Diffuse Contralateral Pulmonary Metastases in Malignant Mesothelioma*

An Unusual Radiographic Presentation

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We describe a patient with malignant pleural mesothelioma involving the lung parenchyma bilaterally in a diffuse nodular fashion. This pattern of metastasis is seldom reported for this tumor.

Malignant mesothelioma is a relatively rare tumor arising most commonly from the pleura. It has assumed increasing importance in recent years, mainly because of a rising incidence and an etiologic association with asbestos exposure.4,5 The tumor generally spreads by direct invasion of surrounding tissues. Distant metastases generally occur late in the disease process.6,7 Involvement of the contralateral lung, although reported, is unusual. When it occurs, it tends to manifest itself as large nodules or masses, which are often pleural based.8 This report describes a patient with malignant pleural mesothelioma with bilateral parenchymal involvement assuming a diffuse, nodular appearance on chest x-ray film.

CASE REPORT

A 62-year-old white former shipyard worker, without a history of prior lung disease, was hospitalized in January 1986 because of cough and dyspnea. Chest x-ray film findings were normal except for a persistent right pleural effusion. Mesothelioma was diagnosed by open pleural biopsy. Treatment consisted of a partial right parietal pleurectomy, and radiation therapy with 4,500 rads administered to the entire right hemithorax, ending in May 1986. In August 1986, the patient complained of fatigue, anorexia, low-grade fevers, dyspnea on exertion, and a cough productive of clear mucus. He denied chest pain, or hemothysis. Result of a PPD test was negative.

Past medical history was remarkable for diabetes mellitus, and a recent episode of supraventricular tachycardia. Medications at the time of admission included digoxin and chloropramide.

Physical examination was unremarkable except for decreased breath sounds over the right chest and the presence of a right thoracotomy scar. Screening laboratory tests were normal except for a hemoglobin level of 11.0 g/dl and glucose of 224 mg/dl. Arterial blood gas levels on room air were: pH, 7.51; Pao2, 72; Paco2, 29. Roentgenogram and CT scan of the chest both showed, in addition to the previously noted right pleural changes, new diffuse nodular disease bilaterally (Fig 1). The nodules were relatively uniform in size, with diameters of 6-10 mm and no evidence of cavitation. Fiberoptic bronchoscopy was performed, with brushings and transbronchial biopsies, but the specimens were nondiagnostic for mycobacterial, fungal, neoplastic, or any specific inflammatory process. The patient subsequently underwent open lung biopsy of the lingula. Pathologic study showed the presence of malignant cells within the lung parenchyma (Fig 2), which on special staining were Alcian blue-positive (intracellularly, with hyaluronidase digestion) and mucicarmine, as well as PAS-negative, characteristics consistent with malignant mesothelioma. The histology was identical to that of the original tumor.

DISCUSSION

A recent comprehensive review identified the six most common chest roentgenographic findings associated with malignant mesothelioma as pleural effusion, pleural thickening, discrete pleural masses, large lung nodules, hilar mass, and rib destruction.9 Diffuse parenchymal involvement was not described in this report, or in several older studies.9,10

The occurrence of pulmonary parenchymal involvement with this tumor has been noted by others,9,11 but no single report highlights the parenchymal changes seen on plain chest films and CT scans, in combination with pathologic confirmation of the radiographic findings. A recent report of brain metastases from mesothelioma reported by Kaye et al12 documents contralateral pulmonary nodules found at autopsy; however, little chest radiographic information is of-

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FIGURE 1A (left). Posteroanterior chest film, showing diffuse, nodular changes throughout both lung fields. B (right). The same changes as seen on CT scan, confirming the intraparenchymal location of the process.
Encroachment Upon the Lungs of Large Chronic Pericardial Effusion*  

Pulmonary Tamponade?

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Pulmonary encroachment by a large chronic pericardial effusion is reported in a woman with pericardiocentesis whom we recently treated. A restrictive pulmonary impairment is documented with pulmonary function data obtained before and after drainage of the effusion and the patient's dyspnea improved.

The potential for pulmonary encroachment as a result of large chronic pericardial effusion has been described theoretically in reviews of pericardial disease. However, we have not discovered documented evidence of this phenomenon. We recently treated a patient with massive chronic pericardial effusion who demonstrated, on pulmonary function testing, restrictive pulmonary impairment which improved dramatically after drainage of the effusion.

**CASE REPORT**

A 59-year-old black woman with a history of chronic pericardial effusion, chronic obstructive pulmonary disease, interstitial lung disease, and coronary artery disease presented with one week of progressive dyspnea on exertion. The chronic pericardial effusion was first diagnosed six years prior to admission by echocardiography; at that time, there was reluctance to undertake pericardiocentesis because it was felt the effusion was stable. Pulmonary function studies performed then showed a mixed abnormality with restrictive and obstructive components. The patient was taking theophylline (Theodur) 300 mg twice daily and had a 40 pack-year smoking history.

The patient was in mild respiratory distress, afebrile, with blood pressure 110/84 mm Hg, pulse 80 b/m, without pulsus paradoxus. There was jugular venous distention to 9 cm. Diminished breath sounds and dullness were present at the left lung base and there was mild expiratory wheeze. The chest was otherwise clear. The abdomen was unremarkable. Extremities showed no edema. There were no neurologic deficits.

Initial chest roentgenogram (Fig 1) demonstrated a massive

**REFERENCES**

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Large Chronic Pericardial Effusion (Kane, Figueroa)