Laparoscopic Diagnosis of Peritoneal Mesothelioma
Report of a Case and Review of the Diagnostic Approach

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Peritoneal mesothelioma is a rare, highly malignant primary cancer of the peritoneal surface. The diagnosis of this entity historically is made at autopsy, but from a review of the recent literature, laparotomy is increasingly involved in establishing the diagnosis (1-3). There is only one published case of peritoneal mesothelioma where laparoscopy and peritoneal biopsy were utilized (4).

We wish to report the first case of malignant peritoneal mesothelioma diagnosed by laparoscopy in which photographic documentation is available, and also review the current diagnostic approach to this entity.

CASE REPORT

A 54-year-old Caucasian male painter was well until approximately five months prior to admission when he presented with increasing abdominal girth and vague left lower and left upper quadrant abdominal pain. Outpatient evaluation with an upper-gastrointestinal series and barium enema revealed an hiatal hernia, and he was treated with antacids. He was hospitalized one month later for abdominal pain, increasing abdominal size, and weight gain despite decreasing muscle mass in his extremities. He was treated for suspected alcoholic liver disease with diuretics. He failed to improve and was admitted to Wadsworth VA Hospital. His past medical history was noncontributory. The social history included heavy cigarette smoking and moderate alcohol abuse in the past, but he denied any alcohol intake during the seven years preceding this admission. The patient was born in Missouri and worked as a painter. He denied exposure to asbestos, but did admit working frequently with spackle compounds which until recently contained asbestos. He had no history of tuberculosis, coccidioidomycosis, or malignancy.

Physical Examination. A normally developed, slightly cachectic white male with moderate digital clubbing and a protuberant abdomen. There were no stigmata of chronic liver disease. Chest: bilateral basilar rales; abdomen: diffusely distended and tense with fullness in the flanks, shifting dullness, and a fluid wave. The liver span was 8 cm by percussion and the spleen was nonpalpable. There was a hard, nodular, superficially palpable, shelf-like mass that extended from the left upper to left lower quadrant along the left flank. The remainder of his physical examination was unremarkable.

Admitting Laboratory Data. Hematocrit 31.9%; hemoglobin 10.0 g/dl; WBC count 10,700/mm³ with a normal differential; and platelet count 700,000/μl. Prothrombin time, electrolytes, amylase, and SMA 12 were normal except for increased globulins. Liver function tests were normal including an LDH of 125 IU. HBsAG was negative. Urine analysis: sterile pyuria and hematuria. Chest x-ray showed bilateral pneumatic infiltrates, interstitial fibrosis, and nodular densities in both lower lobes. Skin tests: negative 5 TU PPD and 1/10 coccidioidomycosis. 250 TU PPD was positive to 15 mm induration and subsequent 5 TU PPD was also positive. Liver/spleen scan was normal. Peritoneal fluid obtained by paracentesis was a greenish color that became turbid upon standing; pH was 7.7; RBC 162/mm³, WBC 522/mm³ and predominantly mononuclear; total protein 5.2 g/dl, glucose 72 mg/dl, LDH 224 IU, amylase 31 units. The acid mucopolysaccharide level in the ascitic fluid was within normal limits. Peritoneal fluid cytology displayed atypia and hypochromasia of mesothelial cells consistent with reactive mesothelial cell proliferation, malignant ascites, or peritoneal mesothelioma (Figure 1). Serum T₃ and T₄ were in the low normal range. Bone marrow biopsy was negative for granulomatous disease or malignant cells. Evaluation of renal status was negative except for an intravenous pyelogram which showed right upper calyceal blunting consistent with infection. All smears for acid-fast organ-
LAPAROSCOPY IN PERITONEAL MESOTHELIOMA

Fig 1. Cell button of peritoneal fluid with mesothelial cells showing grouping and single cell arrangement. There is moderate to marked hyperchromasia of nuclei with associated variation in size consistent with a well-differentiated mesothelioma, malignant ascites, or reactive mesothelial cell proliferation (H&E, ×500).

isms in ascitic fluid, morning gastric aspirates, sputum, and urine were negative, and all cultures for tuberculosis were ultimately negative.

Since the etiology of this exudative ascites was not clarified and the possibility of tuberculous peritonitis or malignancy remained, the patient underwent laparoscopy on the eleventh hospital day in the hope of establishing a tissue diagnosis. Storz laparoscopy equipment with the Hopkins Mark II telescope was used. The entire procedure was performed under local anesthesia. The liver appeared normal in size and consistency, with the right lobe partially submerged in ascitic fluid. The liver surface, falciform ligament, visceral and parietal peritoneum, as well as the serosa of the small intestine were all studded with innumerable 1 to 2-mm soft creamy white glistening nodules with associated cake icing-like plaques (Figure 2). The parietal peritoneum was not inflamed or erythematous. There were adhesions in the left upper quadrant in the area of the splenic flexure between the parietal peritoneum and small bowel. Using an accessory trocar, multiple biopsies were taken under direct laparoscopic control from the liver and from nodules located in parietal peritoneum and small intestinal serosa. The histology of the liver was normal, but biopsies from the nodules demonstrated malignant peritoneal mesothelioma of the mixed fibroepithelial type (Figure 3). Because of the initial abnormal chest x-ray, total lung tomograms were obtained which revealed calcified plaques over the pleura, diaphragm, and pericardium as well as calcified healed granulomas; all consistent with asbestosis and/or mesothelioma. The patient was begun on a trial of Adriamycin on the 29th hospital day. At the time of discharge (the following day), he refused further therapy. The patient died at another hospital one month later, and no autopsy was performed.

DISCUSSION

Mesothelioma is the only primary tumor of the peritoneum. This rare tumor may be benign or malignant. The tumor has a counterpart in the pleural cavity, and the pleura is the primary site of occurrence twice as frequently as the peritoneum, al-