A Rapid Progression of Malignant Pleural Mesothelioma with Metastases to Lung and Brain

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Abstract

Malignant pleural mesothelioma commences as single or multiple nodules, and generally spreads by local growth with extension of nodules to diffusely encompass the lung. The mortality from malignant mesothelioma (MM) usually results from local spread of the primary tumour. Metastases are uncommonly demonstrated clinically in the early stages of the disease. Here we report a 47 years old male patient, who was exposed to tremolite asbestos environmentally, with the sarcomatoid type of malignant pleural mesothelioma who had a rapidly progressive disease with multiple cerebral and multiple nodular contralateral lung metastases seen soon after presentation.

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Introduction

Malignant mesothelioma (MM) is an uncommon but highly lethal neoplasm which originates from mesothelial cells, most commonly from pleura, less commonly from peritoneum and rarely from pericardium and tunica vaginalis (1,2). It commences as single or multiple nodules, and generally spreads by local growth with extension of nodules to diffusely encompass the lung (3). As a consequence, most patients complain of dyspnea and/or chest pain at the presentation of the disease (4). The mortality from MM usually results from local spread of the primary tumour. Although metastases have been demonstrated in at least half of the reported cases at autopsy (5,6), metastases are uncommonly demonstrated clinically in the early stages of the disease. It is claimed that the probability of hematogenous metastasis increases from epithelial to sarcomatoid subtype (7).

We report a patient with the sarcomatoid type of malignant pleural mesothelioma who had a rapidly progressive disease with cerebral and contralateral metastases seen soon after presentation.

Case Report

A 47 year-old man was admitted to our clinic in June 1995 with a 2-month history of progressively severe left sided shoulder and chest pain. The man was born and lived in a vil-

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lage called Saraycık in Kütahya city, in the central part of Turkey. The man was a forest laborer but he had a history of asbestos exposure from using white-soil (which contained tremolite asbestos) to white wash or plaster his house. He had a smoking habit of 25 pack/years. Physical examination revealed dullness and decreased breath sounds over the lower part of the left hemithorax. Results of routine laboratory tests were normal except for raised sedimentation rate (55mm/h) and LDH (556 IU). Chest x-ray showed pleural thickening at the left apex and a very small effusion on the same side. The pleural effusion was an exudate and no malignant cells were identified in three cytologic examinations.

Computed Tomography (CT) of the chest revealed diffuse smooth thickening in parietal pleura with a nodular lesion as well as a minimal pleural fluid (Figure 1). Since he refused thoracoscopy a CT-guided closed pleural needle biopsy (CT-CPNB) was performed (8), but this was not diagnostic. Abdominal and cerebral CT, radionuclide bone scintigraphy, bronchoscopy and other investigations revealed no evidence of distant visceral metastases.

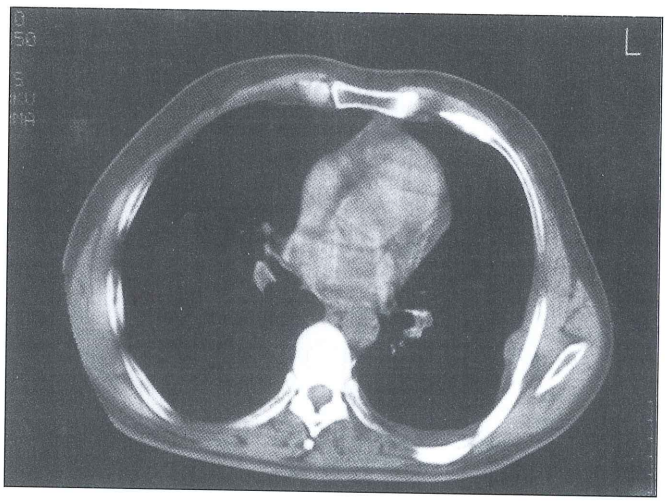

Fig. 1. Initial Computer Tomography of the chest showed diffuse smooth thickening in parietal pleura with a noduler lesion at the left-side.

One month after admission, the patient's clinical status had worsened with exertional dyspnea, sweating, lethargy and pain only controlled by morphine. CT-CPNB was performed again and a histopathologic diagnosis of sarcomatous malignant mesothelioma was obtained.

The patient began a chemotherapy schedule consisting of intravenous cisplatin (60 mg/m^2), Mitomycin C (8 mg/m^2) and recombinant interferon alpha-2a (4,5 million IU, subcutanously, twice weekly, every week), but two months later, after taking 2 cycle of chemotherapy, the patient worsened clinically with progression of all symptoms and also developing a left hemiparesis. Chest x-ray and CT revealed a collapsed left hemithorax with multiple nodules and masses encompassing and invading the lung and multiple nodules in the right lung (Figure 2). Cerebral CT with contrast enhancement was performed and revealed multiple lesions surrounded by oedema in both occipital areas, 1 cm in right and 1.5 cm in left, near the vertex (Figure 3).

After review of all the cerebral CT's, metastatic lesions of MM were diagnosed. We also performed a bronchoscopy to see intrabronchial area once more. In bronchoscopy we detected a visible lesion mimicking a malignant invasion and the biopsy samples revealed histopathologically malignant mesothelioma diagnose again. The patient did not respond to chemotherapy and died 2 weeks later. No consent was given for autopsy.

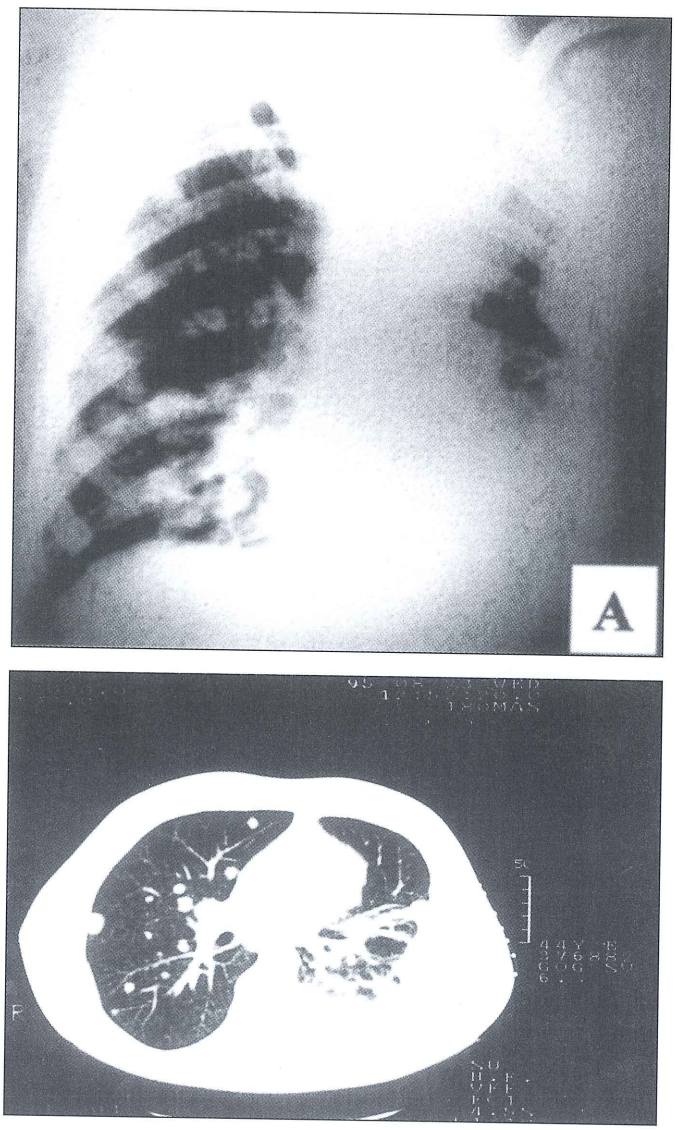

Fig. 2. A- Posteroanterior chest film, showing collapse, pleural thickening and pleural fluid at the left side, and multiple nodular imaging at the right side.
B- the same changes seen on CT scan.

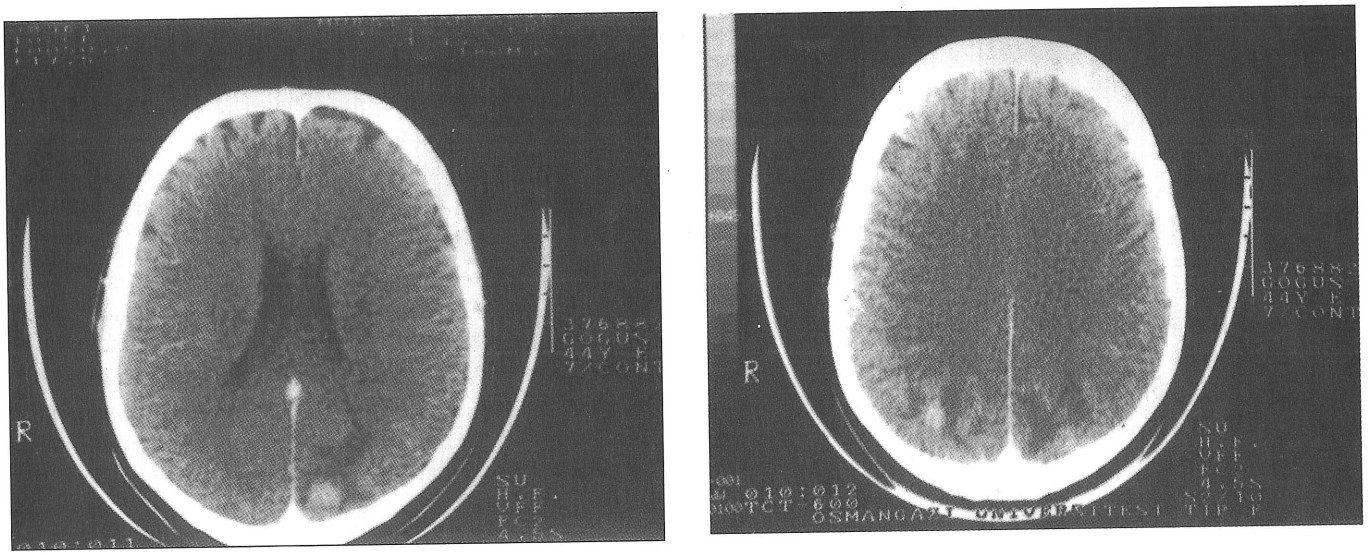

Fig. 3. Cerebral CT scan showed bilateral occipital brain metastases of malignant mesothelioma.

Discussion

Most patients with MM die from the complications of locally spreading tumour. In contrast to the other tumours, it is accepted that mesothelioma cells have a long doubling time and only a slight tendency to invasion (3,9). It is unusual for MM to metastasize before the late stages of the disease when spread occurs mostly to contralateral lung, liver, adrenals, bones, and rarely brain, but is rare for the metastases to be demonstrated ante mortem (5,6,10). The number of reports of brain metastasis in MM have increased with 55 cases reported in the literature (11,12). Brain metastases occur in less than 1% of the cases (13). Histopathological analysis of the cases with brain metastasis showed that the sarcomatoid type predominated; only two or three cases with detected brain metastasis have been reported in the epithelial subtype of MM (11,14). The diagnosis of brain metastasis was made ante mortem in only 6 cases including the present case (15).

Our patient had no neurologic or psychologic symptoms, or CT findings of brain metastasis on presentation but within three months MM had progressed with haematogenous dissemination to the contralateral lung and brain. Very few cases with multiple nodular deposits in the contralateral lung parenchyma have been reported in the literature (16).

The site, frequency and growth of metastases depends on the localisation of the primary tumour and on biochemical and immunological features of both the cancer cells and host. In rare cases of MM, disease develops rapidly with widespread metastases but the reason for this is not known. It is possible that genetic alterations might be important in disease progression, but further research such as oncogene analysis is needed to understand the natural history of malignant mesothelioma.

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