Primary Leiomyosarcoma of the Lung

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Primary smooth muscle tumors of the lung are rare, and usually arise from the uterus, gastrointestinal tract, or soft tissue. The patient reported was found at autopsy to have leiomyosarcoma which arose in the left mainstem bronchus and metastasized to the right lung, liver, pancreas, both kidneys, and brain, sparing the lymphatic system. This tumor is slow growing and late metastasizing, in spite of its degree of anaplasia, and has a better prognosis for surgical cure than does bronchogenic carcinoma.

Shaw et al1 found 26 cases of primary leiomyosarcoma of the lung reported up to 1961 and added two more. We report another case of primary leiomyosarcoma of the lung with multiple metastases, diagnosed at autopsy.

REPORT OF A CASE

A 75-year-old, white retired farmer was brought to the Topeka Veterans Administration Hospital in October, 1967 because of physical deterioration with hallucinations, urinary retention, and respiratory insufficiency. Except for chronic cough and exertional dyspnea for many years, associated with lifetime cigarette smoking, there was no history of previous illness. He denied alcoholism. He was emaciated and tachypneic at rest. Attention and memory were poor, and he was transiently confused. Dusky cyanosis and beaking of the nails were noted. Localized induration of the lower lip was present. The barrel-shaped chest was hyperresonant and limited in excursion. Breath sounds were obtained only with forced diaphragmatic breathing. The prostate was enlarged.

Pulmonary function studies showed marked impairment. The arterial pO2 ranged from 55 to 64 mm Hg while the patient was at rest and breathing room air. The serum bicarbonate and pH were normal, as were urea and creatinine levels. Cultures of the urine grew E. coli. Chest roentgenograms showed moderate cardiac enlargement, marked pulmonary fibrosis and generalized emphysema, and dense pleural caps. Later films showed, in addition, infiltrations of the left lung base consistent with pneumonia. Spondylitis of the lumbar spine was present, with marked narrowing and degeneration of the disc between L3 and S1, and generalized osteoporosis was seen on skeletal survey. Excretory pyelography was normal. Electrocardiograms were consistent with emphysema. A mixed flora was obtained on culture of sputa, including overgrowth of Pseudomonas and Proteus, but no cytologic studies were performed.

After bladder decompression and intensive respiratory care, transurethral prostatectomy and excision of the lip lesion were done, with histologic findings of benign prostatic hyperplasia and basal-squamous cell carcinoma of lip. Respiratory insufficiency continued, requiring continuous low flow oxygen at rest together with intermittent inspiratory positive pressure, postural drainage, and antibiotic therapy. His condition gradually worsened, but there was no recurrence of mental confusion, and hypercapnia did not develop. He died in the seventh month of hospitalization, two days after a convulsive seizure followed by right hemiplegia, aphasia, and progressive coma.

Autopsy Findings: The body was that of a fairly well-developed, poorly-nourished, 75-year-old white man. A large tumor mass (Fig 1) 7 cm in diameter, surrounded the left mainstem bronchus. On section, necrosis and extensive hemorrhage were found. The tumor did not completely infiltrate the wall of the bronchus. The hilar lymph nodes were free of metastases. A large metastatic lesion, 15 cm in diameter, was localized to the pleural surface of the lower lobe of the right lung, with superficial infiltration of the lung parenchyma. Its thickest part measured 0.7 cm. There was a hemorrhagic area between this and the parietal pleura. The liver showed three small metastases, the largest one measuring 1.5 cm in diameter. Similar metastases were present in both kidneys, the pancreas, and the brain.

Microscopic examination confirmed the origin of the tumor in the left mainstem bronchus. It was a sarcomatous tumor consisting of interlacing bands of spindle cells (Fig 2) showing nuclei with blunted ends and scanty cytoplasm. There were occasional giant neoplastic cells. Approximately three mitotic figures per high power field were seen. Mac-

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Figure 1. Tumor mass surrounding the left mainstem bronchus.

Figure 2. Interlacing bundles of spindle cells showing nuclei with blunted ends and scanty cytoplasm (H and E × 200).
Primary leiomyosarcoma of the lung, though rare, may arise from the smooth muscle coat of the bronchial tree, most commonly in the left lower lobe where seven examples have been described. In our case, the site of origin was the left mainstem bronchus. In the cases reported, the patients' ages ranged between four and 83 years, and the sexes were equally represented. The presenting symptoms were similar to those of bronchogenic carcinoma.

Histologically, the tumor is made up of interlacing bundles of elongated cells, showing in some cases many mitotic figures and occasional tumor giant cells. The gross characteristics of leiomyosarcoma are similar to those of leiomyoma except that areas of necrosis and hemorrhage are usual and sometimes extensive. The largest reported tumor measured 20 x 20 cm. In spite of its anaplasia, this tumor has a much better prognosis than does bronchogenic carcinoma. Metastases are uncommon and late occurring. Evolution to death is slow. Metastases have been reported in only three patients and in these it was widespread. Lymph node involvement is very rare. In our patient, the pattern of metastases was that of leiomyosarcoma rather than bronchogenic carcinoma, since lymphatic metastases were absent. An interesting case is reported by Frank Glenn et al of concomitant bronchogenic carcinoma with leiomyosarcoma. The lymph node metastases were from the bronchogenic carcinoma and not the leiomyosarcoma.

Our patient's tumor was not diagnosed before death, probably because of his chronic pulmonary invalidism. The last chest x-ray film, two months before death, showed diffuse emphysema, pulmonary fibrosis, and marked pleural reaction (Fig 4) but no evidence of tumor. Autopsy found diffuse tumor infiltrates of both lungs, most marked at the pleural surface of the lower lobe of the right lung. The primary site of tumor was the mainstem bronchus, the tumor measuring 7 cm in diameter, its cut surface showing extensive areas of necrosis and hemorrhage. Metastases were present in the right lung, liver, both kidneys, pancreas, and brain.

In no instance has the diagnosis of leiomyosarcoma of the lung been made through sputum cytology. Chest x-ray films usually do not show any changes that differentiate it from bronchogenic carcinoma. Yanovich et al found the resectability rate to be 55 percent for the entire group of 13 patients and 70 percent for ten patients who were explored. The cure rate following resection is higher than that for carcinoma of the lung. Exploratory thoracotomy should therefore be done in all cases where there are no demonstrable metastases.

**DISCUSSION**

Neumann has pointed out that myomas are seen in organs containing smooth muscle (uterus and gastrointestinal tract) and are rarely seen in organs in which muscle fibers are limited to the vascular system. Primary leiomyosarcoma of the lung, though rare, may arise from the smooth muscle coat of the bronchial tree, most commonly in the left lower lobe where seven examples have been described. In our case, the site of origin was the left mainstem bronchus. In the cases reported, the patients' ages ranged between four and 83 years, and the sexes were equally represented. The presenting symptoms were similar to those of bronchogenic carcinoma.

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PERICARDIO PERITONEAL COMMUNICATION—
AN ADDITIONAL ETIOLOGIC FACTOR IN
PURULENT PERICARDITIS*

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The occurrence of a case in which purulent pericarditis occurred in conjunction with a peritoneal abscess indicates that an additional etiologic factor in purulent pericarditis may be communication between the pericardial and peritoneal cavities through a congenitally weakened portion of the diaphragm.

Purulent pericarditis has been discussed often in the medical literature. Factors concerning etiology have been listed in several papers. The occurrence of a case in which communication between the pericardial and the abdominal cavities was demonstrated by perforation of a peritoneal abscess into the pericardium prompted this review of literature concerning this subject and forms the basis for this report.

CASE REPORT

A two-year-old boy was admitted March 3, 1961 to Children's Hospital, San Diego, with complaints of anorexia, anemia and the presence of an abdominal mass. Infancy had been complicated by recurrent bouts of staphylococcal infections involving skin and respiratory systems. Upon examination, a tender mass was palpated in the epigastrium

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