Ruptured Ovarian Cystic Teratoma with Peritoneal Reaction: a case report

HSIU-WEN KUO  CHENG-YI CHAN  KUN-ENG LIM  HSU-CHAO CHANG

Department of Radiology, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei, Taiwan

ABSTRACT

Although ovarian teratomas are the most common neoplasms in younger patients, ruptured teratomas are rare. Ruptured teratomas may mimic malignant tumors, and chronic rupture may result in granulomatous peritonitis.

We report a case of ruptured teratoma with peritoneal seeding in a 31-year-old woman without a significant history complained of progressive abdominal fullness. Abdominal computed tomography and 1.5-Tesla magnetic resonance imaging revealed a large cystic tumor in the right adnexa with diffuse fat implants in the peritoneum. In addition, dense calcifications and fat inclusions were observed within the tumor. The right ovarian tumor and most of the peritoneal implants were surgically excised. Follow-up computed tomography performed 4 years after resection showed no lesion recurrence, although some residual fat implants were observed in the peritoneum.

Mature cystic teratomas account for 10-20% of all ovarian neoplasms and occur mostly in young adults. Spontaneous rupture of a mature cystic teratoma is uncommon (1-2% of all complications) because it usually has a thick capsule [1, 2]. Ovarian teratomas may rupture into the peritoneum, urinary bladder, small bowel, rectosigmoid colon, or vagina.

We describe the imaging and immunohistochemical characteristics of a case of ruptured teratoma with peritoneal reaction that was successfully treated with surgery.

CASE REPORT

A 31-year-old woman, gravida 1, presented to our hospital with a 3-week history of progressive abdominal fullness and associated weight loss. She had been previously healthy with normal menstrual cycles and without histories of major systemic disease, gastrointestinal and gynecological symptoms, or trauma or accident.

Physical examination revealed a markedly distended abdomen without tenderness or rebound pain. Abdominal ultrasonography revealed massive ascites without definite mass. On abdominal computed tomography (CT), a cystic tumor with calcification and fat inclusions in the right adnexa (Fig. 1a), and diffuse fat implants in the perihepatic and subphrenic regions were detected (Fig. 1b-1c). Associated ascites and peritoneal thickening were also observed (Fig. 1c). These findings were suggestive of a ruptured right ovarian teratoma with peritoneal reaction.

On 1.5-Tesla magnetic resonance imaging (MRI), fat implants presented as T1 hyperintensity, while a prominent macroscopic fat signal was detected within the tumor and peritoneal cavity on fat-suppressed T1-weighted MRI (Fig. 2a-2b). These findings indicate a fat-containing tumor in the right adnexa and peritoneal fatty implants. In addition, massive ascites and prominent enhancement of the peritoneum were noted (Fig. 2c). Accordingly, ruptured ovarian teratoma with peritoneal reaction was diagnosed, and laparotomy was performed.

Correspondence Author to: Hsiu-Wen Kuo
Department of Radiology, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei, Taiwan
No. 289, Jian-Guo Road, New Taipei 231, Taiwan
Preoperative analysis of serum tumor markers revealed a cancer antigen 125 (CA-125) level of 121 U/mL (reference range, 0-35 U/mL). The alpha-fetoprotein (AFP), carcinoembryonic antigen (CEA), and b-human chorionic gonadotropin (β-HCG) levels were unremarkable.

During laparotomy, massive, mucinous, jelly-like, yellowish, and sticky fat implants were observed in the whole abdominal cavity. The total volume was approximately 2000 cc. A ruptured right ovarian tumor was found. The external surface appeared gel-like with mucoid material over the elastic surface. On incision, some sebum and calcified hairs were also visible. On microscopic examination, teratoma components, including mature bone, skin with appendages, and sebum, were observed.

She was symptom-free postoperatively without further treatment. Follow-up with CT studies over a period of 4 years showed that some residual fat implants were noted in the subphrenic and perihepatic regions without interval change. The CA-125 levels remained within the reference range.

**DISCUSSION**

Spontaneous rupture of a mature cystic teratoma is uncommon (1–2% of all complications) because it usually has a thick capsule [1, 2]. Acute rupture may occur during pregnancy, delivery, iatrogenesis, or trauma [3, 4]. However,
Ruptured ovarian cystic teratoma

chronic rupture may cause slow leakage of intratumoral materials through small tumor perforation.

Nader et al. and Suprasert et al. reported cases of ruptured ovarian teratoma with abdominal distention and weight loss [3, 4], which were also observed in our case. The reported symptoms were abdominal pain, peritonitis, and hemoperitoneum [5]. These symptoms are associated with acute or chronic rupture.

Patients with suspected gynecological malignancies should undergo preoperative examination of tumor markers. In our review of previous studies on ruptured teratomas, we found that serum CA-125 levels were either elevated or normal. In cases of preoperatively elevated CA-125 levels that subsequently return to normal, follow-up assessments of serum CA-125 levels should be performed. We presumed that our reported case was a stable disease based on the normal postoperative CA-125 level and stationary CT findings.

Ovarian teratomas may rupture into the peritoneum, urinary bladder, small bowel, rectosigmoid colon, or vagina [1, 6]. The most common site of rupture is the peritoneal cavity. Mature cystic teratomas have typical imaging characteristics with fatty and calcified components within the tumor. Presence of extratumoral and intraperitoneal fatty nodules is suggestive of a ruptured teratoma. Ruptures lead to parasitic peritoneal implants, usually involving the

Figure 2. a. Axial T1-weighted magnetic resonance image showing hyperintense implants in the peritoneum (arrow). b. Axial fat-suppressed T1-weighted magnetic resonance image showing macroscopic fat signal. c. Post-contrast fat-suppressed T1-weighted magnetic resonance image showing diffuse peritoneal enhancement (arrow). d. Axial T2-weighted magnetic resonance image showing right adnexal heterogeneous tumor (arrow) and massive intraperitoneal fluid.
Most teratomas are benign and asymptomatic. Symptoms result from the following complications: torsion, rupture, infection, and malignant change. The massive ruptured materials in symptomatic ruptured teratomas must be completely removed surgically. In our case, the ruptured materials were not removed completely. However, this is sometimes difficult. For the present case, no further management was conducted because it was histologically benign and symptom-free postoperatively.

We report a rare case of ruptured cystic ovarian teratoma with peritoneal reaction that was successfully treated with surgery. We recommend that surgery be performed in cases of suspected spontaneous rupture of an ovarian teratoma for symptom relief and to prevent development of peritonitis and malignant transformation. For postoperative residual peritoneal implants in cases of histologically benign ruptured teratoma, further treatment may not be a necessary action.

REFERENCES