CASE REPORT

Diffuse malignant peritoneal mesothelioma

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Abstract  Mesothelioma often originates in the pleura and less frequently in the peritoneum. This article describes a rare case of diffuse malignant peritoneal mesothelioma in a 54-year-old male construction worker who was admitted to our hospital with a 2-month history of progressive abdominal distention. Abdominal computed tomography revealed extensive peritoneal nodularity and omental cake along with massive ascites. Imaging findings initially suggested peritoneal carcinomatosis, primary peritoneal carcinoma, and tuberculous peritonitis. Laparoscopic biopsy of the omentum and peritoneum confirmed the diagnosis of malignant peritoneal mesothelioma of epitheloid type. Although systemic chemotherapy was administered, no tumor regression was found. The patient finally died of nosocomial infection.

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Introduction

Malignant mesothelioma is a highly aggressive primary neoplasm of the serosal lining of the pleura, peritoneum, pericardium, or tunica vaginalis [1]. Primary diffuse malignant peritoneal mesothelioma (DMPM) is a rare clinical entity. Only 33% of those diagnosed with DMPM have a history of asbestos exposure [2]. This article describes a 54-year-old male patient who was admitted to our hospital with progressive abdominal distention and was diagnosed with DMPM. The clinical and histopathological features of this rare lesion are described based on a review of previous literature.

Case report

A 54-year-old male construction worker was admitted to our hospital with a 2-month history of progressive abdominal distention. Despite anorexia, the patient did not experience nausea, vomiting, abdominal pain, or body weight loss. He also had a 25-year history of heavy alcohol consumption. Physical examination revealed hypoactive...
bowel sound and abdominal shifting dullness. Paracentesis indicated exudative features with lymphocytic predominance (95%) and serum-ascites-albumin gradient less than 1.1 g/dL. The levels of protein, glucose, lactate dehydrogenase, and amylase were 3.3 g/dL, 39 mg/dL, 462 U/L, and 30 U/L, respectively. No malignant cells were found in ascites. Additionally, ascitic fluid culture and culture for acid-fast bacilli were negative. Chest X-ray revealed no active lung lesions such as pleural thickening and pleural effusion. A computed tomography (CT) scan of abdomen disclosed extensive peritoneal nodularity (Fig. 1, arrow) and omental cake (Fig. 2, arrows) along with massive ascites. No elevation of serum CA19-9, carcinoembryonic antigen, or alpha fetoprotein level was noted. Laparoscopic biopsy of peritoneum revealed turbid ascites and peritoneal nodularity (Fig. 3, arrow). Microscopically, the specimen comprised epitheloid mesothelioma, consisting of solid nests of neoplastic epitheloid cells with slightly hyperchromatic nuclei and small nucleoli. Tumor cells invaded the adjacent connective tissue (Fig. 4). Malignant peritoneal mesothelioma, epitheloid type, was diagnosed by immunohistochemistry, which exhibited positive staining for Wilms’ tumor 1 antigen (WT1), D2-40, calretinin, cytokeratin, and AE1/AE3, and negative staining for mucicarmine, carcinoembryonic antigen, and MOC-31. Although systemic chemotherapy was administered, no tumor regression was observed. The patient eventually died of nosocomial infection.

**Discussion**

As a highly aggressive neoplasm of serosal surfaces, malignant mesothelioma may involve the pleura, less frequently the peritoneum, and, in a small percentage of cases, the tunica vaginalis, testis, or pericardium [1]. DMPM is a rare clinical entity, accounting for approximately 30% of all mesothelioma [3]. Only 33% of DMPM patients have a history of asbestos exposure [2]. According to a previous study, asbestos exposure is the etiology in 60% of DMPM in men and 23% in women [4]. DMPM has also been associated with radiation therapy, recurrent peritonitis, mica exposure, and administration of thorium dioxide [5]. Although the patient in this study had no definite history of asbestos exposure, as a construction worker, he had a higher likelihood of coming into contact with fire-retardant coatings, cement, bricks, pipes, flooring, and roofing than the general population.

The overall incidence of this disease is higher in males than in females, which may be due to a higher incidence of asbestos-related occupations in men [5]. Clinically, symptoms in these patients include the following: ascites (77%),

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**Figure 1.** Computed tomography scan of the abdomen shows massive ascites and peritoneal nodularity (arrow).

**Figure 2.** Computed tomography scan of the abdomen shows omental cake (arrows).

**Figure 3.** Diagnostic laparoscopy reveals turbid ascites and peritoneal nodularity (arrow).
In pathology, malignant peritoneal mesothelioma is characterized by soft, grayish-white, papillary nodules or masses extending over peritoneal surfaces. In clinical practice, ascitic fluid cytology can be used as an initial diagnostic modality for malignant mesothelioma. However, the definite diagnosis of malignant peritoneal mesothelioma is established based on laparoscopic biopsy. Previously, DMPM was treated with a combination of systemic chemotherapy, palliative surgery, and, in a few patients, total abdominal radiation capable of achieving a median survival of 12 months [14]. Prognosis of DMPM is poor, with a median survival rate of <1 year [6,15]. However, new therapeutic strategies (e.g., combined approach with cytoreduction surgery and hyperthermic intraperitoneal chemotherapy) have prolonged survival considerably in selected cases in recent years [6,14].

DMPM is a rare disease characterized by a difficult diagnosis, different presentations, variable course, and poor prognosis. DMPM is a rare cause of ascites in Taiwan. However, it should be considered in patients inflicted with ascites, particularly in those without cirrhosis, pulmonary tuberculosis, and nonperitoneal malignancy.

**References**


[13] Comin CE, Saieva C, Messerini L. h-Caldesmon, calretinin, estrogen receptor, and Ber-EP4: a useful combination of and MOC-31 [2,13]. DMPM is categorized into three pathologic subtypes: epithelial (56%), sarcomatous (32%), and mixed (13%) [3]. In this study, cytological examination of ascitic fluid failed to identify cancer cells. DMPM was diagnosed based on laparoscopic biopsy.
