

## Peritoneal Mesothelioma – A Rare Variant

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### Abstract

Primary peritoneal mesothelioma is a rare entity with an incidence of 1-2 cases per million. It can occur in any age group, although the 50-60 years of age group is the most affected. Mesotheliomas are common in pleura, only 20 percent arise from peritoneum. Peritoneal mesothelioma histologically occurs as two variants, solid and cystic. Solid variant is common and cystic being rare. Multicystic presentation is rarer comparatively. High index of suspicion is essential as histopathology alone helps in the diagnosis and early initiation of treatment is crucial for survival. We present this case for its rarity since very few cases of it are reported in the literature.

**Keywords:** Peritoneal Mesothelioma; Peritoneal Cyst

### Case report

36 year old gentleman presented with abdominal distension and mild diffuse pain for 3 months duration. His past medical history was unremarkable and he had been evaluated in various hospitals for the same complaints without a final diagnosis (Figure 1). On physical examination he was found to be moderately built had mild pallor and bilateral pitting pedal edema. Abdomen examination revealed three hard nodular non tender masses in the right hypochondrium and left iliac fossa, the largest measuring 10 x 8 cm in the right hypochondrium. He had graded 2 ascites.



**Figure 1:** He was a theatre artist by occupation and had history of swallowing earthworms and snakes as a stunt for which he even held a Guinness record

Liver function test was normal. Latex agglutination test performed for hydatid disease was negative. USG abdomen showed multiple echogenic masses in the peritoneum with moderate ascites. Ascitic fluid analyses showed exudative ascites with a negative cytology screen for malignancy.

CECT abdomen showed multiple ill defined enhancing non calcified peritoneal masses in entire abdomen and pelvis (Figure 2), diffuse omental fat stranding, moderate free fluid in abdomen and pelvis, with multiple para-aortic, per-iportal, peri-pancreatic lymphadenopathy (Figure 3).



**Figure 2:** Multiple ill-defined enhancing non calcified peritoneal masses, Omental fat stranding

CT guided biopsy of mass was done and histopathological examination showed features consistent with malignant cystic lesion probably mesothelioma –multicystic variant.

Immuno-histochemistry was diagnostic of malignant mesothelioma.

NSE	Negative
PCK	Positive+++
S 100	Positive++
Ki	67.5% of epithelial cells

Patient is on chemotherapy- paclitaxel based regimen and has shown response on follow up

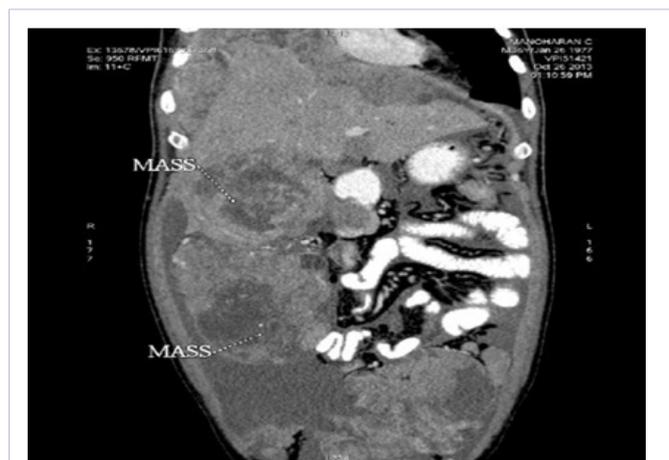


Figure 3: Omental fat stranding



Figure 4: Free fluid in abdomen. Ill-defined peritoneal masses

**Discussion**

Malignant Peritoneal Mesothelioma (MPM) was first described in 1908 by Miller and Wynn. It is a rare neoplasm with a rapid fatal course and a median survival of 6-12 months.

The mean time from symptoms to death was 345 days [1]. MPM accounts for 0.2% of all malignant disease and only 12.5-25% of malignant mesotheliomas [2, 3]. It usually occurs in middle-aged men who commonly complain of abdominal pain or a feeling of fullness, abdominal distention or increasing abdominal girth, nausea, anorexia, and weight loss, as in the present case. Only 50% of patients with a peritoneal origin of MPM have a history of asbestos exposure. This association increases to 80% in mesotheliomas with the more common pleural origin (Figure 5) [4].

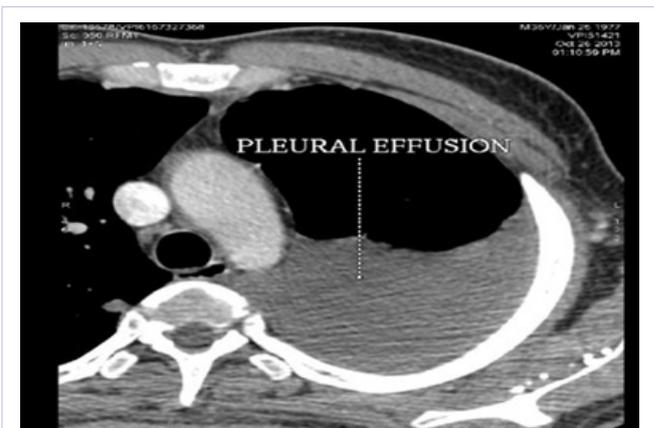


Figure 5: Gross left pleural effusion causing partial collapse of adjacent lung

Three radiological types are described in MPM. ‘Dry-painful’ type is the most common, in which CT shows 1 large mass or multiple small peritoneal masses, with no signs of ascites. The ‘wet’ type is associated with intestinal distension and ascites, widespread small nodules and plaques, and no solid

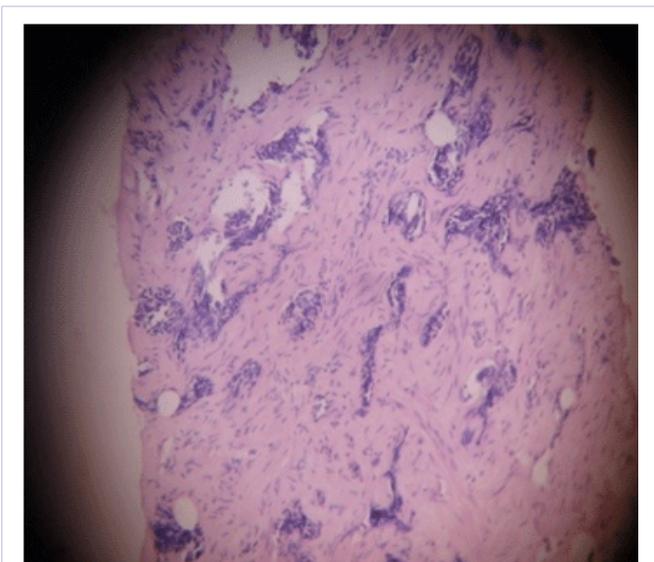


Figure 6: Histopathological examination - Numerous cystic spaces lined by bland 1-2 cell layered cuboidal cells with minimal cytoplasm. Cysts are separated by loosely arranged fibroblast bundles. Frequent mitoses are seen. HPE was suggestive of malignant mesothelioma

masses. Finally, there is the 'mixed' type [5]. A precise diagnosis based on imaging findings alone is not possible. Furthermore, distinguishing a benign from a malignant process as well as a primary from a metastatic process is also challenging. Therefore, the definitive diagnosis of peritoneal mesothelioma depends on histologic and immunohistochemical examination. The three basic histological types of MPM are epithelioid (the most frequent), sarcomatoid and mixed (biphasic). Apart from these two variants, multicystic and well differentiated papillary have also been reported (Figure 6).

A large number of immunohistochemical markers have been suggested for diagnostic aid, but none of the markers alone is diagnostic. However, they become very useful when used as a panel. Malignant MPM is characterized by positive staining for EMA, calretinin, WT1, cytokeratin 5/6, antimesothelial cell antibody-1, and mesothelin. Cytokeratins help to confirm invasion and to distinguish mesothelioma from sarcoma and melanoma. Immunohistochemistry is also useful to distinguish peritoneal mesotheliomas from primary papillary serous carcinoma of peritoneum, serous ovarian carcinomas, colorectal adenocarcinoma diffusely involving the peritoneum, and borderline serous tumors. In particular, calretinin, cytokeratin, and thrombomodulin are typically positive in patients with mesotheliomas and negative in those with serous carcinomas. In our case cytokeratin was positive and Ki was positive confirming the diagnosis of mesothelioma [6-8].

Peritoneal mesothelioma usually remains confined to the peritoneal cavity for most of its natural history. However, parasternal, retroperitoneal, mediastinal, axillary, supraclavicular, and cervical lymph nodes, lung, bone, liver, and umbilical ('Sister Mary Joseph's nodule') metastases have all been reported as was the scenario in the present case

Mesotheliomas are almost universally considered a fatal neoplasm, and until recently the treatment options were very limited and ineffective. Tumor histopathology, previous surgical score, lesion size, gender, distribution (assessed with Gilly classification and peritoneal cancer index), and completeness of cytoreduction score represent the main prognostic index [9].

Park et al reported in his study on 18 patients undergoing Cytoreductive surgery (CRS) +hyperthermic intraperitoneal chemotherapy (HIPEC) had a two year survival rates of 80%. In studies reporting at least 2 year outcome data, median survival has varied greatly ranging between 29.5 and 100 months and five year overall survival between 30%-90% [10].

Yan et al published the largest longitudinal series with 405 patients in a multi-institutional review between 1989 and 2009. Here, 92% of patients received HIPEC most commonly with cisplatin and doxorubicin and an additional 23% subsequently received early post-operative chemotherapy between postoperative day 1 and 5, most commonly with paclitaxel. Overall median survival was 53 months and five year survival was 47% [11].

Nodal statuses, histological subtype, mitotic count, completeness of cytoreductive surgery are all prognostic factors associated with improved survival.

Molecular targeted therapy is the latest therapeutic advance that improves survival. Mesothelin, epidermal growth factor receptor, MUC 1, sphingosine kinase 1 are the various molecules targeted and of this sphingosine kinase holds promising results [12].

FTY720 (Fingolimod; trade name Gilenya, Novartis) is a FDA-approved drug for treating relapsing forms of multiple sclerosis. In addition to the immunosuppressant property, several reports about FTY720 as an anti-cancer drug in various malignancies have rapidly accumulated [12, 13].

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