Endoscopic ultrasound-guided fine needle aspiration for the diagnosis of bowel endometriosis: a case report

Takao Miwa¹, Takuji Iwashita², Masashi Aiba¹, Takahiro Kochi¹, Katsuhisa Toda¹, Noriaki Nakamura¹, Naoki Katsumura¹, Masahito Shimizu²

¹Department of Gastroenterology, Chuno Kosei Hospital, ²Department of Gastroenterology, Gifu University Graduate School of Medicine, Gifu, Japan

Introduction

Bowel endometriosis is a condition caused by endometrial glands and stroma infiltrating the bowel wall and reaching the subserous fat tissue or the adjacent subserous plexus. A 42-year-old woman with changes in stool habits, nausea, and stomach aches experienced complete obstruction in the rectum. Endoscopic ultrasound demonstrated a low echoic lesion outside the rectal mucosa and endoscopic ultrasound-guided fine needle aspiration confirmed the diagnosis of bowel endometriosis. The clinical characteristics of bowel endometriosis are unspecific and this condition is sometimes misdiagnosed as a malignant tumor, irritable bowel syndrome, or any other colorectal disorder. Our aim is to show that endoscopic ultrasound-guided fine needle aspiration might be helpful for bowel endometriosis diagnosis and exclusion of other malignant disease.

Keywords: bowel endometriosis; bowel obstruction; endoscopic ultrasound-guided fine needle aspiration; ileus

Case report

A 42-year-old woman had previously underwent total hysterectomy and bilateral salpingectomy for uterine myoma including ovarian chocolate cyst removal. Three
months previously, she was referred to our clinic owing to nausea, constipation, and lower abdominal cramping pain. Blood examination showed slightly elevated serum cancer antigen 125 level (44.4 U/mL). Imaging work-up revealed niveau formation in the ascending colon on abdominal radiography (fig 1a) and enhanced thickening of the rectal wall on contrast enhanced computed tomography (CT) (fig 1b). These findings suggested the presence of colonic ileus caused by rectal cancer or post-surgical stricture from the hysterectomy. The colonic ileus was successfully managed with conservative treatment, including nasal ileus tube placement. After resolution of the ileus, colonoscopy was performed, which revealed complete obstruction in the upper rectum (fig 1c, 1d). Endoscopic biopsy did not show any obvious abnormal findings, although it was difficult to rule out malignancies. Subsequently, EUS (GF-UC240P; Olympus, Tokyo, Japan) was performed, which demonstrated a 27.3×18.8 mm low echoic lesion below the rectal mucosa and submucosa, infiltrating the rectal muscularis propria (fig 2a). EUS-FNA was performed using a 22-gauge needle (Acquire; Boston Scientific, MA, USA) (fig 2b). Pathological evaluation revealed endometrial glands and stroma scattered in smooth muscle tissue; additional immunohistochemical stains revealed cluster differentiation 10 in the surrounding stroma and estrogen receptor in the endometrial glands (fig 3). The lesion was finally diagnosed as bowel endometriosis and managed by endoscopic balloon dilatation and administration of dienogest as hormone therapy, which improved her symptoms. Follow-up CT performed 14 months later also showed improvement of rectal wall thickness.

Discussions

EUS is an established imaging modality to examine the lower gastrointestinal tract and its high resolution enables recognition of the layer structure of the rectal wall. EUS has been reported to have high accuracy in T staging, especially in rectal cancer [6]. Imaging features of bowel endometriosis on EUS were reported as a hypoechoic lesion with an irregular and unclear margin [7]. Another advantage of EUS in bowel endometriosis is the evaluation of bowel infiltration as T staging for rectal cancer, which is important to determine management methods, either laparoscopy or laparotomy [8], and whether bowel resection is necessary [9]. However, despite precise evaluation with EUS, pathological evalu-

![Fig 1.](image1) a) Abdominal radiographs showing niveau formation in the ascending colon; b) computed tomography with contrast showing enhanced thickening of the rectum wall (arrow); c) and d) colonoscopy showing complete obstruction in the rectum.

![Fig 2.](image2) a) Endoscopic ultrasound demonstrated a 27.3×18.8 mm low echoic lesion infiltrating the rectal muscularis propria; b) endoscopic ultrasound-guided fine needle aspiration was performed using a 22-gauge needle.

![Fig 3.](image3) a) and b) Pathological evaluation revealed endometrial glands and stroma scattered in smooth muscle tissue; c) cluster of differentiation 10 was positive in the surrounding stroma; d) the estrogen receptor was positive in the endometrial glands.
ation is vital to establish a definite diagnosis of bowel endometriosis.

Another advantage of EUS is its ability to perform pathological sampling using FNA under EUS guidance, which was first reported in 1992 [10]. EUS-FNA has been reported as a reliable method to obtain pathological specimens of pelvic lesions located in the intraluminal or around the lower intestine [11,12]. However, the efficacy of EUS-FNA for endometriosis has been barely evaluated and was highlighted only in a few case reports or case series [7,13,14] (Table I.). Together with the findings of these reports and our case, the pooled sensitivity of EUS-FNA for bowel endometriosis was 70% (7/10) [7,13,14]. Surgical exploration or operation could be prevented in 3 of 7 patients diagnosed using EUS-FNA; conservative treatment was administered instead. Thus, EUS-FNA could help to obtain a pathological diagnosis of bowel endometriosis and change the management plan by preventing surgical exploration. As for safety, compared with upper intestinal EUS-FNA, lower gastrointestinal EUS-FNA has been reported to be associated with higher rates of adverse events (20.5%), although most adverse events were mild [15]. Therefore, the indications of EUS-FNA for pelvic lesions need to be carefully considered; however, given their low invasive nature, we believe that EUS-FNA should be performed if there is any possibility that the FNA diagnosis could change the management plan, such as that for colon cancer versus bowel endometriosis.

In our case, malignant diseases or post-surgical effects from the patient’s hysterectomy were initially suspected as the cause of rectal obstruction based on blood test and imaging evaluations. EUS revealed hypoechoic tumors at the obstruction site and following FNA, successfully provided a pathological diagnosis of bowel endometriosis without any adverse events. EUS-FNA was useful to prevent unnecessary surgery and changed the management method to hormonal therapy with endoscopic balloon dilation.

In conclusion, EUS is a useful examination to evaluate the cause of obstruction in the rectum, and EUS-FNA should be considered if a pathological diagnosis cannot be established using regular endoscopic biopsy. EUS-FNA is also useful to diagnose bowel endometriosis around the rectum.

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| No. | Age | EUS findings                  | EUS-FNA diagnosis | Pathological diagnosis | Treatment         | Reference |
|-----|-----|-------------------------------|-------------------|------------------------|-------------------|-----------|
| 1   | 41  | Hypoechoic, regular border lesion | Endometriosis     | EUS-FNA                | Surgical          | [13]      |
| 2   | 37  | Hypoechoic, regular border lesion | Endometriosis     | EUS-FNA                | Conservative      | [13]      |
| 3   | 50  | Hypoechoic, irregular border lesion | Endometriosis     | EUS-FNA                | NA                | [7]       |
| 4   | 36  | Heterogenous, irregular border lesion | Endometriosis     | EUS-FNA                | NA                | [7]       |
| 5   | 44  | Heterogenous, irregular border lesion | Inconclusive      | None                   | Conservative      | [7]       |
| 6   | 42  | Hypoechoic lesion             | Inconclusive      | Surgical exploration  | Conservative      | [7]       |
| 7   | 53  | Hypoechoic lesion             | Inconclusive      | Surgical exploration  | Surgical          | [7]       |
| 8   | 26  | Hypoechoic lesion             | Strongly suggestive of endometriosis | EUS-FNA | NA | [7] |
| 9   | NA  | NA                            | Endometriosis     | EUS-FNA                | NA                | [14]      |
| 10  | 42  | Hypoechoic, irregular border lesion | Endometriosis     | EUS-FNA                | Conservative      | Our case  |

EUS-FNA, endoscopic ultrasound-guided fine needle aspiration; NA, not available.
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