



A case of unique endoscopic findings of intestinal endometriosis exposed to the mucosa: aggregation of papillary protruded bulges from the submucosal elevation of the rectum

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Abstract

Intestinal endometriosis exposed to the mucosa is relatively rare. Therefore, its endoscopic findings with pit pattern and magnifying endoscopy with narrow-band imaging and clinicopathological features of intestinal endometriosis exposed to the mucosa have not been well documented until now. A 44-year-old woman was suspected to have gastrointestinal bleeding by positive fecal occult blood test. Colonoscopy revealed a hemicircular submucosal tumor whose surface was covered with easy-bleeding papillary bulges in the rectum. Pit pattern analysis and magnifying endoscopy with narrow-band imaging revealed straight microvessels among the straight pits arranged in a radial manner, and the avascular area with no pit pattern of the top of the bulge. These findings were different from those of polyps or cancer. Biopsy specimens from the protruded lesions were diagnosed as rectal mucosal endometriosis by hematoxylin–eosin staining and immunohistochemical examination. Surgical resection was suggested to the patient, but the patient did not favor surgical treatment. After the diagnosis, the most appropriate treatment started and successfully relieved her abdominal pain. Malignant transformation of the endometriotic lesion has not arisen to this date.

Keywords Intestinal endometriosis · Mucosal · Endoscopy

Introduction

Endometriosis is defined as the presence of hormone-responsive endometrial glands and stroma outside the uterine cavity and is a relatively common disease among women of child-bearing age. It can involve both gonadal and extragonadal sites and the latter organs include the intestine, lung, bladder, skin, and central nervous system.

Intestinal endometriosis occurs in 3.8–37% of female patients, and the most common location is the sigmoid colon and rectum [1–5]. Intestinal endometriosis is usually asymptomatic because it mostly grows intramurally and does not involve the mucosa. Because of its rarity, the endoscopic findings with pit pattern and magnifying endoscopy with narrow-band imaging (ME-NBI) and clinicopathological features of intestinal endometriosis exposed to the mucosa have not been well documented, thus it might be misdiagnosed as inflammatory bowel disease or adenocarcinoma [6, 7]. Therefore, in this case report of intestinal endometriosis in the rectum exposed to the mucosa, we focus on its unique endoscopic findings and histopathological features.

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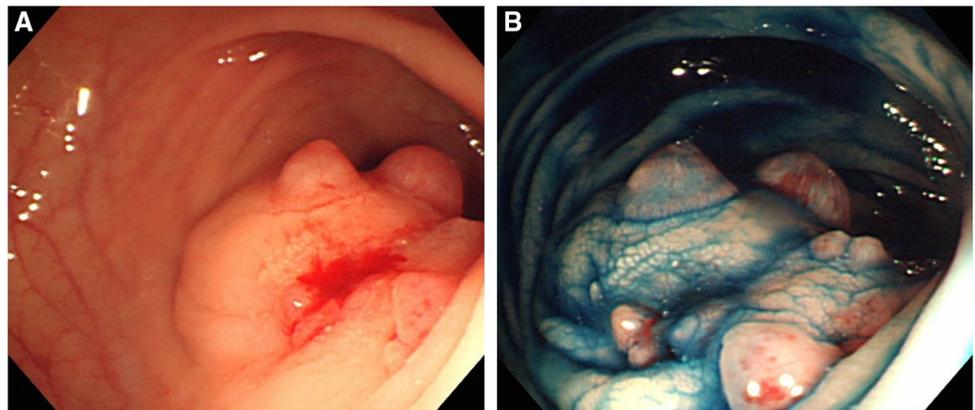


Fig. 1 A barium enema demonstrated unilateral stenosis by the non-smooth protruded lesions at the rectum



Fig. 2 Computed tomography of the abdomen revealed enhanced wall thickness of the rectum which was suspected mass lesion (white arrow)

Fig. 3 a Intestinal stenosis in the rectum caused by a submucosal tumor-like elevation with an aggregation of papillary, protruded lesions and bleeding when touched was observed by colonoscopy. **b** Chromoscopy indicated that the papillary, protruded lesions were glossy and smooth



Case report

A 44-year-old woman tested positive for fecal occult blood in February 2010. A barium enema detected unilateral denting in the rectum around which was non-smooth mucosal elevation (Fig. 1). Computed tomography (CT) of the abdomen revealed enhanced wall thickness of the rectum which was suspected mass lesion (Fig. 2). An endoscopic examination revealed a submucosal tumor-like elevation occupying almost 50% of the rectal lumen (Fig. 3). On its mucosal surface were aggregated papillary or bamboo shoot-like, smooth, and easy-bleeding bulges (Fig. 4a). These lesions were observed by both crystal violet staining for pit pattern analysis and ME-NBI. For pit pattern analysis, straight pits with normal luminal size, which were look like elongated by the submucosal elevation, arranged in a radial manner of the papillary bulge and pit pattern was disappeared in the top of the bulge (Fig. 4b). Moreover, ME-NBI showed straight microvessels arranged in a radial manner among the ducts, and avascular area of the top of the bulge (Fig. 4c). The mucosal appearance was not like conventional polyps or cancer. On suspicion of intestinal endometriosis, biopsies were obtained from the protrusions. Histopathologically, proliferation of both the endometrial glandular and stromal cells was seen by hematoxylin–eosin staining (Fig. 5a). The endometrial stromal cells showed CD10 positivity and the surrounding colonic tissue stained negative on immunohistochemical examination (Fig. 5b). Moreover, ectopic endometrium and stromal cells showed estrogen receptor (ER) and progesterone receptor (PgR) positivity, but CDX2 negativity (Fig. 5c–e). Thus, she was diagnosed as having rectal endometriosis.

Actually, she started to suffer from intermittent abdominal pain at the age of 40. After the diagnosis of endometriotic ovarian cyst, she had undergone ovarian cystectomy. To alleviate painful symptoms, she soon began hormonal therapy; a norethisterone–ethinyl estradiol

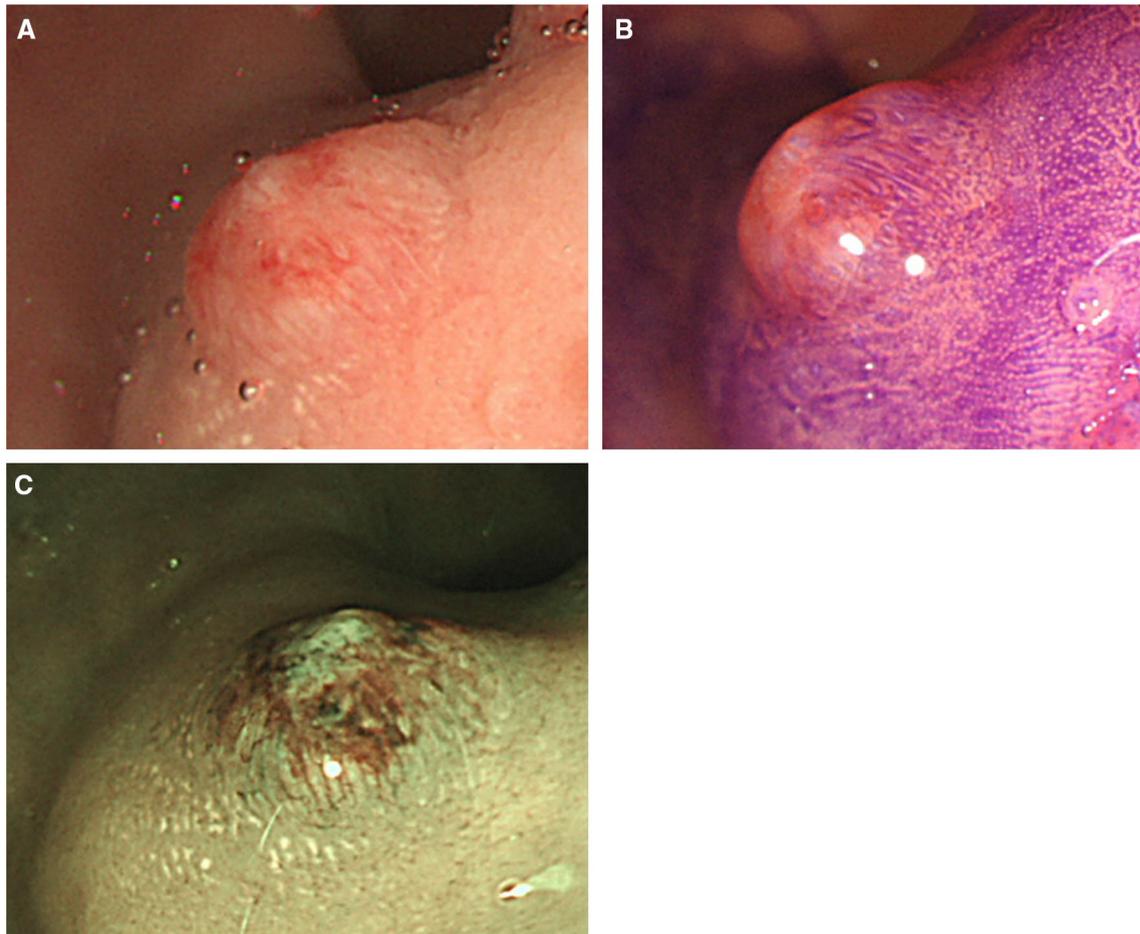


Fig. 4 **a** The papillary, protruded lesion was closely observed as a smooth elevated lesion. **b** Crystal violet staining for pit pattern analysis. Straight pits arranged in a radial manner of the papillary bulge extended by submucosal tumor were observed, and pit pattern was

disappeared in the top of the papillary bulge. **c** Magnifying endoscopy with narrow-band imaging. Straight microvessels among the ducts arranged in a radial manner and the avascular area of the top of the papillary bulge were observed

combination orally for 2 years, then, an ethinyl estradiol–levonorgestrel combination until the age of 44.

In this case, surgical resection was suggested to the patient, but the patient did not favor surgical treatment. Therefore, the medicine was switched to dienogest by the diagnosis of rectal endometriosis. Although the elevated lesion did not regress in size, her abdominal pain was fairly relieved in 2 months after the new medication. The patient, 50 years now, has successfully managed to continue dienogest since then, while requiring two cessation periods of 4 months and 5 months, respectively, and additional leuprorelin for 5 months due to intractable metrorrhagia. She is free of abdominal pain or obstruction of defecation so long as she takes dienogest. Malignant transformation of the rectal endometriotic lesion has not arisen yet.

Discussion

We encountered a case of endometriosis of the rectum exposed to the mucosa. Endoscopic findings showed a hemicircular multinodular submucosal tumor topped with easy-bleeding papillary or bamboo shoot-like bulges in the rectum. Pit pattern analysis and ME-NBI revealed straight pits with straight microvessels arranged in a radial manner, and the avascular area with no pit pattern was observed in the top of the papillary bulge. To the best of the knowledge, these findings were not reported until now. Biopsies were taken from the bulges and rectal endometriosis was diagnosed.

The prevalence of endometriosis involving the gastrointestinal tract has been reported to be 3.8–37% of woman

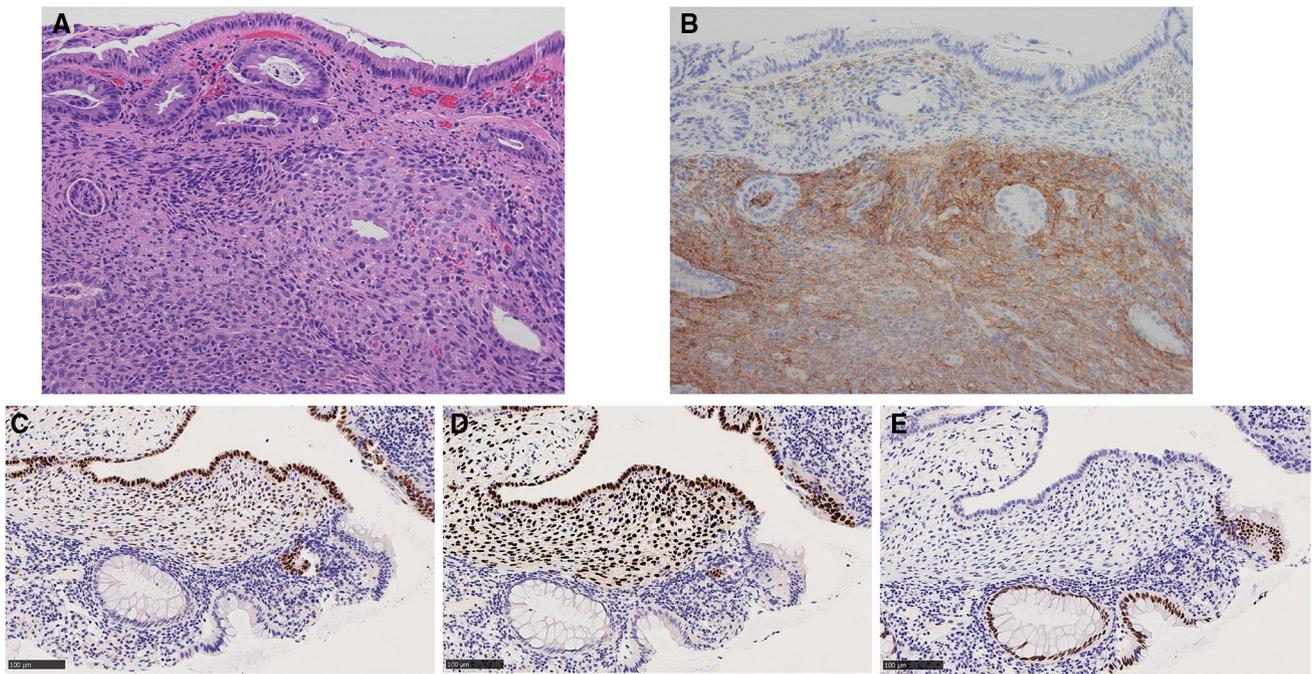


Fig. 5 **a** Histological examination. The endometrial stromal cells within the colonic mucosa (original magnification, $\times 20$). **b** Immunohistochemical examination. The endometrial stromal cells were CD10 positive in the colonic mucosa (original magnification, $\times 20$). **c** Immunohistochemical examination. The endometrial stromal cells were ER positive in the colonic mucosa (original magnification, $\times 20$). **d**

Immunohistochemical examination. The endometrial stromal cells were PgR positive in the colonic mucosa (original magnification, $\times 20$). **e** Immunohistochemical examination. The endometrial stromal cells were CDX-2 negative in the colonic mucosa (original magnification, $\times 20$)

[1–4]. The rectosigmoid is the most common site in the gastrointestinal tract, affecting 74% of these patients [5]. The etiology of endometriosis remains obscure, and several theories have been advocated; implantation theory (regurgitation, vascular or lymphatic dissemination, mechanical transplantation, and immunity), coelomic metaplasia theory (inflammation, hormonal stimulation, and induction phenomenon), embryonic rests theory (Wolffian duct and Müllerian duct), direct extension theory, and composite theory [8].

Intestinal endometriosis usually lacks abdominal symptoms because endometriosis usually does not exceed the serosa or subserosal layer. When the main lesion resides in deeper than mucosal layers, colonoscopic examination and biopsy might have a limited role [9]. Instead, computed tomography, magnetic resonance imaging, and endoanal ultrasound might be useful to identify the mass and its extension, but none would provide a definitive diagnosis [10].

As for the intestinal endometriosis involving the mucosa, Jiang W et al. reported a retrospective review of 15 cases from 14 patients [11]. Clinical symptoms such as rectal bleeding, abdominal or pelvic pain, distal bowel obstruction, diarrhea, generalized weakness, change in bowel movement, and adnexal mass were presented in 11 cases (78.6%). In 6 cases colonoscopy was performed, detecting polypoid

lesions, ranging from small sessile polyps to large pedunculated or sessile non-bleeding polyps (0.7–1.5 cm). Biopsies from these polypoid lesions clarified the mucosal involvement of endometriosis. In our case, the positive fecal occult blood test gave the chance to reveal intestinal endometriosis, which seems unique and has not been reported yet.

To diagnose intestinal endometriosis, immunohistochemistry is mandatory in addition to conventional hematoxylin–eosin staining. In ectopic endometrium, the ectopic glands express ER, PgR and CK7, while the endometrial stromal cells express CD10, ER and PgR. Rectal mucosa is known to express CK20 and CDX2, but not CD10, ER, PgR, or CK7 [12]. In the present case, the stromal cells were CD10 positive and both the ectopic endometrium and rectal mucosa were CD10 negative. Ectopic endometrium and stromal cells were ER and PgR positive, but CDX2 negative. The use of immunostaining using these antibodies (ER, PgR, CK7, CK20, CD10, CDX2) helped decisively for the diagnosis of intestinal endometriosis in our case.

Medical treatment such as non-steroidal anti-inflammatory drugs, oral contraceptives, and GnRH analogs will give symptomatic relief in many cases, although the recurrence rate is high after cessation of these drugs [13]. Therefore, surgical resection may well be considered for young patients to avoid long-term medication and those with severe

symptoms. In the present case, surgical resection was suggested to the patient, the patient did not favor surgical treatment. The symptoms improved by dienogest treatment, although the elevated lesion did not regress in size.

Approximately 0.7–1.0% of endometriosis reportedly transforms into malignancy in any organs and the colorectum accounts for 4.3% [14]. In this case, malignant transformation of the endometriotic lesion has not been detected to date.

In summary, we here report of a case of endometriosis involving intestinal mucosa, which is relatively rare. Intestinal endometriosis is hard to find, because it lacks specific gastrointestinal symptoms. Endoscopists should think of the possibility of intestinal endometriosis when observing such unusual protrusion, especially in female patients with abdominal symptoms in accordance with their menstrual cycle. The decisive diagnosis depends on biopsies. Pathologists should also be informed of the possibility of colorectal endometriosis so as to make full use of the specific immunohistochemical analysis.

Compliance with ethical standards

Conflict of interest Shinsuke Kazama, Takeyuki Hiramatsu, Kenji Kuroda, Kumiko Hongo, Yukihiro Watanabe, Toshiaki Tanaka, and Ken Kuriki declare that they have no conflict of interest.

Human rights All procedures followed have been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Informed consent Informed consent was obtained from the patient for being included in this study.

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