

Malignant peritoneal mesothelioma presenting as a complex omental lesion

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Malignant peritoneal mesothelioma is a rare, aggressive neoplasm with a poor prognosis. It simulates a spectrum of conditions and thus poses great difficulty in diagnosis and management. We report a case of malignant peritoneal mesothelioma in a young female whose abdominal CT showed a complex lesion occupying the entire abdominal cavity. This lesion mimicked an ovarian malignancy with peritoneal carcinomatosis.

Introduction

Malignant peritoneal mesothelioma is a rare but aggressive neoplasm arising from the mesothelial lining of the peritoneum. It can occur in the mesothelial cells of the pleura, peritoneum, pericardium, and tunica vaginalis of the testis (1).

Case report

A 28-year-old female patient presented with abdominal pain, abdominal distension, and loss of appetite for one month. On examination, she was pale and had a large, palpable, abdominopelvic mass. Pervaginal examination revealed a palpable mass in the posterior fornix. Baseline investigations were within normal limit except for hemoglobin, which was 7.3 gm/ml. An ultrasonogram showed a large heterogeneous mass with predominantly cystic components and a few solid components occupying the entire abdominal cavity. The endometrium was thickened and measured 2.3 cm. CT of the abdomen showed large,

nonenhancing, multinodular lesions of attenuation 27-35 HU distributed around the periphery of the abdominal cavity, with a centrally displaced small bowel and mesentery (Fig. 1). Another cystic lesion was seen in the left adnexa (Fig. 2). Ascites was also seen around the liver (Fig. 3). CT of the thorax showed moderate left pleural and



Figure 1. 28-year-old female with malignant peritoneal mesothelioma. Axial, contrast-enhanced CT section of the abdomen in the arterial phase shows a large, heterogeneous, peritoneal lesion displacing the bowel loops centrally.

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Figure 2. 28-year-old female with malignant peritoneal mesothelioma. Axial, contrast-enhanced CT section of the abdomen in the arterial phase shows a heterogeneously enhancing lesion predominantly cystic components in the left adnexa (asterisk).



Figure 3. 28-year-old female with malignant peritoneal mesothelioma. Coronal, contrast-enhanced CT section of the abdomen in the arterial phase shows an ill-defined, heterogeneously enhancing lesion with cystic and solid components in the peritoneal cavity with a cystic lesion in the left adnexa. Ascites is also seen.

pericardial effusion. Serum alpha-fetoprotein, CA-125, and CA-19.9 were found to be within normal limits.

Intraoperatively, multiple nodular lesions were seen infiltrating the omentum with centrally encased bowel loops

(Fig. 4). The patient underwent complete omentectomy with cytoreductive surgery, and total abdominal hysterectomy with bilateral salpingo-ovariectomy. Histopathological examination of the resected specimen showed a highly cellular tumor consisting of spindle cells arranged in interlacing bundles and sheets. The cells had hyperchromatic

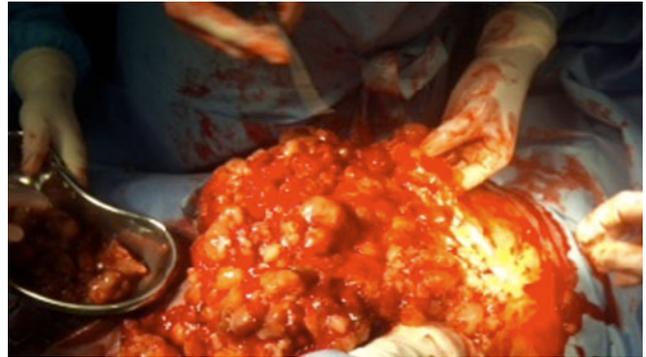


Figure 4. 28-year-old female with malignant peritoneal mesothelioma. At laparotomy, the whole abdomen was seen to be covered with massive nodular masses that seemed to arise from the omentum. The whole mass weighed 2Kg, approximately.

nuclei with mild anisocytosis (Fig. 5). Immunohistochemical analysis was positive for CD 10, WT1, and C-Kit, and negative for ER and PR, confirming the histological diagnosis of malignant peritoneal mesothelioma (Figs. 6A and 6B). The abdominal hysterectomy with salpingo-ovariectomy was based on the clinical suspicion of ovarian

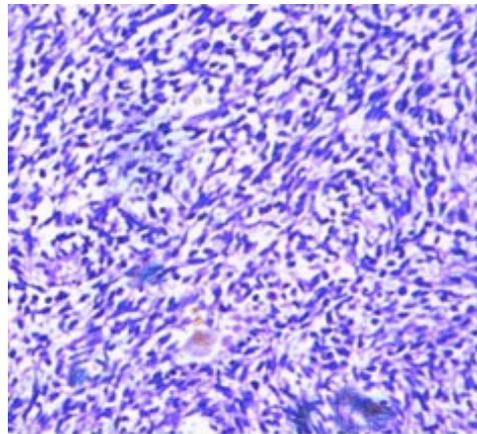


Figure 5. 28-year-old female with malignant peritoneal mesothelioma. Hematoxylin and eosin staining of the frozen section shows a highly cellular tumor consisting of spindle-out cells arranged in interlacing bundles and sheets. The cells have hyperchromatic nuclei with mild anisocytosis.

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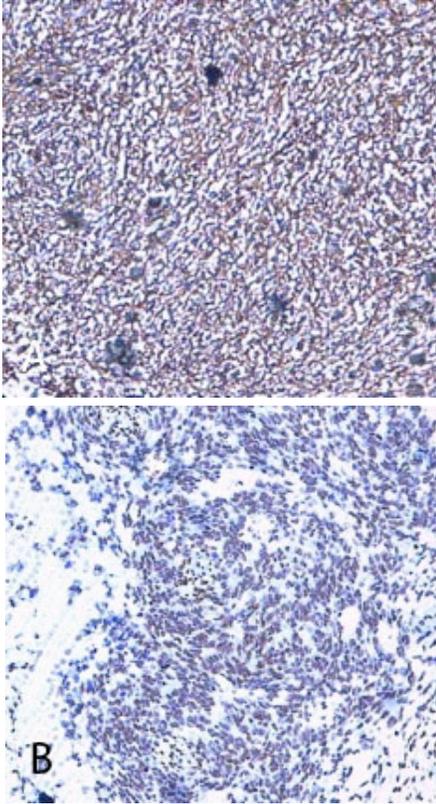


Figure 6. 28-year-old female with malignant peritoneal mesothelioma. A: Immunohistochemical staining for CD 10 was positive, suggesting the possibility of sarcomatous or mesothelial origin. B: Immunohistochemical staining for WT 1 was positive, confirming the diagnosis of mesothelioma.

maligancy, but subsequent histology showed a hyperplastic endometrium and a benign physiological left ovarian cyst. The patient was followed up with chemotherapy and was asymptomatic two months after the surgery.

Discussion

Malignant peritoneal mesothelioma is the second most common type of mesothelioma; it accounts for about 30% of all malignant mesotheliomas, with an overall incidence of 2 to 2.6 cases per million annually. A causal relationship between malignant peritoneal mesothelioma and asbestos exposure is implicated (especially the cridolite variety). However, half of these patients do not have any history of asbestos exposure. Exposure to mica, talc, and thorium and infection with Simian Virus 40 (SV 40) have also been reported as risk factors for mesotheliomas. There are three different presentations of malignant peritoneal mesothelioma (2):

- Dry painful type: The commonest form of presentation, it presents with abdominal pain with little or no ascites.
- Wet type: It presents with abdominal distension and ascites.
- Mixed type: It presents with abdominal pain and distension.

Weight loss, bowel obstruction, and anemia are the other common clinical features. Paraneoplastic syndromes associated with peritoneal mesothelioma are thrombocytosis,

hypoglycemia, hypoalbuminemia, venous thrombosis, paraneoplastic hepatopathy, and a wasting syndrome.

Abdominal radiography may show features of abdominal distension. Ultrasonography demonstrates ascites, the amount depending on the pattern of presentation (3). It may present as small masses that may have either a sheet-like appearance or be irregularly shaped. The small nodules progress to form confluent plaque-like masses, resulting in “omental caking.”

Peritoneal mesotheliomas can appear three different ways on CT:

- Dry painful type: A large peritoneal mass or multiple, diffuse, small peritoneal nodules with little or no ascites.
- Wet type: Ascites with or without multiple small nodules or plaques.
- Mixed type: Combination of the dry and wet types.

CT also demonstrates thickening of the peritoneum, mesenteric infiltration, and omental caking. Mesenteric infiltration produces the characteristic stellate and fixed appearance. Calcification is rare. Scalloping of the adjacent viscera, especially the liver and colon due to mass effect, can be observed. About half of these patients show evidence of pleural plaques, pleural calcification, and parenchymal lung disease.

MRI aids in planning of radiotherapy for localized disease and in assessment of the tumor extent and invasion. Positron-emission tomography (PET) can assess the likelihood of a tumor, and its extent and invasion. It also helps in staging the disease by identifying the tumor at other sites.

A combination of cytoreductive surgery, intraperitoneal chemotherapy, and radiotherapy is reported to have a better prognosis and to increase the survival rate of patients with mesothelioma. Palliative chemotherapy is offered in inoperable cases.

Younger age (under 60 years), female gender, epithelioid subtype of mesothelioma, combination of cytoreductive surgery, chemotherapy and radiotherapy, and absence of tumor invasion to the deeper structures are associated with better prognosis (4).

Peritoneal carcinomatosis, lymphoma, pseudomyxoma peritonei, and tuberculous peritonitis commonly simulate malignant peritoneal mesothelioma (5). Other, less common differential diagnoses include retractile mesenteritis, intraperitoneal endometriosis, desmoid tumor, carcinoid tumor, and atypical mesothelial hyperplasia.

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