Bowel Endometriosis Presenting With Massive Ascites Relapses in Ovaries: a Case Report and Literature Review

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Case report

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Abstract

Background: About 10% reproductive aged women are affected by endometriosis. Deep infiltrative endometriosis (DIE) is the most severe form of endometriosis which has a high risk of recurrence. Bowel is the most common extragenital involved organ. The clinical features of bowel endometriosis vary by location, size, and infiltrative depth of lesions, which makes diagnosis and treatment difficult. Endometriosis presenting with massive ascites is rare and hard to diagnose before histopathology. There are no authoritative guidelines on the management of DIE at present.

Case presentation: A 37-year-old woman presenting with massive ascites and pelvic mass was diagnosed with bowel endometriosis after laparoscopy. Bowel resection and anastomosis followed by gonadotropin-releasing hormone agonists (GnRH-a) therapy was performed. Two levonorgestrel-releasing intrauterine devices and two levonorgestrel-releasing subcutaneous silastic implants were inserted subsequently. Recurrence was found in bilateral ovaries 25 months after surgery. Cystectomy of bilateral ovarian cysts, bilateral salpingectomy and postoperative GnRH-a therapy was performed. The patient showed no recurrence at follow-up by May 2021 (22 months).

Conclusions: In the presence of massive ascites and pelvic mass, DIE should be considered as a differential diagnosis for ovarian cancer. Endometriosis in different organs may have different pathogenesis, which leads to different treatment focus. On the basis of complete resection and postoperative GnRH-a therapy, our application of high dose levonorgestrel-releasing systems creatively improves the treatment effect of bowel endometriosis. The mechanism of recurrent endometriosis that occurs in different organs may relate to lymph node involvement and individual immune state.

Background

About 10% women of reproductive age are affected by endometriosis which is a chronic, recurrent, inflammatory disease caused by the ectopic presence of endometrial tissue outside the uterine cavity[1]. The most severe form of endometriosis is deep infiltrative endometriosis (DIE) which is defined by subperitoneal invasion exceeding 5 mm in depth. Bowel endometriosis is the most common extragenital DIE that typically involves muscularis or mucosa presenting as a single nodule larger than 1 cm in diameter. The symptoms of bowel endometriosis can be classified as non-specific versus specific. The former includes dysmenorrhea and dyspareunia, the later consists of diarrhea, constipation, dyschezia and bowel obstruction depending on location, size and depth of lesion. Surgical treatment, aiming at complete removal of lesions, is the main choice for symptomatic patients. But approximately 50% patients will experience recurrence in 5 years after surgery since it is cytoreductive rather than curative[2]. Postoperative adjuvant medical treatment is needed due to a high risk of relapse. Currently, However, there are no clear guidelines on the management of DIE[3]. It remains a formidable challenge for clinicians to defeat DIE. Here we report a case of bowel endometriosis presenting with massive ascites and recurring in bilateral ovaries to provide practical experience and reference for future clinical management.
Case Presentation

A 37-year-old woman (gravida 1, para 1) who presented with a 4-year history of pelvic effusion that had increased markedly in the past month admitted to our hospital in June 2017. She had a 10-year history of dysmenorrhea relieved with analgesics.

Ultrasonography confirmed the presence of massive ascites and pelvic effusion. A mildly elevation in CA 125 level (126.9 U/mL, reference range<35.0 U/mL) was revealed in laboratory tests. Positron emission tomography-computed tomography (PET-CT) showed a soft tissue mass on the right pelvis with an elevated uptake of $^{18}$F-Fluorodeoxyglucose (FDG). (Fig. 1) 380 ml of hemorrhagic peritoneal fluid was drained by paracentesis and demonstrated negative for malignant cells. A lymph node biopsy was performed and revealed only large numbers of lymphocytes.

She underwent diagnostic laparoscopy after hospitalization. A large amount of bloody ascites was identified upon entering the peritoneal cavity and 2 L was evacuated in total. (Fig. 2a) Severe adhesions of the uterus and bilateral adnexa to the sigmoid colon and rectum was noted. The ileocecum was enlarged and rigid forming a 5×5 cm mass. (Fig. 2b) The appendix contracted and adhered to the right pelvic wall. Scattered miliary nodules ranging from 0.5-1 cm in diameter were seen on the surface of the bowel. (Fig. 2c) Bowel resection and anastomosis were performed to excise the ileocecal mass and the frozen section indicated endometrial implants. (Fig. 2d) Other visual lesions were removed completely. Postoperative pathology confirmed endometriosis of the appendix and intestine, the resection margin and two intestinal lymph nodes were disease-free. She postoperatively received 6-course gonadotropin-releasing hormone agonists (GnRH-a) therapy (leuprolide acetate 3.75 mg per course from the second day after surgery). After multidisciplinary consultation and informed patient consent, two levonorgestrel-releasing intrauterine devices (each containing levonorgestrel 52 mg) and two levonorgestrel-releasing subcutaneous silastic implants (each containing levonorgestrel 75 mg) were inserted later to prevent further recurrence. The patient had amenorrhea after medication without hot flash, palpitation or other discomfort.

The patient was asymptomatic without recurrence 25 months after surgery. In July 2019, she was readmitted for endometriotic cysts of both ovaries found on pelvic magnetic resonance imaging (MRI). Second laparoscopy showed the bowel appeared normal. Douglas' Pouch was completely enclosed by extensive pelvic adhesions. (Fig. 3a) The surface of uterine was uneven with scattered inflammatory follicles. Bilateral fallopian tubes were edematous, tortuous and tightly adhered to the ovaries. (Fig. 3b) We performed cystectomy of bilateral ovarian cysts and bilateral salpingectomy. (Fig. 3c) Both intraoperative and postoperative pathology demonstrated bilateral ovarian endometriotic cysts. She completed 3-course GnRH-a therapy after surgery. On regular outpatient follow-up, the patient remains with amenorrhea and has no complains of hot flash, memory loss, palpitation or other discomfort. No clinical evidence of recurrence was found by May 2021.

Discussion And Conclusions
Endometriosis presenting with ascites is rare. Since the first case was reported in 1954, there are only 63 cases in total until 2011.\(^4\) Bernstein et al.\(^5\) firstly suggested that irritation of peritoneal cells by endometrial debris in peritoneal cavity eventually cause ascites. Ussia et al.\(^6\) later promoted a concept by retrospective analysis that the source of massive ascites is the excessive ovarian transudation similar to a Meigs syndrome consisting of an ovarian fibroma, massive ascites, and hydrothorax. As the mechanism of endometriosis is under study, the pathophysiology of endometriosis-related ascites is similarly unclear. Patients most frequently complain of anorexia, abdominal distention and abdominal pain while typical symptoms of endometriosis such as dysmenorrhea are revealed by detailed history. Considering the similar symptoms, the existence of pelvic mass and the elevation of CA 125, ascites secondary to endometriosis is usually mistaken for ascites associated with ovarian malignancy. Although fine-needle cytology of ascites has been successfully applied to confirm endometriosis\(^7,8\), the overwhelming majority of patients are definitively diagnosed by postoperative histology or exclusion of other conditions causing ascites.

Maximum removal of the lesion is the key of treatment for endometriosis. Surgical approaches for bowel endometriosis are mainly divided into three categories: shaving excision, disc resection and segmental resection. Influence factors of the choice of surgery type includes location of the bowel lesion, depth of infiltration, number of nodules, and presence or absence of stricture. Generally speaking, bowel occlusion of > 50% or nodule larger than 2–3 cm indicates a need for elective bowel resection\(^9\) In this case, segmental bowel resection was performed to completely excise the mass and all scattered lesions were removed by shaving excision or bipolar coagulation. However, it's reported that occult microscopic endometriosis exists in 15% specimens of resection margins even when radical segmental resection is performed\(^1\), which makes appropriate postoperative medicine significant for inhibiting and removing residual microlesions. Nevertheless, there are no authoritative regiments at present. Several medication options can be used alone or in combination such as long-term oral contraceptive, progestins, GnRH-a and levonorgestrel-releasing intrauterine devices. Some studies have demonstrated that GnRH-a and non-oral contraceptive are more effective in DIE\(^9,10\). Considering the large lesion load and deep infiltration, GnRH-a were applied immediately after optimal lesion excision to reach a maximum suppression of residual lesions and a total of 6 courses. Later two levonorgestrel-releasing intrauterine devices and subcutaneous implants keep the progestin level within an effective range for continuous inhibition locally and systematically. The patient presented with amenorrhea without any perimenopausal symptoms which indicated an appropriate estrogen level.

No lesions found in the bowel in the second surgery demonstrated our therapeutic strategies successfully prevented bowel recurrence. Interestingly, new lesions appeared on the ovaries even when the ovarian function is suppressed at a low level. Residual endometriotic lesions are commonly suggested to be the main origin of recurrence. That's obviously not consistent with present situation. No disease reappeared in the bowel demonstrates radical removal of lesions and other source of ovary recurrence. Lymph node involvement and lymphatic vessel invasion which are frequently found in deep infiltrating rectosigmoid could also be responsible for recurrence, especially in DIE.\(^11\) This indicates the value to detect lymph
node involvement in DIE. However, postoperative histology of lymph node revealed no disease in our case. Development and implant in different position from primary disease of de novo lesions in retrograde bleeding may contribute to recurrence in new organs[12]. In addition, immunological factors might play an important role in this process. Massive ascites can be a sign of inflammatory sensitive status. A significant elevation of CD158α(+) NK cells (CD158α-expressing cells among CD16-expressing natural killer cells) in both ascites and peripheral blood can be observed in women with endometriosis. Besides, this increase of CD158α(+) NK cells in peripheral blood could not be diminished by surgery and GnRH-a treatment[13]. Which means CD158α(+) NK cells may be a potential biomarker for endometriosis. Furthermore, young age at primary surgery(≤ 35 years), high body mass index(≥ 23 Kg/m²), intraoperative finding of adhesion extension, the presence of adenomyosis, dysmenorrhea are reported to be risk factors of recurrence[2,14,15].

In conclusion, DIE should be considered as a differential diagnosis for ovarian cancer in the presence of massive ascites and pelvic mass. Endometriosis occurring in different organs may have different pathogenesis, which leads to different treatment focus. Physicians must take clinical symptoms, patients’ expectations, the range and depth of the lesions into consideration when make treatment plan. Application of high dose levonorgestrel-releasing systems after surgery and GnRH-a therapy improves the treatment effect of bowel endometriosis. The mechanism of recurrent endometriosis that occurs in different organs may relate to lymph node involvement and individual immune state.

**Abbreviations**

DIE: Deep infiltrative endometriosis  
CA125: Cancer antigen 125  
PET-CT: Positron emission tomography-computed tomography  
FDG: Fluorodeoxyglucose  
GnRH-a: gonadotropin-releasing hormone agonists  
MRI: Magnetic resonance imaging

**Declarations**

Ethics approval and consent to participate: The study received ethics approval from the Commission for Scientific Research in the Obstetrics and Gynecology Hospital of Fudan University.

Consent for publication: The patient provided written informed consent for the publication of this case report.

Availability of data and materials: The data used or analyzed are all included in this published article.
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Authors’ contributions: BYT: reviewing the literature, drafting and revising the manuscript. HW: data collection. YLQ: case selection, patient’s overall management and critical review of the manuscript. YL: case selection, patient’s overall management and revision of the manuscript. All authors read and approved the final manuscript.

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Figures
Figure 1

PET-CT findings. A soft tissue mass on the right pelvis with an elevated uptake of 18F-Fluorodeoxyglucose (FDG). (a). Coronal plane. (b). Axial plane. (c). Sagittal plane.
Figure 2

The first laparoscopy. (a). Massive hemorrhagic ascites. (b). Severe pelvic adhesions. (c). Scattered miliary lesions on the surface of the bowel. (d). The contracted appendix which was demonstrated to be endometriosis.
Figure 3

The second laparoscopy. (a). No recurrence in the bowel. (b). Bilateral fallopian tubes were edematous, tortuous and tightly adhered to the ovaries. (c). Cystectomy of bilateral ovarian cysts and bilateral salpingectomy were performed.