Cutaneous Lesions: An Unusual Clinical Presentation of Small Cell Lung Cancer

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Patient: Male, 87-year-old

Final Diagnosis: Small cell lung cancer

Symptoms: Cutaneous lesions

Medication: —

Clinical Procedure: —

Specialty: Oncology • Surgery

Objective: Unusual clinical course

Background: Small cell lung cancer (SCLC) is the most aggressive type of lung cancer, accounting for 13% of all new lung cancer cases worldwide. Common metastatic sites are the brain, liver, adrenal glands, bone, and bone marrow, while cutaneous metastasis is rare and is associated with a poor prognosis, and presentation of SCLC as the first sign of malignancy is even rarer.

Case Report: An 87-year-old patient with a history of tobacco abuse and free from any medication administration presented to the Emergency Surgical Department with 2 nodules in the skin of the abdomen. Excisional biopsy of the skin lesions was performed and the pathology showed metastatic small cell cancer originated from the lungs. A chest X-ray and CT scan confirmed the diagnosis of lung cancer. Chemotherapy was initiated. Following a short hospitalization period, the patient’s condition worsened. The patient died in the Intensive Care Unit before completion of full cycles of chemotherapy and palliative radiation therapy.

Conclusions: A diagnosis of metastatic disease should be considered in patients with new cutaneous lesions and a smoking history. Skin lesions of metastatic lung cancer are often described as painless nodules, mobile or fixed, hard or flexible, single or multiple. Treatment in limited-stage disease usually includes chemotherapy combined with radiation. In extensive-stage disease, chemotherapy is the primary option. Small cell lung carcinoma is more responsive to chemotherapy and radiation therapy than are other cell types of lung cancer. For prevention, especially in high-risk patients, annual chest screening, smoking-prevention programs, and control of occupational exposure to culprit substances are highly recommended.

Keywords: General Surgery • Neoplasm Metastasis • Small Cell Lung Carcinoma

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Background

Small cell lung cancer (SCLC) is the most aggressive type of lung cancer, accounting for 13% of all new lung cancer cases worldwide [1]. SCLC is classified as limited-stage or extensive-stage disease based on the location of the tumor. In particular, patients with tumors located to the hemithorax of origin, the mediastinum, or the supraclavicular lymph nodes can be determined as having limited-stage disease (LS-SCLC) and they represent approximately 30% of all new SCLC cases. In contrast, tumors that spread beyond the supraclavicular areas indicate extensive-stage disease [2].

SCLC is difficult to identify, especially at early stages, in which signs and symptoms do not appear. Thus, cancer can spread to other sites, even before the primary occurrence is diagnosed. For instance, patients experiencing cancer in advanced stages may be entirely unaware of their disease and may be diagnosed only after undergoing a computed tomography (CT) scan for an unrelated condition [3].

Common metastatic sites of SCLC are the brain, liver, adrenal glands, bone, and bone marrow. Cutaneous metastasis is rare and is associated with a poor prognosis [1]. In contrast, it is common for other types of lung carcinoma to present with cutaneous metastasis. Although cutaneous metastasis of SCLC usually occurs at the terminal stage of the disease, it may, less commonly, be concurrent with the diagnosis and may also present as the first sign of the illness [4].

In patients with extensive disease, long-term disease-free survival is rare. Regardless of stage, the current prognosis for patients with SCLC is unsatisfactory despite improvements in diagnosis and therapy made during the past 25 years. Without treatment, SCLC has the most aggressive clinical course of any type of pulmonary tumor, with a median survival from diagnosis of only 2 to 4 months [2,5].

Case Report

An 87-year-old White man with a 120 pack-year history of smoking presented to the Emergency Surgical Department of the university hospital with 2 round grayish-brown nodules located in the skin of his abdomen. The patient had a history of fatigue and dizziness over the last 2 months but no weight loss. He was not taking any medication and he did not have history of dyspnea, cough, pleuritic pain, or any other respiratory problems. The patient was in good physical condition and nutrition for his age (body mass index=20.5). The skin nodules were painless, clearly visualized, and mobile (not fixed in the skin). One of them was 4×5 cm in size on the left lumbar region and the other one was measured 3.5×2 cm on the right iliac region (Figure 1A, 1B). Physical examination revealed multiple palpable cervical lymph nodes bilaterally and single axillary and inguinal lymph nodes unilaterally.

The level of arterial blood pressure was 140/90 mmHg, body temperature was 36.7°C, and the oxygen saturation level was 95%.

At his admission to our department, most blood and serum examinations were within normal range except for...
carcinoembryonic antigen CEA (274.5 ng/ml), cancer antigen CA 15-3 (14.56 U/ml), neuron-specific enolase (NSE 48.84 ng/ml), amylase (104 U/ml), and alkaline phosphatase (152 U/l).

A chest X-ray showed multiple nodular lesions in the right lower lobe and pleural effusion bilaterally (Figure 2A, 2B). The patient underwent surgical excision biopsy of the skin lesions on the day of his admission to the hospital, and an immediate histological examination of the lesions was requested.

The CT scan confirmed the chest X-ray results and additionally revealed spleen and right adrenal gland induction and multiple nodes in the brain. The CT scan also showed multiple subcutaneous nodular lesions in the abdominal region (Figure 3). There were no foci found in the liver or in the bone scan.

Based on the histological examination performed 48 h after the request, the skin lesions were proved to be metastatic small cell lung cancer. The patient had the first cycle of IV chemotherapy with cisplatin and etoposide on the 7th day of hospitalization. Palliative radiation therapy could have been used if the lesions became bleeding or painful. On the 12th day, the patient's condition deteriorated dramatically, with loss of consciousness. Although he had the proper supportive and cerebral decompressive treatment (Dexamethasone 4 mg i.v. 3 times/day), he was deprived of his full chemotherapy and radiation. The patient died in the Intensive Care Unit 50 days after his admission to the hospital.

Discussion

Evidence from every-day medical practice shows that lung cancer is a systemic disease in the great majority of cases, especially small cell lung cancer [6]. Extrathoracic metastases due to small cell lung cancer often present even in patients with apparently restricted lung tumors, and these patients are often dying from systemic metastases [7].

Over the past few years, small cell lung cancer (SCLC) has been referred to as grade IV pulmonary neuroendocrine carcinoma (NEC) [8]. It is characterized by rapid growth and early dissemination. LD-SCLC is treated with curative intent with a combination of chemotherapy and radiotherapy, with median survival of 23 months and 5-year survival of 12% to 17%. Extensive-disease SCLC is treated primarily with chemotherapy, with a median survival of approximately 7 to 12 months, while the 5-year survival rate is only 2% [9].
Risk factors include smoking, exposure to several industrial compounds (eg, asbestos, arsenic, and chromium compounds), residential radon, cooking oil vapors, indoor coal and wood burning, and viral factors HPV 16 and 18. Preexisting lung disease confers an increased risk of lung cancer (up to 13%) for individuals who have never smoked [10]. Small cell carcinoma is extraordinarily rare in patients who have never smoked tobacco [11]. In addition, the risk of lung cancer exceeds 24% in nonsmokers who live with smokers [12].

Skin and soft tissue metastases occur in 8% of patients dying of lung cancer, and 1% to 12% of patients with lung cancer develop skin metastasis. Lesions present as painless subcutaneous or intramuscular masses, often nodular, mobile or adherent, hard or flexible, oval or round, single or multiple, and varied in size. Less common lesions include erysipelas-like papules, plaques, ulcerations, zosteriforms, and scleroderms [13,14].

The skin lesions of metastatic lung cancer do not have a characteristic presentation pattern and cannot be distinguished from skin metastases originating from other organs. Differential diagnosis also includes squamous cell carcinoma, basal-cell carcinoma, amelanotic melanoma and Merkel cell carcinoma. Plaque-like lesions, erysipelas-like papules, and zosteriform lesions may mimic local infection. Diagnosis is by biopsy [13].

All histological types of lung cancer can metastasize to the skin. Adenocarcinoma and large cell carcinoma have a higher incidence of cutaneous metastasis, while squamous cell and small cell carcinoma rarely metastasize [15]. Between 7% and 23.8% of these patients have cutaneous lesions as an initial sign of malignancy in various series reported [16].

More than 95% of all SCLC cases transcend Stage I, and there is no benefit from surgical resection for advanced-stage disease. Solitary cutaneous metastases can be surgically excised with a combination of chemotherapy, and/or radiation. If multiple cutaneous lesions exist, chemotherapy alone is preferred, especially when cutaneous lesions are bleeding or painful. Cutaneous metastases suggest a poor prognosis. Indicators of poor prognosis include non-resectable small-cell primary tumors, multiple cutaneous metastases, or other distant metastases. Treatment is only palliative [17].

Immunotherapy (atezolizumab and durvalumab) also plays a promising role in modern treatment of advanced SCLC disease. The combination of immunotherapy with chemotherapy as the first-line treatment seems to help some people live longer [18].

The American Association for Thoracic Surgery recommends annual chest screening, with low-dose computed tomography screening in high-risk patients, since lung cancer can be disseminated early without any symptoms [19].

Conclusions

Although uncommon, cutaneous metastasis may be the presenting sign of small cell lung cancer. Atypical skin lesions should lead to suspicion of metastatic disease, particularly in the elderly, in patients with or without smoking history. Cutaneous metastasis indicates extensive-stage disease and a poor prognosis. Chemotherapy combined with thoracic radiation therapy is considered the standard of care, improving median survival.

Annual chest screening with low-dose computed tomography in high-risk patients is recommended, since patients with lung cancer can be asymptomatic.

Smoking-prevention programs and control of occupational exposure to culprit substances are highly recommended due to high SCLC death rate and limited advances in therapy.

Department and Institution Where Work Was Done

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Declaration of Figures’ Authenticity

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