

Benign Multicystic Peritoneal Mesothelioma: A Case Report and Review of the Literature

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Benign multicystic peritoneal mesothelioma (BMCPM) is a rare disease. It is described histologically as benign, but its tendency to recur after resection does not permit a truly benign classification. The differential diagnosis with other semi-solid, cystic adnexial and intra-abdominal tumors is difficult. A case of a BMCPM is presented and examination findings, diagnosis and treatment approaches are reviewed according to the literature.

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Key Words: Benign multicystic peritoneal mesothelioma, Peritoneal neoplasm, Peritoneal cyst

Primary mesotheliomas are tumors arising from the epithelial and mesenchymal elements of the mesothelium. They can be found in the pleura, pericardium, and peritoneum.¹ Benign multicystic peritoneal mesothelioma (BMCPM) is a rare tumour, primarily affecting young women of reproductive age; approximately 80 cases have been described mainly in the pathological and surgical literature.² Malignant mesothelioma is more frequent with the history of asbestos exposure whereas no known predisposition was reported for the benign form. Although it is a benign tumour, it has a high recurrence rate and the malignant transformation of the disease is reported.³ We reported one case with an unusual localization and presentation.

Case Report

A 23-year-old, nulligravid woman was referred to the obstetrics and gynecology department because of abdominal pain localized over her pelvis. The pain had been present for two years, but it increased gradually. The general physical examination was unremarkable. Pelvic examination revealed a semi-cystic, semi-mobile mass at the right adnexial region which cannot be differentiated from the uterus. Transvaginal ultrasonography (USG) revealed a 8x7 cm, cystic mass at the right adnexial region with a thick septation and increased echogenicity in the lower posterior part of cyst. Resistance index was measured as 0.57 in the investigation of Doppler blood flow velocity taken from the wall of the mass. Contrasted computerized tomography revealed a cystic lesion,

thickly septated and possessing a thicker soft tissue component at the posterior part which was taking more contrast material (Figure I). No pathology was observed in other intraabdominal and retroperitoneal organs. There was no ascites in the abdomen. The level of tumor marker CA-125 was 66.8 (3.6-54.6 U/ml); other tumor markers, biochemical and hematological parameters were within the normal reference ranges. There was no family history of gynecological cancer.



Figure I. Contrasted computerized tomography shows a thickly septated cystic mass occupying right half of the pelvis with compression to urinary bladder (multicystic peritoneal mesothelioma).

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It was decided to operate the case with the pre-operative diagnosis as benign tumour (endometrioma, dermoid cyst) originating from the right ovary. Treatment approaches were discussed with the patient, and the decision was made to proceed with a laparoscopic resection of the cyst if there were no malignant neoplastic features on frozen section examination. Laparoscopic examination showed a mass with 8 cm diameter, originating from the right ovary. The mass had a smooth surface, was clinging to uterus posterior, wholly obliterated douglas and right fossa ovarica by adhesion and also showed dense adhesion with sigmoid colon and omen-

tum. Because of these dense adhesions, it was decided to complete the operation by laparotomy. Cystectomy was performed by laparotomy following adhesiolysis. Meanwhile, 100 ml. sero-hemorrhagic colored liquid was drained from within the cyst. Since the mass demonstrated dense adhesion around right internal iliac artery and ureter, the cyst capsule at this site could not be completely excised. The remaining cyst capsule pieces were destructed with bipolar cauterization. Frozen-section examination was diagnosed as a benign cyst. The patient made an uneventful recovery and was discharged on the third post-operative day.

Histopathological examination showed variously sized, rounded or irregularly shaped cystic spaces separated by varying amounts of edematous fibrous connective tissue with a mild inflammatory infiltrate. These cysts were lined by a single layer of cuboidal or flattened epithelium. In some areas many of the cells were plump and protruded into the lumen in a hobnail (Figure II). The immunohistochemical staining of the lining cells demonstrated positive staining for immunoreactive cytokeratin and negative staining for factor VIII-related proteins. Histological analysis and immunohistopathologic findings revealed a benign multicystic peritoneal mesothelioma.

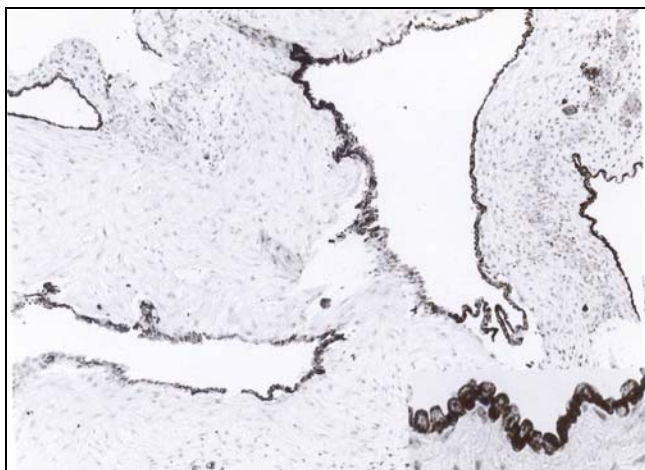


Figure II. Histopathological examination showed variously sized, rounded or irregularly shaped cystic spaces separated by varying amounts of edematous, fibrous connective tissue with a mild inflammatory infiltrate (immunostain for cytokeratin, x100). These cysts were lined by a single layer of cuboidal or flattened epithelium which was plump and protruded into the lumen in a hobnail. (lower right corner, x400).

The control USG taken in the third post-operative month showed a septated cystic mass with heterogeneous ecogenity at the size of 5x3 cm in the same location. No pathology was observed in the uterus, left ovary and other pelvi-abdominal structures. The case was informed that the cyst could recur due to its pathological characteristic. The controls made in the post-operative sixth and twelfth months showed that the cyst protected its size and appearance as in the post-operative third month. Re-operation was not made upon the request of the case who was asymptomatic.

Discussion

Benign multicystic peritoneal mesothelioma (BMCPM) was first described as a distinct entity by Mennemeyer and Smith in 1979.⁴ Subsequently, several reports have supported the mesothelial cell origin of the condition.⁵⁻⁸ It has been suggested that multicystic peritoneal mesothelioma was probably more common than formerly recognized and mistaken for other intra-abdominal cystic conditions, particularly lymphangiomas or cystic ovarian tumors.

Although the histological description of multicystic peritoneal mesothelioma is benign, the clinical behaviour of the condition, which tends to recur, is not. Multicystic peritoneal mesotheliomas are now thought to belong to a group of 'borderline' mesotheliomas of the peritoneal cavity, the behaviour of which is between that of completely benign adenomatoid mesothelioma and the truly malignant mesothelioma (Table 1).⁹ The incidence of malignant mesothelioma is 0.9-1.0 per million persons per year.¹⁰ Patients with diffuse malignant mesothelioma show an overall median survival between 6-10 months.¹¹ Adenomatoid mesotheliomas are rare and are mostly found in the genital tract. They are benign and do not tend to recur.¹² BMCPM is the rarest type among the aforementioned mesothelioma types.²

Table 1. Classification of peritoneal mesotheliomas.

Benign	
	Adenomatoid mesothelioma
	Localised fibrous mesothelioma
Borderline	
	Multicystic peritoneal mesothelioma
	Well-differentiated papillary mesothelioma of peritoneum
Malignant	
	Epithelial mesothelioma
	Fibrosarcomatous mesothelioma
	Mixed type mesothelioma

Multicystic peritoneal mesothelioma usually presents itself with abdominal or pelvic pain with or without obstruction. Other manifestations of the disease include dysfunctional uterine bleeding, dysuria and dyspareunia. Patients may be aware of a mass or it may be an incidental finding.^{2,5,9} The case we presented had right inguinal pain that aggravated particularly in the pre-menstrual period. Findings of the physical examination in BMCPM cases may be different according to the location and size of cysts. The cysts encountered are generally at different sizes up to 20 cm, may cover the whole pelvis and abdomen, may be more than one in number and have thin walls and fragile structures.^{2,9,13} Our case is different from other intra-abdominal multiple cyst cases found in the literature, since she had a single, septated cyst located only within the right ovary.

Pre-operative diagnosis of mesothelioma cysts is difficult due to their similarity to other abdomino-pelvic masses.

Plain abdominal radiographs may show displacement of bowel loops by the cysts, calcification within the cyst, and gastrointestinal contrast studies and intravenous urography may confirm these findings.¹⁴ Ultrasonography, computerized tomography and magnetic resonance imaging have been used to show the site, size and number of intra-abdominal BMCPM cysts.^{14,15} The cyst may partly capture the intravenous radiopaque contrast medium resulting in a hyperdense appearance on CT.² Contrasted computerized tomography of the presented case showed that posterior part of the cystic lesion separated by septa held more contrast material. But it cannot be said that this condition is specific to this disease. It is accepted that CA 125 and other tumor markers are not important in the diagnosis of the disease.¹³ Pre-operative radiological tests, as seen in the presented case, provide guidance in differentiating between malignant and benign masses, rather than assuring diagnosis. Exact diagnosis can be given only after the final histopathologic examination.

Several other intra-abdominal cystic conditions cause confusion: lymphangioma, enteric cyst, pseudo-cyst, infective cyst, paraovarian cyst, cystic ovarian tumors, endometrioma and pseudomyxoma peritonei. In practice, the most difficult differential diagnosis is between multicystic peritoneal mesothelioma and intra-abdominal lymphangioma because the clinical, operative and light microscopic features of the two are similar. In general, intra-abdominal lymphangiomas are more likely to present in the childhood, have no sex preponderance and are less likely to recur after resection than BMCPM.¹⁶ The histological appearance revealed the cyst lined with flattened cuboid or hobnail epithelial cells. The immunohistochemical staining of the surrounding cells demonstrated positive results with all anti-keratin and anti-vimentin antibodies. No staining is observed for factor VIII, CA 19-9, CA 125, and CEA antibodies. The immunohistochemical and electron microscopic examination could differentiate the cystic mesothelioma from lymphangioma with these properties.^{7,17} The immunohistochemical staining and light microscopy findings supported the diagnosis of BMCPM in our case (Figure II).

The etiology of BMCPM was reported to be unknown. Some authors consider BMCPM as of a reactive origin due to a frequent history of abdominal surgery or inflammation.^{18,19} Petrou et. al. observed that a case who had laparoscopic cholecystectomy developed BMCPM in the post-operative second year. The lesion was entirely covering the abdomen in addition to gallbladder stone in one of the histopathological sections and they concluded that mesothelioma might have developed depending on reactionary stimulation of the gallbladder stones in the abdomen.¹⁹ The fact that histopathologic examination of our case revealed dense chronic inflammatory cell infiltration in loose connective stroma surrounding mesothelial cysts supports the thesis that BMCPM could develop secondarily to a previous inflammation.

Treatment of BMCPM is by meticulous resection. In some patients the total surgical resection of the peritoneal cystic mesothelioma could not be feasible when the mass surrounded the vital structures or was in diffuse peritoneal form. Despite the best efforts to excise all macroscopic cyst material, recurrence rates have been reported frequently (approximately 50%) after an interval of 3-27 months.^{2,4,5,9} Because reported follow-up data are somewhat scarce, true prognosis in recurrence cases is uncertain. Adjuvant chemotherapy and radiotherapy are probably of no use because of the slow-growing nature of the disease. However one patient with a history of recurrent disease (three debulking procedures over a 6-year period) was treated with continuous hyperthermic peritoneal perfusion with cisplatin. This patient was without evidence of disease in the third post-treatment year.²⁰ Based on the predominance of BMCPM in women in the reproductive period, treatment with anti-estrogen Tamoxiphene was described in a case report with a recurrence 2 years after radical surgery. There was an initial reduction in the cyst volume, followed by stabilization over a period of 18 months.²¹ A more promising method of reducing the high recurrence rate is with sclerosants, and tetracycline has been used as an adjunct to operation with apparent success.²²

In conclusion, pre-operative recognition of peritoneal benign cystic mesothelioma is difficult, but important for proper surgical management. Use of radiology, frozen sections and post-operative histology and immunohistochemistry will lead to an accurate diagnosis. Complete resection is essential to avoid local recurrence. Patients should be checked for recurrence, initially every three to six months by physical and ultrasound examination of the abdomen, paying special attention to the pelvis.

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