare, it must be ruled out in patients with suspicious skin lesions, smoking history, or lung cancer.

Keywords: Adenocarcinoma, lung cancer, skin metastasis

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Introduction

According to recent the World Health Organization reports, lung cancer has become the most common type of malignancy and the leading cause of death from cancer; approximately 19.4% of cancer deaths per annum.^[1] Lung cancer can be differentiated by histology, with the most common type being adenocarcinoma, followed by squamous cell carcinoma, small cell carcinoma, large cell carcinoma, and bronchial carcinoid. Lung cancer frequently metastasizes to the adrenals, liver, brain, contralateral lung, and bones.^[2] Although cutaneous metastases from the lung are rare, it must be ruled out in patients with suspicious skin lesions,

smoking history, or lung cancer. Discussed in multiple case reports, all histological types of lung cancer may metastasize to the skin, and clinical presentation of skin lesions are variable.^[3] We present an unfortunate case of lung adenocarcinoma with skin metastasis, which was simultaneously diagnosed during the same hospitalization.

Case Presentation

A 72-year-old hispanic male with a past medical history of pulmonary fibrosis controlled on oral steroids and

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home oxygen therapy, hypertension, diabetes mellitus, and no prior smoking history presented to the emergency department for progressive dyspnea over three weeks. He reported having cough that is productive of yellow sputum with no hemoptysis, associated with fever, night sweats, and six-pound weight loss over one week prior to the admission. In addition, the patient reported having a rapidly growing scalp lesion over two months with accompanying pain but no pruritus or discharge. He denied exposure to smoke or tuberculosis. On physical examination, vital signs indicated a temperature of 96.8°F, blood pressure of 153/87, heart rate of 82, respiratory rate of 22, and oxygen saturation of 86% on room air. On head examination, there was a large, ulcerative, well-circumscribed lesion, measuring 2.5 cm in diameter on the right parietal scalp with no cervical lymphadenopathy. On chest examination, he had fine bilateral diffuse crackles. The remainder of the exam was normal.

Diagnostic laboratory values showed a leukocytosis with a white blood count of 23,200 Cells/mcL, hemoglobin of 12.3 g/dL, platelets of 211,000/mcL, blood urea nitrogen of 17 mg/dL, and creatinine of 0.8 mg/dL.

Arterial blood gas on 21% FiO₂ showed pH of 7.44, PO₂ of 51, and PCO₂ of 39, indicating a gradient of 50 mmHg. A chest X-ray showed bilateral interstitial infiltrates [Figure 1]. The patient was admitted to the medical floor, started on intravenous corticosteroids, oxygen, and nebulized treatments with symptomatic improvement. Initial workup included an echocardiogram showing severe pulmonary hypertension and a computed tomography (CT) scan of the chest showing diffuse fibrotic changes bilaterally with multiple densities of different diameters [Figures 2 and 3]. For further evaluation, a CT-guided biopsy of the lung revealed a poorly differentiated malignant neoplasm with foci of necrosis; immunohistochemical stains indicated adenocarcinoma [Figures 4 and 5]. Genotype testing was negative for epidermal growth factor (EGFR) mutation, RAS mutation, and alk translocation. Excision of the right scalp lesion was performed, and the pathology revealed poorly differentiated malignant neoplasm favoring adenocarcinoma, as confirmed by immunohistochemical stains [Figures 6 and 7]. During his hospital stay, the patient developed severe hypoxic respiratory failure requiring intubation and transfer to the intensive care unit. The etiology of his acute decompensation was determined to be septic shock secondary to healthcare associated pneumonia; hence, the patient was started on vasopressors and intravenous antibiotics. With the acute change of clinical status, prognosis was poor; his condition deteriorated and he expired after 2 weeks of hospitalization.



Figure 1: Chest X-ray of the patient shows bilateral interstitial infiltrates

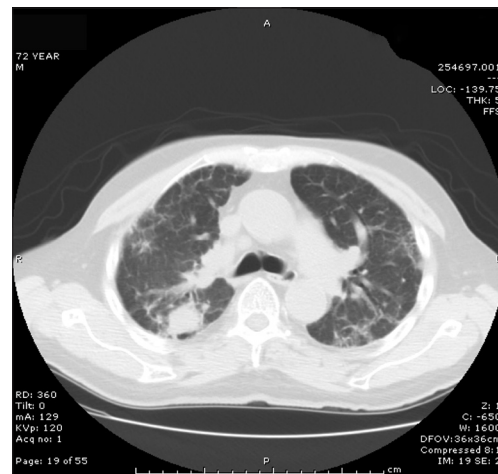


Figure 2: CT chest of the patient shows right upper lobe mass and bilateral fibrotic changes and infiltrates

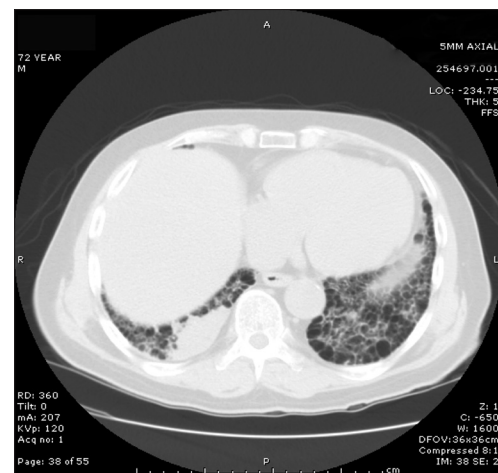


Figure 3: CT chest of the patient shows right lower lobe mass and bilateral fibrotic changes and infiltrates

Discussion

As demonstrated in this case, cutaneous metastases from the lungs are rare but must be ruled out in

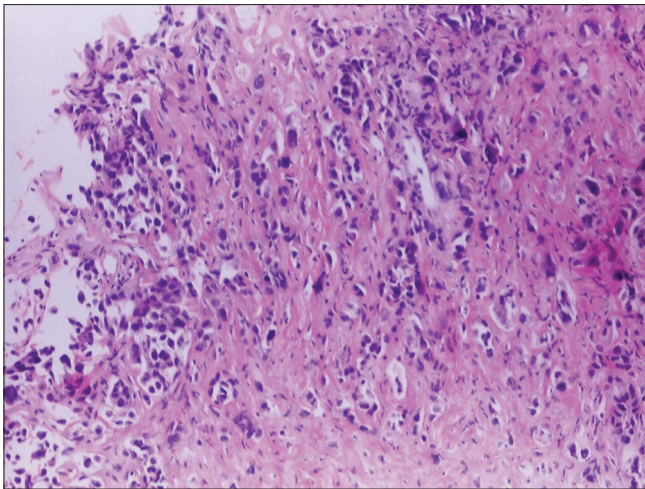


Figure 4: Hematoxylin and eosin stain of lung adenocarcinoma

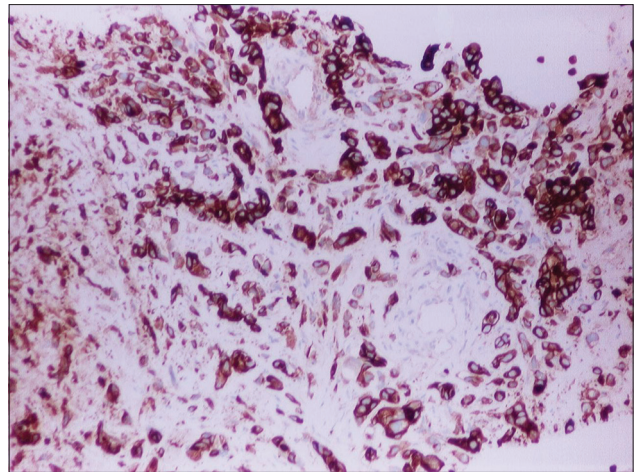


Figure 5: CK-7 stain of lung adenocarcinoma

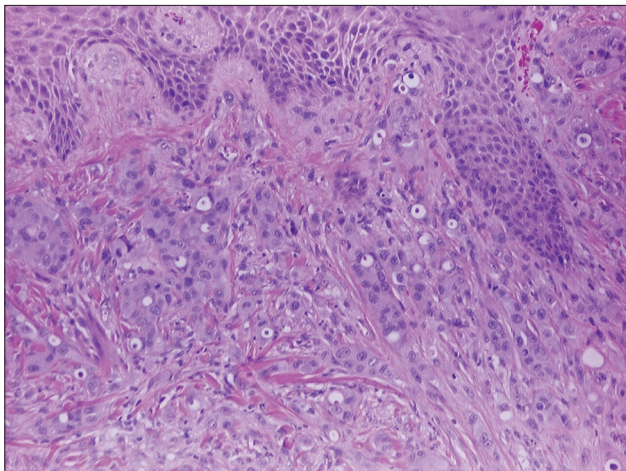


Figure 6: Hematoxylin and eosin stain of the skin with subepidermal adenocarcinoma

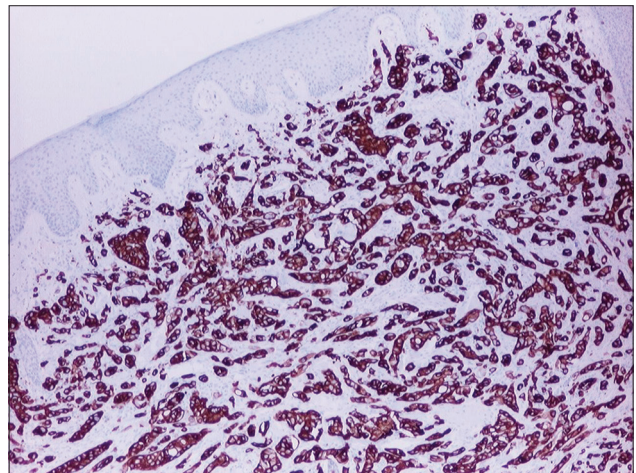


Figure 7: CK-7 stain of the skin with subepidermal adenocarcinoma

patients with suspicious skin lesions, history of lung carcinoma, or tobacco exposure. Our patient had a history of pulmonary fibrosis with no history of smoking, and had a skin lesion as the first presentation for an underlying undiagnosed lung adenocarcinoma. The percentage of patients with lung cancer that develop cutaneous metastases ranges from 1 to 12%, with an overall incidence of 5.3% for all cancers.^[3,4] The most common sites for cutaneous metastases are the scalp, head, neck, and chest, with the most common histological diagnosis being adenocarcinoma.^[2] Among other internal neoplasms, lung cancer is the fastest to metastasize to the skin after initial diagnosis, with a mean time of 5.75 months. In 20–60% of reported cases, the skin lesions may present before or concurrently with the diagnosis of the primary tumor.^[5] Our patient reported a scalp lesion that grew over a 2 months period, simultaneous with the first occurrence of his pulmonary complaints. Cutaneous metastases from lung cancer do not have a characteristic presentation; skin lesions are often described as

nodular, mobile, or fixed, indurated, and painless. Less commonly, these lesions present as zosteriform, bullous, papulosquamous, plaque-like, ulcerated, vascular with telangiectasias, erysipelas-like, or scarring alopecia on the scalp.^[6,7] Histologically, cutaneous metastases from the lung are frequently poorly differentiated. Diagnosis is often based on clinical information; however, histology, immunohistochemistry, and electron microscopy are utilized for gold standard confirmation. Immunohistochemical markers that may be useful for diagnosis are antithyroid transcription factor, cytokeratin 7 (CK-7), and CK-20.^[8,9] For our diagnosis, lung specimen and subepidermal specimen were stained with CK-7, which is specific to primary lung adenocarcinoma. If the histology of the primary and metastatic lesions is similar, the diagnosis is confirmed.

Treatment of solitary cutaneous metastases usually includes surgical resection combined with adjunct chemotherapy.^[9] Other treatments include radiotherapy, cryotherapy, laser, or radiofrequency

ablation or interferon alpha injections.^[10] Usually, cutaneous metastases indicate a progression of the malignancy and poor prognosis.^[5] Other poor prognostic indicators include small-cell primary lung tumors (nonresectable), multiple metastatic cutaneous lesions, or other distant metastases.^[11] The average survival time after diagnosis of cutaneous metastasis is approximately 5 to 6 months, with few patients living longer than 1 year.^[12]

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Conflicts of interest

There are no conflicts of interest.

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