A rare case report of extensive abdominopelvic endometriosis mimicking peritoneal malignancy: An imaging investigation

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ABSTRACT

Introduction: Endometriosis is a benign condition characterized by endometrial tissue deposited outside the uterine cavity. Endometriosis characteristics include a well-defined cyst (endometrioma) with or without internal septations and seeding nodules; however, no case of extensive infiltrating abdominopelvic endometriosis has been reported.

Case presentation: A 48-year-old female presented with incidentally found a hypervascular lesion in the pelvic cavity from routine checkup ultrasound. The computed tomography (CT) angiography investigation showed pelvic arteriovenous malformation (AVM). She underwent embolization at interventional radiology unit and the CT angiography follow up showed complete occlusion of pelvic AVM. However, eight months after embolization, she came with severe abdominal pain and hypotension. Emergency CT showed a large abdominopelvic mass with hemoperitoneum which was suspected for gynecologic or peritoneal malignancy. Further magnetic resonance image (MRI) was highly suspicious of peritoneum or mesentery malignancy. Surgical tumor removal was performed. The histologic results were negative for malignancy and the tumor was compatible with endometriosis.

Conclusion: Extensive abdominopelvic endometriosis is rare, and its imaging findings may not exclude peritoneal malignancy. Therefore, a definite diagnosis via histological investigation is necessary.

Keywords: endometriosis, carcinomatosis, image interpretation, diagnosis, case report


INTRODUCTION

Diffuse peritoneal disease has several aetiologies, such as malignancy, infection, and inflammation. The dissemination of malignancy into the peritoneal cavity is, so far, most commonly found as the metastatic site of an advanced tumor. Primary peritoneal malignancy, though less common, is also one of the differential diagnoses. However, several alternative non-neoplastic conditions can also cause diffuse peritoneal involvement and mimic peritoneal malignancy. Endometriosis is an ectopic deposit of endometrial tissue outside the uterine cavity, usually in the ovaries and pelvic cavity. Deposition of endometriosis at the peritoneum has been reported as focal seeding. However, there was no case report of endometriosis which diffusely involves peritoneum similar to peritoneal malignancy. Therefore, we present a case of extensive histologically-confirmed abdominopelvic endometriosis mimicking peritoneal malignancy. We also describe the imaging findings of this endometriosis case.

CASE REPORT

A 48-year-old premenopausal female (para 2, last 19 years) presented with non-specific pelvic pain. Her routine checkup ultrasound from another hospital reported tubular-shape hypoechoic lesions in the pelvic cavity with high vascularity. The findings were highly suspicious of arteriovenous malformation (AVM). She had regular menstrual cycle; however, she had dysmenorrhea in some cycles, which was relieved by oral analgesic drug. She denied dyspareunia or hypermenorrhea as well as digestive or urinary symptoms related to menstrual period. She had no depressed or anxious symptom, hormonal therapeutic use, and also denied family history of chronic pelvic pain, dyspareunia, or severe dysmenorrhea.

The physical examination revealed a 12-weeks size of uterus with no tenderness in the cul de sac or on cervical motion and no palpable adnexal mass. Her complete blood count and chest radiograph were normal. Due to non-specific symptom, no abnormality on physical examination, and high suspicion of AVM from ultrasound; therefore, further computed tomography (CT) angiography was investigated, which confirmed a pelvic AVM (Figure 1), as well as a minimally enhancing, hypodense lesion in the pelvic cavity, which was suspected to be a mixed component of lymphatic malformation (Figure 2). She underwent embolization afterward, and the follow-up CT angiography
showed complete occlusion of the prior AVM. For the residual parts of suspected lymphatic malformation, the vascular surgeon decided to observe and follow up.

Eight months later, she visited the hospital due to abdominal pain with hypotension. The initial blood pressure was 80/40 mm Hg. The physical examination showed abdominal distension and generalized tenderness with guarding. Her initial hematocrit was lower (28.5%) compared to the previous admission (36%). She was resuscitated until hemodynamically stable. The emergency CT showed a minimally enhancing, multilobulated abdominopelvic mass with internal hemorrhage and a small amount of hemoperitoneum (Figure 3). The differential diagnosis consisted of gestational trophoblastic disease (GTD), bilateral ovarian masses, and peritoneal cancer. Additional laboratory tests including urine pregnancy test (UPT) was negative and beta-human chorionic gonadotropin (hCG) was < 1 mlU/mL. Serum CEA, CA-125 and CA 19-9 were 0.89 ng/mL, 3672 U/mL and 2795 U/mL, respectively.

Further magnetic resonance imaging (MRI) showed heterogeneously enhancing hyposignal intensity in the T1-weighted with hypersignal intensity in the T2-weighted of a large, infiltrating abdominopelvic lesion involving the omentum with internal foci of hypersignal T1 blood component (Figure 4). After contrast administration, the lesion showed inhomogeneous enhancement encasing the uterus, both adnexa, urinary bladder, rectum, and sigmoid colon (Figure 5). Peritoneal enhancement is also visualized. These MRI findings were highly suspicious for malignancy. Primary peritoneal cancer, peritoneal metastasis, and mesenteric sarcoma featured in the differential diagnosis. Exploratory laparotomy with total abdominal hysterectomy and bilateral salpingooophorectomy, as well as omentectomy with tumor removal were performed. The gross specimen consisted of multiple pieces of a yellowish-white irregular tissue. The histologic results were negative for malignancy and compatible with endometriosis involving the myometrium and the serosal surface, both ovaries and fallopian tubes, the omentum, and the mesentery (Figure 6). She was discharged from the hospital without complication. She had no clinical symptoms of dysmenorrhea or pelvic pain, and the clinical status was good during follow up.

**DISCUSSION**

Endometriosis is a complex inflammatory disease defined as the presence of functional endometrial glands and stroma outside the uterine cavity which primarily affects women of reproductive age. It occurs with an estimated prevalence of 3%–15% of reproductive females. The endometriotic process includes endometriotic implants (peritoneal and extraperitoneal) and adhesions. The clinical manifestations of endometriosis vary from the absence of symptoms to severe pain and life-changing dysfunction. In this case, the initial presenting symptom and physical examination...
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were non-specific to endometriosis. Moreover, the ultrasound and initial CT angiography revealed vascular malformation; therefore, the attention of endometriosis might be ignored.

Among the various imaging modality choices, transvaginal and transvesical ultrasonograms are the most common primary tools for evaluating endometriosis. Both types of ultrasound are suitable for detecting endometrioma, whereas adhesion and implanted nodules are minor findings in such studies. The classic endometrioma on ultrasonography shows unilocular or multilocular cysts with an internal, low-level echo and septations as well as bright, echogenic foci within the cyst wall. However, our case was not evaluated by ultrasonography because endometriosis was not suspected initially. Even if this case had been evaluated by an ultrasonogram, it would not have been specific for endometriosis due to the patient's clinical presentation and the presence of diffuse lesions in the abdominal and pelvic cavities.

CT findings of endometriosis usually reveal heterogeneous, soft tissue compatible with hemorrhage of variable durations, fibrosis, or inflammation, and enhancement in the contrast study. However, in atypical endometriosis cases, the CT scan may lack the necessary sensitivity and specificity. The CT scan is also one of the most common imaging modalities; it can provide an overview of the gross location of peritoneal metastasis. The typical features of peritoneal metastasis are also well-described in literature; they include enhanced, thickened or nodular peritoneal reflections, soft tissue nodularity of peritoneal surfaces, thickened omentum, ascites, thickened or soft tissue nodules in the mesentery, and peritoneal or omental calcifications.

MRI is an excellent method for identifying old hemorrhagic content, road-mapping multiple endometriotic implants for the surgeon, and revealing extensive pelvic adhesions and ureteral involvement. On MR images, endometriotic implants show a signal intensity similar to that of smooth muscle, with low signal intensity on T2-weighted images, intermediate signal intensity on T1-weighted images (depending on blood content), and variable degrees of enhancement corresponding to the fibrous tissue containing hemorrhagic islands after the intravenous injection of the contrast material. Punctate hyperintense foci on T1-weighted images and pelvic anatomy distortion, suggesting adhesions, also support findings of extra ovarian endometriosis. The MRI features of malignancy arising in endometrioma are seen as an enhancing mural nodule, and in extra ovarian endometriosis, they are typically seen as solid lesions with intermediate signal intensity on T1- and T2-weighted images. These lesions characteristically enhance after the intravenous injection of gadolinium-based contrast material and demonstrate diffusion restriction.

The emergency CT and MRI images, in this case, showed hemoperitoneum, abdominopelvic mass, and new, diffuse, peritoneal enhancement with extensive omental fat infiltration. The summary from CT scan favored malignancy, which differential diagnosis included GTD, ovarian cancer, and peritoneal carcinomatosis. However, GTD could be excluded due to UPT was negative and beta-hCG was normal level, whereas elevation of tumor marker as CA-125 and CA-19 could support ovarian cancer and might be peritoneal cancer.

Figure 4 (A) Coronal T2 weighted magnetic resonance image of the abdomen showing the progression of the tumor involving the omentum and mesentery (large arrows) and a focus of internal hemorrhage (small arrow). Gradient T1 weighted magnetic resonance image at (B) pelvic cavity and (C) lower abdominal levels showing multiple foci of internal hemorrhage (arrows)

Figure 5 Contrasted magnetic resonance image at (A) lower abdominal and (B) pelvic cavity levels showing enhanced internal septations (small arrow) and a thickened enhancing peritoneum (large arrow)

Figure 6 The microscopic appearance of endometriotic nodules showing endometrial glands and the surrounding stroma on the surfaces of the (A) mesentery, (B) omentum, and (C) pelvic cavity
However, further MRI showed no abnormality of both ovaries so ovarian cancer might be excluded and the main possibility of diagnosis was peritoneal cancer. Recently, one publication found that elevation of CA-125 and CA-19 significantly related to endometriosis.10 These tumor markers may be used to support the diagnosis of endometriosis in controversial case.

Based on our literature review, some suggestive features, like ascites and lesion distribution, can help differentiate endometriosis from peritoneal carcinomatosis.11,12,13,14 However, these two findings are neither pathognomonic nor specific for each condition. Since ultrasonography is very sensitive for detecting ascitic fluid, this is a ubiquitous finding in association with malignancies like peritoneal carcinomatosis.15 Meanwhile, unfortunately, endometriosis can also cause ascites. Nevertheless, only 30–40 cases of endometriosis with ascites have been reported. The associated ascitic fluid is exudative since it is likely the sequelae of peritoneal irritation due to the rupture of endometrial cysts,12 or it can present as massive hemorrhagic ascites.15 The differences in distribution can also help to differentiate between diagnoses. In malignant cases, cancer cells are carried by the peritoneal fluid, resulting in widespread peritoneal metastasis; the location of implants could be somewhere in the dependent upper abdomen, e.g., the diaphragm, splenic hilum, stomach, lesser sac, liver, mesenteric root, and the paraaortic nodes above the renal vessels.15 In contrast, the common peritoneal sites in endometriosis are mainly in the pelvis.14 However, in our case, the images mimicked peritoneal carcinomatosis due to the presence of enhancing and diffuse lesions as well as the involvement of the omentum and mesentery. Additionally, multiple foci of hemorrhage and hemoperitoneum are not specific for endometriosis.

CONCLUSION
Extensive abdominopelvic endometriosis, especially in the case of omental and mesentery involvement, requires rigorous imaging investigation in conjunction with histological confirmation. Further comparison study regarding imaging and histological findings of peritoneal endometriosis and primary peritoneal carcinoma is needed.

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CONFLICT OF INTEREST
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AUTHOR CONTRIBUTION

ETHICAL CONSIDERATIONS
The ethical clearance of this study was approved by the Commission on Research Ethics, Faculty of Medicine, Prince of Songkla University, number REC.63-209-7-4.

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