Spontaneously Ruptured Endometrioma Associated with Endometrioid Adenocarcinoma: MR Findings

Eito KOZAWA1*, Yuka MATSUO1, Kousei HASEGAWA2, Keiichi FUJIIWARA2, Takaki SAKURAI3, and Fumiko KIMURA1

Departments of 1Diagnostic Imaging, 2Gynecologic Oncology, 3Pathology, Saitama Medical University, International Medical Center
1397-1, Yamane, Hidaka-shi, Saitama 350-1298, Japan
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A 38-year-old woman was transferred to the hospital with lower abdominal pain. Magnetic resonance (MR) imaging revealed an irregular ovarian wall with a solid component and a fluid-fluid level in the cystic mass and the pelvic space, which was thought to be pathognomonic for the rupture of an endometrioma with a malignant ovarian tumor. Histologic examination following adnexectomy revealed a ruptured endometrioma associated with endometrioid adenocarcinoma. A fluid-fluid level in the cystic mass and pelvic space may be pathognomonic MRI feature for a rupture of either an endometrioma or an endometrioma with a malignant tumor.

Keywords: MRI, rupture, ovarian endometrioma with endometrioid Adenocarcinoma, fluid-fluid levels

Introduction

Endometrioid adenocarcinoma of the ovary is one of the most common primary malignant ovarian tumors, and its coexistence with endometrioma has been reported to be 15 to 25%.1,2 However, to our knowledge, this is the first case reported in the English literature of a ruptured endometrioma associated with endometrioid adenocarcinoma, and only a few cases of ruptured ovarian tumor of endometrioma and teratoma have been reported along with magnetic resonance (MR) imaging and computed tomographic (CT) findings.3-6 We describe the MR findings of a ruptured endometrioma with an endometrioid adenocarcinoma that presented with an irregular surface and a solid component in the ovarian tumor and with fluid-fluid levels in the ovarian tumor and the pelvic space.

Case Report

A 38-year-old woman presented with lower abdominal fullness of 3 weeks’ persistence. The fullness subsided after several days, and she developed abdominal pain. Physical examination confirmed pain in the lower abdomen and pelvis. She was slightly anemic, with hematocrit of 34.5%. Tumor markers were normal except for elevated CA 125 (39.0 U/mL; normal < 35 U/mL). Sonography showed ascites and no mass in the lower abdomen. Post-contrast CT images revealed a large cystic mass with a solid component that measured 10 × 9 cm and ascites on the right side of the pelvis. MR images were obtained to characterize the lesion further. There was a cystic component of approximately 10 × 9 × 9 cm and irregular shape in the non-dependent portion of the cystic mass (Fig. 1A–D). Axial T2-weighted images showed high signal intensity in the cystic mass and pelvic space (Fig. 1A, B). Axial T1-weighted images showed slightly high signal intensity in the cystic mass and fluid in the pelvic space (Fig. 1C). Sagittal fat-saturated T1-weighted images with gadolinium enhancement showed heterogeneous high signal intensity in the cystic mass, which suggested a solid component, and thickened peritoneum (Fig. 1D). The normal right ovary could not be identified. The uterus and left ovary appeared normal. The preliminary preoperative diagnosis was ruptured endome-
trioma with related malignant tumor, such as an endometrioid adenocarcinoma or clear cell carcinoma, and chemical peritonitis.

Right adnexectomy revealed a cystic tumor of the right ovary, which contained a ruptured cystic tumor. The fluid of the cystic component was dark red. The internal surface of the cystic tumor was irregular, and there was a solid component (Fig. 1E).
The pathological diagnosis was endometrioma associated with an endometrioid adenocarcinoma. There was no evidence of malignancy in the peritoneum. Microscopic examination showed subepithelial spread of endometrial tissue and covering of the cyst wall with endometrioid adenocarcinoma cells (Fig. 1F). Based on these findings, the tumor was diagnosed as a ruptured endometrioma with endometrioid adenocarcinoma. The patient’s postoperative course was uneventful, and she was discharged 7 days after surgery.

Discussion

Endometrioma occurs in 3 to 10% of women of reproductive age, 2 to 5% of postmenopausal women, and 25 to 80% of infertile women.7 Endometrioma was formerly treated with medication or left untreated and given a prolonged follow-up as a benign tumor, but it has recently been associated with cancer.1,2,7,8 Endometrioma has been reported to develop in about 0.7 to 0.8% of cases.8,9 Because our case showed slightly high intensity on T1-weighted image and a fluid-fluid level on T2-weighted image, which suggested endometrioma in the cystic lesion with a solid component, the differential diagnosis was endometrioma with related malignant tumors.

The histological types of malignant tumors arising from endometrioma include endometrioid adenocarcinoma, clear cell carcinoma, serous cystadenocarcinoma, mucinous cystadenocarcinoma, and others.1,2,7,9 About 70% of these are endometrioid adenocarcinoma and clear cell carcinoma. Generally, MR imaging is useful to detect and characterize adnexal masses, and enhanced solid nodules in the cystic lesion are the most valuable findings for ovarian malignant tumor.1,2 The adnexal mass in the current case appeared as a cystic mass with an enhanced solid nodule on MR imaging with gadolinium. The MR findings of the ovarian tumor mimicked those of endometrioid adenocarcinoma, clear cell carcinoma, serous cystadenocarcinoma, adenofibroma, and Mullerian mucinous borderline tumor. Preoperative diagnosis included endometrioid adenocarcinoma and clear cell carcinoma because of their increasingly frequent observation.

Although endometrioma is common in women of reproductive age, only a few cases are reported with MR and CT findings of ruptured endometrioma.3,5 Correct diagnosis requires MR imaging, which can better indicate the correct shape and features of ovarian rupture better than CT. Previous studies using MR and CT imaging have reported representative features of ovarian rupture to include the absence of a tense, flabby, or depressed surface of the cystic lesion.6,10,11 Cystic ruptured ovarian tumor with hemorrhage can sometimes be detected as well based on a fluid-fluid level in the pelvic space, although this is uncommon because MR imaging of a hemorrhage shows varied signal intensity on T1-weighted and T2-weighted images. Detection of a fluid-fluid level in the pelvic space enables diagnosis of a ruptured ovarian tumor with greater confidence on MR imaging.

The cause of the rupture in the present case was unknown. Pregnancy, trauma, adhesion, growth of the tumor mass, or infection may cause ruptured cystic ovarian tumor, with pregnancy and trauma the most common triggers. Pregnancy increases tension when the uterus enlarges and alters the anatomical position of an ovarian tumor, and trauma will put pressure on its wall.6,10,11 An endometrioma may develop adhesions, and changes in position from such dense adhesions and growth of a malignant ovarian tumor could induce spontaneous rupture of the cystic tumor, as noted by Vora’s group.10

In summary, we report a case of ruptured endometrioma associated with an endometrioid adenocarcinoma. MR imaging revealed the irregular surface of the ovarian wall with a solid component and a fluid-fluid level in the cystic mass and pelvic space. Although fluid-fluid level formation is a nonspecific imaging finding that may be encountered in many pathologic conditions, its presence in both the pelvic space and cystic ovarian tumor may be more indicative of ruptured ovarian tumor.

References

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