

Laparoscopically Diagnosed and Treated Ruptured Metastatic Ovarian Tumor

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Abstract

A 51-year-old woman visited our institution with a chief complaint of abdominal pain. Blood laboratory testing revealed a carcinoembryonic antigen level of 13.4 ng/mL. Magnetic resonance imaging revealed a massive pelvic mass with marked wall thickening, partly accompanied by a high-signal-intensity cystic component in T2-weighted images. The entire tumor had low-signal intensity in T1-weighted images. We diagnosed a ruptured ovarian tumor, and the patient underwent emergent laparoscopic left salpingo-oophorectomy. Pathological examination revealed metastatic colon cancer to the ovary, and lower gastrointestinal endoscopy confirmed sigmoid colon carcinoma. Laparoscopic sigmoidectomy was performed followed by adjuvant chemotherapy with capecitabine + oxaliplatin. Ruptured metastatic ovarian tumor is extremely rare. With early diagnosis and laparoscopic resection, the primary lesion can be identified and treated quickly.

Keywords: Colon cancer, laparoscopy, metastatic ovarian tumor

INTRODUCTION

Ruptured ovarian tumor is one of the several emergency diseases that cause abdominal pain. Ruptured ovarian cyst is common in women of reproductive age,^[1] and most are benign ovarian tumors, including endometrial cysts and mature teratomas. Ruptured metastatic ovarian tumor is extremely rare. To our knowledge, there have been only two case reports of ruptured metastatic ovarian tumor. We describe a case of ruptured metastatic ovarian tumor, and we review the relevant literature.

CASE REPORT

A 51-year-old woman visited a previous physician with a chief complaint of abdominal pain. Abdominal computed tomography (CT) revealed a large amount of ascites and a massive pelvic tumor with a diameter of 132 mm. The patient then consulted our hospital. She had a medical history of hypertension, diabetes mellitus, and appendicitis and an

unremarkable family medical history. Strong tenderness was found in her lower abdomen; however, no abdominal guarding was seen. Pelvic examination revealed a palpable tumor in the left side of her uterus, and strong tenderness was confirmed. Transvaginal ultrasonography revealed ascites in Douglas' pouch. The left ovary had a solid part and was enlarged at 88 mm × 72 mm.

Blood laboratory testing revealed a white blood cell count of 13,720/μL, neutrophil count of 10,220/μL, lactate dehydrogenase level of 382 U/L, and blood glucose level of 261 mg/dL. Serum tumor markers revealed a carcinoembryonic antigen level of 13.4 ng/mL; carbohydrate antigen-19-9 and-125 levels and squamous cell carcinoma antigen levels were within normal limits. Magnetic resonance imaging (MRI) of the pelvic mass revealed marked wall thickening, partly accompanied by a high-signal-intensity cystic component in T2-weighted images; the entire tumor

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had low-signal intensity in T1-weighted images [Figure 1]. MRI findings seemed atypical for primary ovarian tumor; therefore, we suspected the possibility of metastatic ovarian tumor. We diagnosed ruptured ovarian tumor, and the patient underwent emergent exploratory laparoscopy. Pale yellow opaque ascites and a ruptured left ovary with scattered soft, white lesions were found in the abdominal cavity [Figure 2]. We collected a sample of the ascitic fluid for cytology. The uterus and right adnexa were normal in appearance except for fibrinoid lesions. We diagnosed ruptured ovarian tumor, and the patient underwent laparoscopic left salpingo-oophorectomy. To avoid shredding the specimen, we made a 4-cm-long incision in the lower abdominal midline and removed the left adnexa.

Cytology of the ascitic fluid was negative. Macroscopically, the left ovarian tumor showed extensive necrosis and was growing and papillary infiltration was also seen. Pathological examination of the left adnexa revealed a well-to-moderately-differentiated tubular adenocarcinoma. Cytokeratin-7 (CK-7) testing was negative and CK-20 testing was diffusely positive on immunohistochemical staining. Test results for homodomain factor CDX2 and p53 tumor-suppressor gene were both positive, and estrogen receptor test results were negative. The final diagnoses were metastatic colon cancer to the ovary.

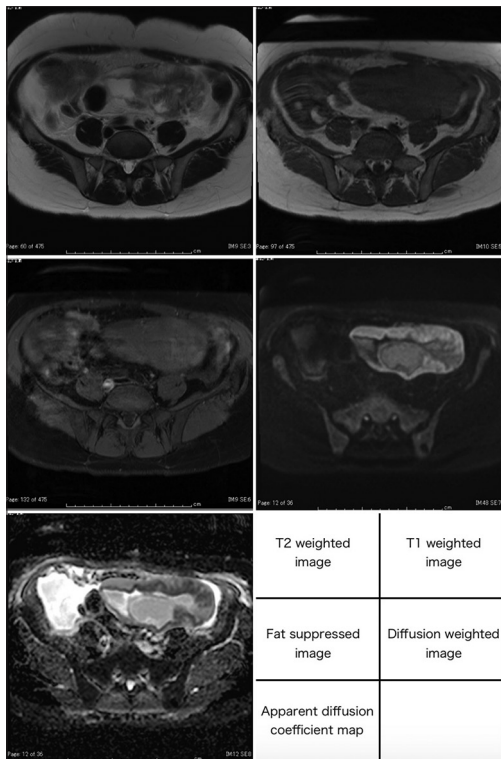


Figure 1: Magnetic resonance image of the left ovary. The left ovarian tumor had marked wall thickening and was partly accompanied by a high-signal-intensity cystic component in T2-weighted images; the entire tumor had low-signal intensity in T1-weighted images

The patient’s postoperative course was favorable, and she was discharged on the 2nd postoperative day. Lower gastrointestinal (GI) endoscopy revealed a type-2 tumor accompanied by stenosis circumferentially at a site 20 cm from the anal margin. Biopsy of the tumor confirmed adenocarcinoma. Upper GI endoscopy was normal except for reflux esophagitis, gastric erosion, and a fundic gland polyp. Therefore, upper GI malignant tumors including stomach cancer and cholangiocarcinoma were denied. Neither lymph node enlargement nor hepatic metastasis was seen with postoperative contrast CT. Laparoscopic sigmoidectomy with D3 lymphadenectomy was performed by a general surgeon for the sigmoid colon carcinoma, and no significant postoperative adhesions were observed during sigmoidectomy. The patient received postoperative adjuvant chemotherapy with capecitabine + oxaliplatin therapy, and no signs of recurrence have been seen 12 months after surgery.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. This study has been approved by the research ethics committee of Teine Keijinkai Hospital (IRB Reference Number: 20190141; approval date: February 3, 2019).

DISCUSSION

Among ovarian cancers, 10%–15% are metastatic ovarian cancers. The primary lesion of metastatic ovarian cancer is reported to originate in the stomach in approximately 76% of patients, large intestine in approximately 11%, mammary glands in approximately 4%, and biliary tract system in approximately 4%.^[2] Even when ovarian malignancy is suspected preoperatively, it is difficult to distinguish whether the lesion is a primary or metastatic tumor based on imaging. Ulbright *et al.* reported that 45% of colorectal

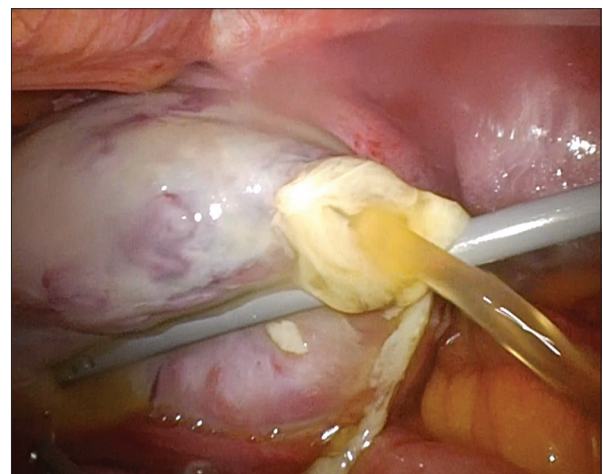


Figure 2: Intra-abdominal findings during emergent exploratory laparoscopy. Pale yellow opaque ascitic fluid and left ovarian rupture with scattered soft, white lesions were found in the abdominal cavity

cancer metastases to the ovary were misdiagnosed as primary ovarian tumors.^[3] Choi *et al.* argued that metastasis should be strongly suspected if the ovarian tumor is bilateral and the surface is smooth. Ovarian metastatic lesions from colon cancer appear more cystic, less frequently have dense enhancement of the solid portion, and are larger compared with ovarian metastatic lesions from stomach cancer on contrast-enhanced CT.^[4] Rupture of ovarian tumors occurs most often with benign ovarian tumors such as endometrial cysts and mature teratomas, and only two cases of ruptured metastatic ovarian tumors have been reported in Japan.^[5,6]

Preventive resection of the adnexa on the contralateral side of the metastasis is controversial. In our patient, the right adnexa appeared normal, and we saw no peritoneal dissemination, even during sigmoidectomy; therefore, we preserved the right adnexa.

Synchronous ovarian metastasis from colorectal cancer is more common than metachronous, and peritoneal dissemination and distant metastasis are seen frequently in synchronous ovarian metastasis. The prognosis for women with synchronous ovarian metastases is poor, with a median overall survival of 18.4 months.^[7] However, one report stated a 5-year survival rate after resection of 67.5% in patients with only ovarian metastasis and no other peritoneal dissemination or distant metastasis.^[8]

Histopathologically, it is often difficult to distinguish metastatic ovarian cancer from primary ovarian cancer with hematoxylin and eosin staining alone; however, CK-7 and CK-20 immunostaining is useful for distinguishing metastatic colon cancer from primary ovarian carcinomas.^[9] Colorectal cancer is CK-7 negative and CK-20 positive, and ovarian cancer is CK-7 negative. We diagnosed ovarian metastasis of sigmoid colon carcinoma in our patient based on CK-7-negative and CK-20-positive results.

Although rupture of metastatic ovarian tumor is extremely rare, we considered the possibility of metastatic ovarian tumor from the beginning in our patient because of the atypical MRI findings. Because of the early diagnosis and

minimally invasive laparoscopic surgery, the patient's postoperative course was good, and we were quickly able to identify and treat the primary lesion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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