Hepatoma Presenting as a Single Cavitary Lung Mass*

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A patient who had had a lobectomy for a large cavitary lung mass died one month later. An autopsy was performed and pathologic review of surgical and postmortem specimens confirmed that the original lung lesion was metastatic hepatoma. Excavating solitary metastases from primary adenocarcinomas represent the rarest form of cavitary metastatic lesion, and this is the first report of hepatocellular carcinoma presenting as a single cavitary lung mass.

The diagnosis of a solitary pulmonary mass can be difficult. The physician must be guided by features such as size, calcification, and cavitation in determining the likely nature of a lesion in a specific clinical setting. We report here a patient with hepatoma whose presenting problem was a single, cavitary lung mass.

CASE REPORT

A 54-year-old man with a history of alcoholism was admitted to the hospital for evaluation of a 4-cm right upper lobe cavitary lung mass. The lesion had been detected by a chest roentgenogram (Fig 1) performed as part of a tuberculosis screening project for high-risk individuals.

On admission, he was found to have a poor memory and was oriented only to place, consistent with a previous diagnosis of Korsakoff's psychosis. He denied weight loss, hemoptysis, anorexia, or a recent change in his chronic productive cough. He had smoked two packs of cigarettes daily for 30 years, and drank alcohol heavily. Past history included acute pancreatitis, acute hemorrhagic gastritis, and alcohol withdrawal seizures. There was a poorly documented history of pulmonary tuberculosis which had been treated with isoniazid and ethambutol. Physical examination revealed several spider hemangiomata, and loss of pinprick sensation in the lower legs. The total liver span was 12 cm, and the surface was smooth and palpable 3 cm below the costal margin. Routine laboratory test results were normal with the exception of an alkaline phosphatase value of 99 IU (normal, 35-85). Sputum examination was negative for acid-fast bacilli and malignant cells. The forced vital capacity was 3,310 ml and the FEV₁ was 2,280 ml. No endobronchial lesions were seen at bronchoscopy, and bronchial brushings and washings did not contain malignant cells. A liver scan was not done. The patient underwent thoracotomy and right upper lobectomy, recovered uneventfully, and was discharged.

A repeat chest roentgenogram one month after discharge showed several new solid lesions in both lungs, and he was readmitted. He complained of mild abdominal pain of four days' duration. The liver span was now 17 cm, and ascites was present. The hematocrit value had fallen from 42 to 30 percent. The alkaline phosphatase level was now 660 IU, SCOT, 79 IU, lactic dehydrogenase value, 980 IU, and bilirubin value, 3.0 gm/100 ml. Liver scan showed multiple filling defects. The patient became progressively weaker, complained of increasing abdominal pain, and died suddenly on the fourth hospital day.

An autopsy was performed and the cause of death was massive hemoperitoneum from ruptured hepatocellular carcinoma (Fig 2). Metastases were found in the lungs, spleen, kidneys, and small bowel. The liver also showed cirrhosis of portal type. The lesion which had been resected from the right upper lobe and initially reported as undifferentiated large cell carcinoma was re-examined and found to be characteristic of hepatocellular carcinoma (Fig 3). Bile pigment, alcoholic hyaline, and areas of necrosis characteristic of hepatoma were present in some areas in the lung tumor.

DISCUSSION

Primary carcinoma of the lung frequently undergoes central necrosis. In one review of 632 patients with lung cancer, 16 percent had cavitary lesions.1 Of the 100 cavitary tumors, 82 were squamous, 11 large cell undifferentiated, 3 alveolar cell, and 4 adenocarcinoma. In

Figure 1. Preoperative chest roentgenogram showing a 4-cm single cavitary lung mass in right upper lobe.

Figure 2. Autopsy specimen from liver showing cirrhotic strand separating liver lobule (right) from hepatoma (left) (hematoxylin-eosin, X 100).

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a combined series of 600 cases of bronchogenic carcinoma, cavitation was seen in 6.8 percent of 263 squamous tumors, 4.1 percent of 97 large cell undifferentiated tumors, and 2.4 percent of 126 adenocarcinomas. No cavitation was seen in 209 cases of oat cell carcinoma. Cavitary lesions in the lung occur in all types of lymphoma but are more common in Hodgkin's disease than in non-Hodgkin's lymphoma.

A great variety of primary extrathoracic tumors have been reported to cause cavitory lung metastases, although central necrosis is a more common feature of primary lung tumors. In a study of 574 consecutive malignant lung tumors, 9 percent of the 176 primary cancers were cavitory but excavation was found in only 4 percent of the 398 metastatic lesions. All seven cavitory metastases which were solitary lesions were of squamous origin. Of 16 patients with multiple cavitory metastases, there were 10 with squamous carcinoma (5 from female genitalia, 4 from pharynx or larynx, 1 from skin), 5 with adenocarcinoma (3 from colon, 3 from breast), and 1 with transitional cell carcinoma of the bladder. Another study reported nine more cases of cavitory pulmonary metastases; only two had solitary lesions and these both occurred with adenocarcinoma of the colon.

Hepatoma frequently involves the lung. In several series, the lungs harbored metastases in over 25 percent of those cases examined at autopsy and were the most common site of extrahepatic involvement. These studies showed that the alkaline phosphatase level was the most reliable and sensitive laboratory test for hepatoma, being elevated in 89 percent of the cases. This is the first report of a cavitory lung metastasis from hepatocellular carcinoma. Its presentation as a single lesion makes it even more unusual, since cavitation of a single metastasis from any adenocarcinoma is extremely rare.

Our patient was initially thought, both clinically and pathologically, to have a primary carcinoma of the lung. He presented with a single cavitory mass in the lung, 4 cm in diameter, and underwent what was hoped to be a curative resection. The presence of a single large lesion in the lung does not strongly suggest metastatic disease and a lengthy search for an occult intra-abdominal tumor is rarely productive. It is our practice to perform a primary preoperative evaluation consisting of a careful history, physical examination, chest roentgenogram, and serum enzymes. Scintiscans or other special studies are done only to investigate specific abnormalities discovered by the primary evaluation. This case does not suggest a need for change in the increasingly widespread practice of proceeding promptly to thoracotomy without an exhaustive search for a primary tumor in patients who have solitary circumscribed lung lesions of uncertain nature. It does, however, point up the need for careful evaluation of all data collected during the primary work-up. In our patient, the serum alkaline phosphatase measurement should have been repeated and should have been followed by a liver scintiscan. This procedure would probably have led to discovery of the hepatoma.

References

Figure 3. Resected right upper lobe lesion showing tumor cells containing large pale nuclei, mitoses, prominent nucleoli, and alcoholic hyaline (arrows) (hematoxylin-eosin, X 250).