A Pulmonary Adenocarcinoma with Miliary Lung Metastases and Bone Marrow Involvement

Mustafa Kolsuz, MD[1]; Muzaffer Metintaş, MD[1]; Emine Dündar, MD[2]; Allen R. Gibbs, MD[3]; Irfan Ucgun, MD[1]

[1] *Department of Chest Diseases, Osmangazi University Medical Faculty, Eskisehir, Turkey*

[2] *Department of Pathology, Osmangazi University Medical Faculty, Eskisehir, Turkey*

[3] *Department of Histopathology, Llandough Hospital, Penarth, South Glamorgan, UK*

Abstract

Adenocarcinoma is the most frequently diagnosed histological subtype of bronchogenic carcinomas in women and nonsmokers, and commonly located peripherally. Pulmonary adenocarcinoma, as other bronchogenic carcinomas, can cause distant metastases. However, miliary lung metastasis is rare and generally bone marrow involvement in pulmonary adenocarcinomas is not expected. Here we report a 71-year-old female pulmonary adenocarcinoma patient with miliary lung metastasis and bone marrow involvement.

Turkish Respiratory Journal, 2000;2:44-46

Key words: *Pulmonary Adenocarcinoma, Miliary Lung Metastases, Bone Marrow*

Introduction

Adenocarcinoma is the most frequently diagnosed histological subtype of bronchogenic carcinomas in women and is not also uncommon in non-smokers (1). It is commonly located peripherally and may be located under the pleura.

In patients with intrathoracic and extrathoracic malignant neoplasms, pulmonary metastases are most commonly described as being well-circumscribed lesions that may vary in size from small miliary nodules to large ones occupying the whole lung (1,2). This pattern has been attributed to hematogenous spread. However, miliary lung metastasis in bronchogenic carcinoma is not always expected (2). Apart from the five cases of Umeki's report, we have not found any other case of pulmonary adenocarcinoma with miliary lung metastases in English literature. Metastases to bone marrow of prostate, breast, pancreas, gastric adenocarcinoma and small cell lung carcinoma have been frequently reported (3-5), but bone marrow involvement in pulmonary adenocarcinoma is not expected. Here we report a case of pulmonary adenocarcinoma with miliary lung metastases in both lungs as well as bone marrow involvement.

Case Report

A 71-year-old women was admitted with a 2-month history of slowly increasing dyspnea, chest pain on the left side, dry coughing, lethargy and also a weight loss of more than

Correspondence: *Dr. Mustafa Kolsuz*
Kırmızıtoprak Mahallesi, Tandoğan Sokak, Soy-gür Apt. A Blok. No: 40/1 Eskişehir, Türkiye

10% of body weight. She originated from a village near Eskişehir in central Turkey, and was without any profession.

Physical examination revealed dullness and decreased breath sounds on the lower part of the right hemithorax. In routine laboratory tests, all were normal (including alkaline phosphatase and calcium) excepting Hb:10g/dl, sedimentation rate 75mm/h, LDH: 776 IU. A chest x-ray showed a bilateral miliary pattern as well as left-side pleural effusion (Figure 1A). Chest CT scan showed a 7x8 cm mass lying posterolaterally, pleural effusion and diffuse reticulonodulary infiltration in a miliary pattern (Figure 1B).

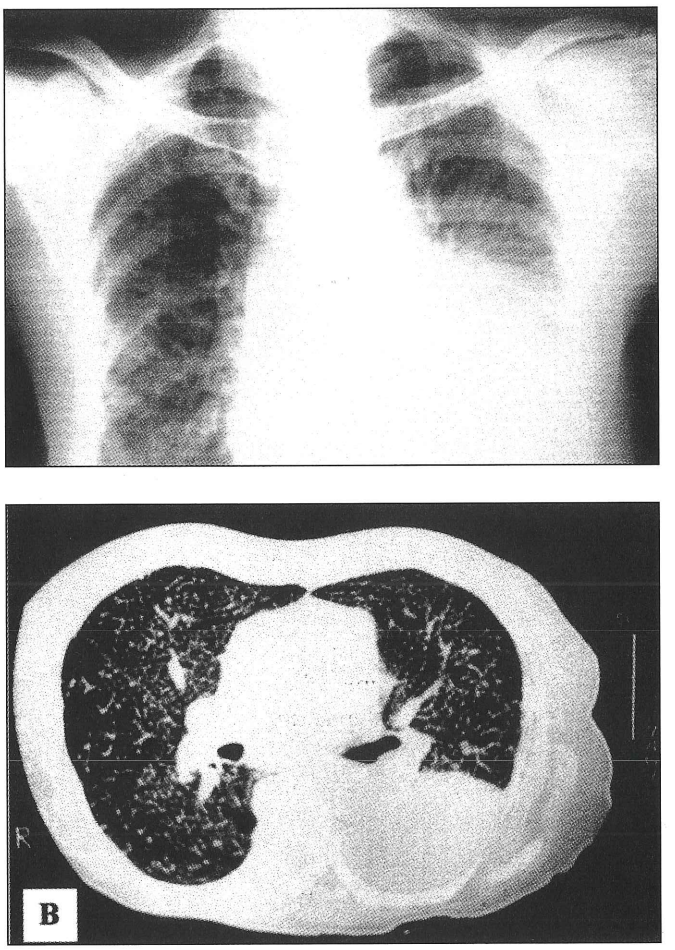

Fig. 1. *Posteroanterior chest x-ray showing bilateral miliary pattern and left-sided pleural effusion (A). Chest CT showing a 7x8cm mass lying posterolaterally and pleural effusion on left side and diffuse reticulonodulary infiltration in a miliary pattern (B).*

Pleural fluid was exudate and had many atypical mesothelial cells showing mitosis and cell balls. Cytological examination of fluid samples failed to produce a diagnosis, so we performed a CT-guided closed pleural needle biopsy through the mass. A bone-marrow biopsy was also performed for differential diagnosis, since a miliary-pattern had been observed radiographically. As a result of the histopathological examination of the biopsy samples from the lung mass, a diagnosis of adenocarcinoma was made (Figure 2A).

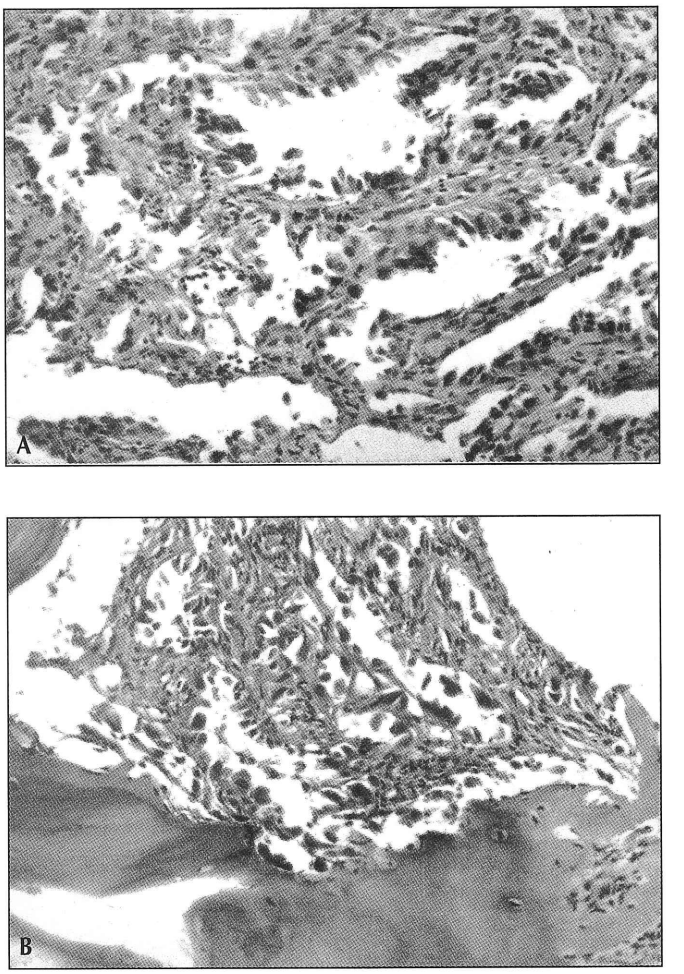

Fig. 2. *Lung biopsy showing irregular tubules lined with tumor cells having large atypical nucleus and scanty cytoplasm (Hematoxylin-eosine, (H.E) stain x 200) (A). Bone marrow metastases closely simulate the architecture of the primary tumor (H.E stain x 200) (B).*

Immunohistological procedures for the carcinoembryonic antigen and Leu-M1 were also performed. At the same time, tumor cells were detected in the bone marrow samples of the patient (Figure 2B).

Extensive evaluation of the patient by cerebral and abdominal CT, bone radionuclide scintigraphy and related consultations revealed no other tumor sites or dissemination. The patient and her family were unwilling to have her undergo any therapy schedule.

Discussion

Intrapulmonary metastases from bronchogenic carci-

noma usually occur in one of two major courses (6). One course is the migration of tumor cells via lymphatic vessels to the hiler lymph nodes and through the heart and pulmonary arteries into the lungs. The second course is through the venous system to the pulmonary veins and heart and then through the bronchial arteries to the lungs. In the lung, they localize as nodular parenchymal or interstitial patterns of growth, or both (2).

The parenchymal nodules arising from metastases may be multiple, ranging in size from small miliary nodules to large ones, and involving various parts of both lungs (6). Miliary lung metastases occurs if the primary neoplasm is rich in vascularity, such as renal cell carcinoma, thyroid carcinoma, sarcoma of the bone and choriocarcinoma (6). However, little information concerning miliary lung metastasis from bronchogenic carcinoma is available.

In our case, the presence of multiple micronodules and the absence of irregular nodular thickening at the interlobular septa and bronchovascular bundles, as well as the absence of lympadenopathy in the radiological examination, would suggest that miliary lung metastases of primary lung adenocarcinoma occur through a hematogenous rather than lymphangitic route.

In the late stages of the disease, distant metastases is quite common in pulmonary adenocarcinoma, but miliary lung metastasis is scarce. In Umeki's study with 630 cases, bone metastasis had occured in 246 cases and miliary lung metastases in only five adenocarcinoma cases. He reports that 246 bone metastases had arisen from the lungs by a hematogenous route, while the five miliary lung metastases had arisen from the secondary bone metastatic foci by means of multiple tumor emboli (2). In our case, we found bone marrow involvement and miliary lung metastases without bone metastases. In fact, bone marrow metastasis is a common occurrence in small cell lung carcinoma cases (7). It is our opinion that, in our case, the pulmonary adenocarcinoma had metastasized to the bone marrow and the lung through a hematogenous route. For this reason, in cases of bilateral lung involvement in bronchial carcinoma we suggest a bone marrow biopsy, irrespective of histological type.

References

1) Mitchell LM. Non-small cell lung cancer-clinical aspects, diagnosis, staging, and natural history. In: Fishman AP, Elias JA, Fishman JA, Grippi MA, Kaiser LR, Senior RM. Pulmonary disease and disorders. 3 rd ed. New York, McGraw Hill Co, 1998; 1759-1859.
2) Umeki S. Association of miliary lung metastases and bone metastases in bronchogenic carcinoma. Chest 1993; 104: 948-950.
3) O'Sullivan GC, Collins JK, O'Brain F, Crowley B, et al. Micrometastases in bone marrow of patients undergoing curative surgery for gastrointestinal cancer. Gastroenterolog 1995; 109: 1535-1540.
4) Pantel K, Aignher C, Kollermann J, et al. Immunocytochemical detection of isolated tumour cells in bone marrow of patients with untreated stage C prostatic cancer. Eur J Cancer 1995; 31: 1627-1632.
5) Torne A, Martinez RS, Pahisa J, et al. Massive metastases from a lobular breast carcinoma from an unknown primary during pregnancy. A case report. J Reprod Med 1995; 40: 676-680.
6) Fraser RG, Pare JAP, Pare PD, Fraser RS, Genereux GP. Diagnosis of disease of the chest. 3 rd ed. Philadelphia, WB Sounders Co, 1989; 315-376.
7) Trillet-Lenoir VN, Arpin D, Brune J. Bone marrow metastases detection in small cell lung cancer. A review. Anticancer Res 1994; 14: 2795-2797.