Metastatic Bronchogenic Carcinoma: An Unusual Cause of Localized Arthritis

To the Editor:

Lung cancer is the most common fatal malignancy in the American male. It is responsible for the deaths of 43 per 100,000 males in this country. All bronchogenic carcinomas tend to metastasize early, which accounts for the high mortality rate. Bronchogenic carcinoma metastasizes beyond the thorax most commonly to lymph nodes, liver, adrenals, kidneys, bone and brain, and bone metastases in bronchogenic carcinoma range from 10 to 20 percent.

However, while metastases of bronchogenic carcinoma to bone are common, metastatic neoplasms of the joint are a rare problem, with only one case having been described in which carcinomatous synovitis of one knee was the presenting feature of bronchogenic carcinoma. We present a case of unilateral painful joint effusion in a patient with bronchogenic carcinoma. The malignant etiology of the effusion was established even in the absence of initial radiographic changes in the underlying bones, with routine cytologic examination of the aspirated fluid.

Case Report

A 62-year-old white man was admitted on July 23, 1973 with chief complaints of hemoptysis of nine days' duration and progressive shortness of breath. The patient had been a pack-and-a-half per day smoker for 40 years. Past medical history was noncontributory.

Physical examination on admission revealed a fairly well built man in no distress with blood pressure 120/80 mm Hg, pulse 80 and regular, and respiratory rate 16 per minute; the rest of the exam was unremarkable. Chest x-ray film showed a density in the anterior segment of the left upper lobe. All the admitting laboratory values were entirely within normal limits.

Following bronchoscopy and mediastinoscopy, which were inconclusive, the patient underwent thoracotomy on August 17, 1973 and was found to have intensive involvement of mediastinal nodes by undifferentiated carcinoma. Pneumonectomy was ruled out and the procedure terminated. A course of external radiation to left lung was subsequently administered.

On September 5, 1973, the patient complained for the first time of a painful left knee, at which time the pain was localized to the medial aspect of the knee and there was no associated swelling. X-ray film of the left knee revealed minimal degenerative changes. Rheumatology consultation was obtained, and the possibility of calcific tendonitis or a medial ligament tear suggested. By September 19 a painful effusion was present in the left knee joint. This was tapped, a few milliliters of bloody fluid aspirated, and a routine cytologic examination showed poorly differentiated adenocarcinoma. Repeat x-ray films showed a lytic destructive lesion of the distal left humerus, a lytic metastatic lesion in the medial condyle of the left femur, and pathologic intertrochanteric fracture of the right hip. Total body bone scan was done on September 18 and markedly increased areas of uptake were seen in the left knee, the left elbow, and the greater trochanter of the right femur.

Radiation therapy to the left knee and elbow was begun with symptomatic relief, but left knee effusion persisted. Repeat aspiration of the left knee again showed adenocarcinoma cells.

The patient continued to deteriorate and expired on November 9, 1973. Autopsy showed undifferentiated carcinoma of left upper lobe with metastasis to mediastinal nodes, left adrenal cortex, both knees, left elbow and right femur.

Discussion

Rheumatic symptoms in bronchogenic carcinoma are common, usually resulting from skeletal metastases or hypertrophic osteoarthritis; however, as we pointed out above, a painful joint effusion as a metastatic manifestation of bronchogenic carcinoma is very uncommon, with only one case having been described in the English literature.

The diagnostic value of cervical and sputum cytologic examinations is well established. This useful diagnostic tool is rarely, if ever, used in the evaluation of joint effusions. In a cytologic examination of 71 joint effusions there were no false positives and three positive aspirates for malignant cells, one of these being in a patient with a clinically unsuspected malignancy. Thus, cytologic examination of joint effusions is very useful.

In our patient the diagnosis of malignant joint effusion was established with cytologic examination even in the presence of an initially normal bone x-ray examination. This early diagnosis made it
possible to give the patient palliative radiotherapy and made his last days of life relatively comfortable.

We believe that cytologic examination of joint effusions is a very useful tool for the diagnosis of malignancy in joints, as malignant cells stand out clearly, and we believe further that all joint effusions that are tapped should have cytologic examination done. Finally, in any painful joint effusion, metastatic bronchogenic carcinoma should be included in the differential diagnosis, even in the presence of normal x-ray findings; relief of symptoms can then be achieved with palliative radiotherapy.

Faroque A. Khan, M.D., F.C.C.P.,
Willa Carter House, M.D. and Arfa Khan, M.D.
Division of Pulmonary Medicine
Long Island Jewish-Hillside Medical Center
Queens, New York

REFERENCES

Scanning Electron Micrographs: Another Look at Early Emphysema Lesions

To the Editor:

We would like to present some scanning electron micrographs which will serve as an extension to a previous report in this journal on the "Anatomic and histologic changes of early emphysema."1 Through the present communication* we may provide a valuable correlation between the histologic structure previously described and the cell distribution on the alveolar surface of the same lung.

McLaughlin and Tueller1 described the macroscopic and histologic changes in emphysema lesions not visible to the naked eye. They reported seeing large aggregations of pigmented macrophages near the early lesions where confluence of the airspaces had begun. The characteristic brown color of these cells has been attributed to the presence of a fluorescent tar-like material within cytoplasmic vesicles which is similar to that found in cigarette smoke.2

We have identified the alveolar macrophages on scanning electron micrographs by their similarity in distribution and size to cells reported in histological sections from the same lung (see in ref 1—Fig 1, 3, 5, 6 and 7). This tissue was obtained from a 34-year-old woman who had smoked 20 cigarettes per day for 12 years and died from a barbiturate overdose. The latex injection technique1 was used in the fixation of the lung and selected areas of the tissue were prepared for scanning electron microscopy by the technique described elsewhere.8 The great depth of field characteristic of the scanning electron microscope has made it possible for us to locate these macrophages more precisely on the surface of enlarged airspaces (Fig 1). Plaques of these cells were seen to rest upon the alveolar surface and have a raised cell perimeter (Fig 2). The precise role these cells play in the pathogenesis remains obscure; however,