

# Colonic Endometriosis Mimicking Colon Cancer

Muhammad Akbar, MD<sup>1</sup>  
 Syed H. Tasleem, MD<sup>2</sup>  
 Nisar Ahmed, MD, FACC<sup>1</sup>  
 Gaston L. Casillas, MD<sup>1</sup>  
 Joe G. Ford, MD<sup>1</sup>

<sup>1</sup>*Park Plaza Hospital, Houston, Texas;*

<sup>2</sup>*Baylor College of Medicine, Houston, Texas*

**A**lthough colonic endometriosis is common in women of reproductive age, it can also present in postmenopausal women. We report the case of a 54-year-old postmenopausal white woman who presented with abdominal pain. On colonoscopy, a mass lesion closely resembling colon cancer was found in the sigmoid colon. Histology revealed endometrial glands and stroma involving the deeper layers of the bowel.

## Introduction

The exact prevalence of endometriosis in the general population is not known. Incidence estimates,<sup>1-3</sup> based upon direct visualization of the pelvic organs, include the following:

- 1% of women undergoing major surgery for all gynecologic indications
- 1–7% of women undergoing tubal sterilization
- 12–32% of women of reproductive age undergoing laparoscopy to determine the cause of pelvic pain
- 9–50% of women undergoing laparoscopy for infertility
- 50% of teenagers undergoing laparoscopy for evaluation of chronic pelvic pain or dysmenorrhea.

The influence of factors such as socioeconomic status, race, and age upon the prevalence of endometriosis is controversial.<sup>4</sup> Delayed pregnancy is thought to increase the risk of endometriosis; thus, many believe that endometriosis occurs more commonly in women of wealthier socioeconomic class, as these women are more likely to delay pregnancy until older age. However, this

finding may result from greater access to medical care.<sup>5</sup> Whites have a higher prevalence of endometriosis compared to blacks and Asians.<sup>3</sup> Endometriosis is most often diagnosed in younger women (age 25–35)<sup>5</sup> and appears to be associated with a tall, thin body habitus and lower body mass index.<sup>6</sup>

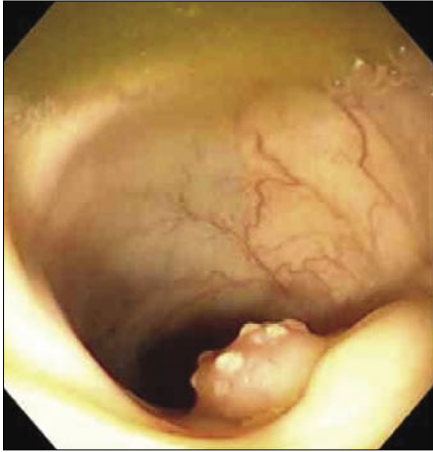
Endometriosis commonly occurs during the active reproductive period,<sup>7</sup> as the growth and maintenance of endometriotic implants are dependent upon the presence of ovarian steroids. This condition is rare in pre- or postmenarchal girls<sup>8-10</sup> and postmenopausal women.<sup>5</sup>

## Case Report

We describe the case of a 54-year-old white woman who presented with complaints of recurrent abdominal pain in the left lower quadrant that had progressively worsened over the preceding 2–3 months. The patient also complained of a decreasing caliber of stools during this time period. She reported no associated nausea, vomiting, weight loss, appetite loss, or rectal bleeding. Her medical history included a prior hysterectomy and treatment for pelvic endometriosis in her early twenties, and she also had hypertension and a hypothyroid condition. Current medications included bupropion hydrochloride (300 mg), escitalopram (10 mg), cetirizine hydrochloride (10 mg), Armour thyroid extract, oral estrogen, and conjugated estrogen vaginal cream; all medications were taken daily. Her father and brother both had a history of prostate cancer, whereas her mother was healthy, with no previous history of endometriosis or myomata uteri.

Initial colonoscopy revealed a polypoid mass in the sigmoid colon, and several biopsies were obtained. The mucosal biopsies showed active colitis with ulceration and regenerative changes. A course of mesalamine (800 mg, tid) was prescribed for 3 months. However, after 3 months,

Address correspondence to:  
 Dr. Syed H. Tasleem, Baylor College of Medicine, Houston, Texas. E-mail:  
 haris\_tasleem@hotmail.com

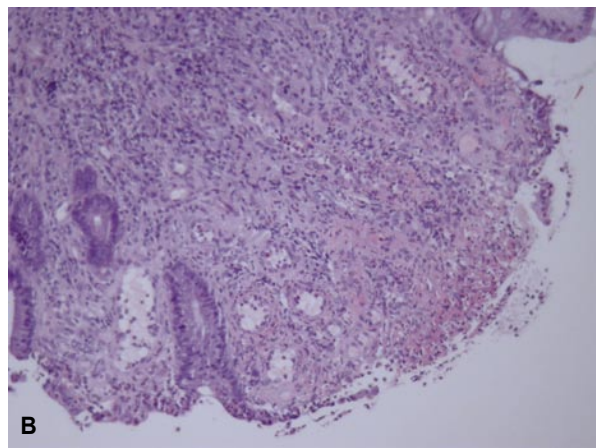
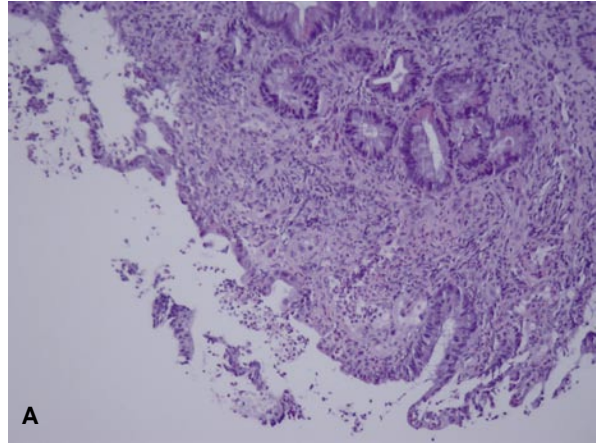


**Figure 1.** Polypoid mass with spike-like projections in the sigmoid colon.

a second colonoscopy revealed the colonic mass to be unchanged. Figure 1 shows the polypoid mass with spike-like projections on its surface. The lesion was again biopsied and tattooed with India ink in preparation for possible surgical removal. Endoscopic removal was deemed too risky due to the size of the mass.

A subsequent biopsy, once again, showed active colitis with ulceration and regenerative changes (Figure 2). Nevertheless, the possibility of inadequate sampling and undetected malignancy was considered and discussed with the patient. The possibility of the presence of an impacted foreign body with inflammatory reaction, endometrioma, and adenocarcinoma were all entertained, and the patient was referred for surgery.

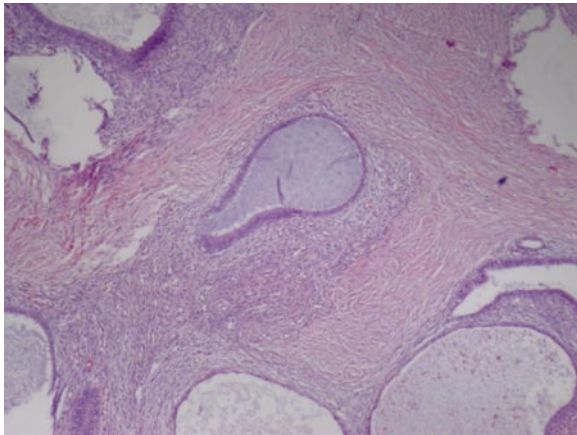
After informed consent was obtained, surgery was planned by a colorectal surgeon, and a laparotomy was performed via midline vertical incision. At the level of the sigmoid colon, a mass measuring 20–30 mm was noted in the mesenteric aspect of the proximal sigmoid colon. There was some puckering of the serosa, as well as the mesentery, within this area. Several uncomplicated diverticula were also found in the vicinity of this mass. The colon segment involving the mass was resected, and an end-to-end, double-layered, hand-sewn anastomosis was performed. Surgical pathology revealed a mucosal protuberance, which, upon sectioning, showed a firm yellowish-gray mass involving the muscularis and serosa. Histologic examination revealed a mixture of smooth muscle cells, endometrial gland tissue, and stroma involving the deeper layers of the bowel wall (Figures 3–6). The final diagnosis was deemed to be sigmoid endometriosis. The patient recovered without incident and remains symptom-free.



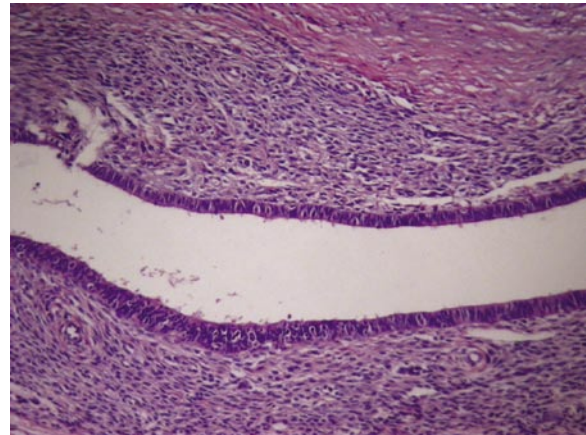
**Figure 2.** Biopsy of the mass at colonoscopy showed ulceration (A) and regenerative changes (B).

## Discussion

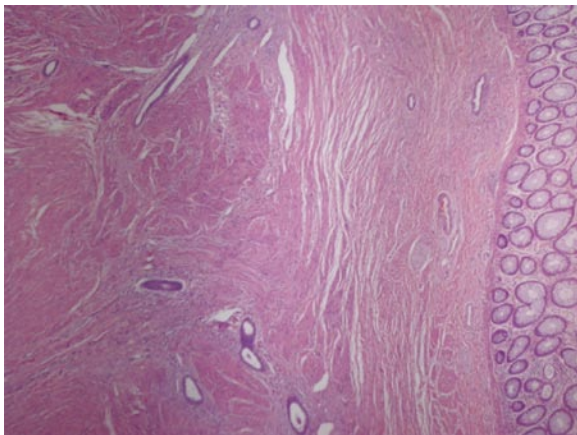
Endometriosis is a gynecologic disorder defined by the presence of endometrial glands and stroma outside the endometrial cavity and the uterine musculature.<sup>11</sup> Endometriotic implants are most commonly found in the pelvis.<sup>7,12,13</sup> The gastrointestinal tract is affected in 5–15% of women who undergo laparoscopy or laparotomy for endometriosis-related symptoms and in up to 40% of postmenopausal women with symptomatic endometriosis.<sup>14–16</sup> Within the gastrointestinal tract, endometriotic implants are most often located in the recto-sigmoid colon (75–90%) followed by the appendix (3–18%) and the terminal ileum (2–16%).<sup>17</sup> The usual sites of involvement are the serosa and muscularis propria, with the mucosa rarely involved.<sup>18</sup> Endometriosis of the intestinal tract can present with abdominal pain, swelling,



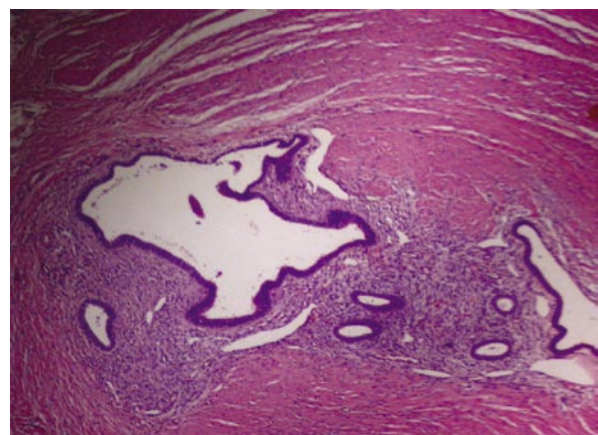
**Figure 3.** Surgical pathology of the mass showed a mixture of smooth muscles, endometrial glands, and stroma.



**Figure 4.** Endometrial glands and surrounding stroma.



**Figure 5.** Bowel wall with endometriosis.



**Figure 6.** Higher-power image of Figure 5.

obstruction, and rectal bleeding.<sup>19</sup> Symptoms are cyclical in approximately 40% of patients.<sup>20</sup> The classic triad of dysmenorrhea, dyspareunia, and infertility may also exist as a result of concomitant pelvic disease. However, it should be noted that the cyclical nature of symptoms is not specific to endometriosis. It is well established that clinical manifestations in inflammatory bowel disease and irritable bowel syndrome may aggravate during the menstrual period.<sup>21,22</sup>

Clinical differential diagnosis varies widely, with the main considerations being appendicitis, diverticular disease, chronic idiopathic inflammatory bowel disease, irritable bowel syndrome, and colonic carcinoma.<sup>23</sup> The involvement of mucosa and submucosa by intestinal endometriosis examined in resection specimens has been

estimated at only 30% and 66%, respectively.<sup>19</sup> Hence, the use of endoscopic biopsy as a diagnostic tool is limited. Furthermore, mucosal involvement is often focal, making the diagnosis of endometriosis on endoscopic biopsy even more difficult.<sup>23</sup> Matsukura and associates<sup>24</sup> reported that they could definitively diagnose endometriosis by endoscopic biopsy in only 6 of 78 patients with intestinal endometriosis. This is likely because the mucosa is rarely affected and typical lesions in the muscularis propria cannot be sampled. Moreover, endometriotic deposits can induce secondary mucosal changes that mimic the findings of other diseases.<sup>25</sup> Other diagnostic examinations such as colonoscopy, barium enema, magnetic resonance imaging, and computed tomography rarely contribute to the diagnosis of superficial endometriosis.<sup>26,27</sup>

However, endometriosis can also form endoscopically visible polyps or masses that can be resected or biopsied.<sup>28</sup> Schroder and colleagues reported that preoperative endorectal ultrasound (EUS) is a reliable technique to visualize perirectal endometrioma and assess rectal wall involvement.<sup>29</sup> EUS is a noninvasive technique with high sensitivity and specificity (97–100% for both measures) for the diagnosis of rectal involvement in patients with known pelvic endometriosis.<sup>30-32</sup>

Recently, there have been reports of successful laparoscopic management of endometriosis, even when bowel resection is indicated.<sup>26,33-37</sup> Compared to the conventional procedure, the laparoscopic method can be used while viewing a magnified field with clear visualization of the details of pelvic anatomy. It is, therefore, easier to identify and excise the visible endometriosis. However, laparoscopic surgery for severe bowel endometriosis is more difficult and requires a more advanced technique. There have not been any reports on the feasibility and clinical outcomes obtained with the laparoscopic method versus the conventional method.<sup>38</sup> Jerby and associates<sup>35</sup> reported that in their laparoscopic series, hospitalization was shorter and the rate of postoperative pain relief was equal to the rate reported in open series.<sup>39,40</sup>

## Conclusion

Colonic endometriosis should be considered in the differential diagnosis of patients with gastrointestinal symptoms, as it can present with symptoms that are either cyclical or unrelated to menstrual cycles. Once a diagnosis is made, a colorectal surgeon and gynecologist should be consulted for further management.<sup>11</sup>

## References

- Sangi-Haghpeykar H, Poindexter AN 3rd. Epidemiology of endometriosis among parous women. *Obstet Gynecol.* 1995;85:983-992.
- Chatman DL, Ward AB. Endometriosis in adolescents. *J Reprod Med.* 1982;27:156-160.
- Missmer SA, Hankinson SE, Spiegelman D, Barbieri RL, Marshall LM, Hunter DJ. Incidence of laparoscopically confirmed endometriosis by demographic, anthropometric, and lifestyle factors. *Am J Epidemiol.* 2004;160:784-796.
- Houston DE. Evidence for the risk of pelvic endometriosis by age, race, and socioeconomic status. *Epidemiol Rev.* 1984;6:167.
- Schenken RS, Babieri RL, Barrass VA. Available at: <http://patients.uptodate.com>. Version 16.2.
- Hediger ML, Hartnett HJ, Louis GM. Association of endometriosis with body size and figure. *Fertil Steril.* 2005;84:1366-1374.
- Olive DL, Schwartz LB. Endometriosis. *N Engl J Med.* 1993;328:1759-1769.
- Laufer MR. Premenarcheal endometriosis without an associated obstructive anomaly: presentation, diagnosis, and treatment. *Fertil Steril.* 2000;74:S15.
- Goldstein DP, de Cholonok C, Leventhal JM, Emans SJ. New insights into the old problem of chronic pelvic pain. *J Pediatr Surg.* 1979;14:675-680.
- Yamamoto K, Mitsuhashi Y, Takaie T, Takase K, Hoshiai H, Noda K. Tubal endometriosis diagnosed within one month after menarche: a case report. *Toboku J Exp Med.* 1997;181:385-387.
- Pishvaian AC, Ahlawat SK, Garvin D, Haddad NG. Role of EUS and EUS-guided FNA in the diagnosis of symptomatic rectosigmoid endometriosis. *Gastrointest Endosc.* 2006;63:331-335.
- Zwas FR, Lyon DT. Endometriosis: an important condition in clinical gastroenterology. *Dig Dis Sci.* 1991;36:353-364.
- Samper ER, Slagle GW, Hand AM. Colonic endometriosis: its clinical spectrum. *South Med J.* 1984;77:912-914.
- Prystowsky JB, Stryker SJ, Ujiki GT, Poticha SM. Gastrointestinal endometriosis. Incidence and indications for resection. *Arch Surg.* 1988;123:855-858.
- Williams TJ, Pratt JH. Endometriosis in 1,000 consecutive celiotomies: incidence and management. *Am J Obstet Gynecol.* 1977;129:245-250.
- Bergqvist A. Extragenital endometriosis: a review. *Eur J Surg.* 1992;158:7-12.
- Miller LS, Barbarevecch C, Friedman LS. Less frequent causes of lower gastrointestinal bleeding. *Gastroenterol Clin North Am.* 1994;23:21-52.
- Levitt MD, Hodby KJ, van Merwyk AJ, Glancy RJ. Cyclical rectal bleeding in colorectal endometriosis. *Aust N Z J Surg.* 1989;59:941-943.
- Yantiss RK, Clement PB, Young RH. Endometriosis of the intestinal tract: a study of 44 cases of a disease that may cause diverse challenges in clinical and pathologic evaluation. *Am J Surg Pathol.* 2001;25:445-454.
- Jubanyik K, Comite F. Extrapelvic endometriosis. *Obstet Gynecol Clin North Am.* 1997;24:411-440.
- Kane SV, Sable K, Hanauer SB. The menstrual cycle and its effect on inflammatory bowel disease and irritable bowel syndrome: a prevalence study. *Am J Gastroenterol.* 1998;93:1867-1872.
- Heitkemper MM, Cain KC, Jarrett ME, Burr RL, Hertig V, Bond EF. Symptoms across the menstrual cycle in women with irritable bowel syndrome. *Am J Gastroenterol.* 2003;98:420-430.
- Kelly P, McCluggage WG, Gardiner KR, Loughrey MB. Intestinal endometriosis morphologically mimicking colonic adenocarcinoma. *Histopathology.* 2008;52:510-514.
- Matsukura N, Matsuo Y, Tsuruta O, et al. Two cases of intestinal endometriosis and literature review of the 78 cases in Japan. *Gastroenterol Endosc.* 1989;31:1577-1583.
- Langlois NEI, Park KGM, Keenan RA. Mucosal change in the large bowel with endometriosis: a possible cause of misdiagnosis of colitis? *Hum Pathol.* 1994;25:1030-1034.
- Redwine DB, Wright JT. Laparoscopic treatment of complete obliteration of the cul-de-sac associated with endometriosis: long-term follow-up of en bloc resection. *Fertil Steril.* 2001;76:358-365.
- Coronado C, Franklin RR, Lotze EC, Bailey HR, Valdés CT. Surgical treatment of symptomatic colorectal endometriosis. *Fertil Steril.* 1990;53:411-416.
- Dadmanesh F, Young R, Clement P. Polypoid endometriosis: a clinicopathologic analysis of 15 cases. *Mod Pathol.* 1999;12:115A.
- Schröder J, Löhner M, Doniec JM, Dohrmann P. Endoluminal ultrasound diagnosis and operative management of rectal endometriosis. *Dis Colon Rectum.* 1997;40:614-617.
- Roseau G, Dumontier I, Palazzo L, Chapron C, Dousset B, et al. Rectosigmoid endometriosis: endoscopic ultrasound features and clinical implications. *Endoscopy.* 2000;32:525-530.
- Doniec JM, Kahlke V, Peetz F, Schniewind B, Mundhenke C, et al. Rectal endometriosis: high sensitivity and specificity of endorectal ultrasound with an impact for the operative management. *Dis Colon Rectum.* 2003;46:1667-1673.
- Dumontier I, Chapron C, Chaussade S, Dubuisson JB. Utility of rectal endoscopic ultrasonography for digestive involvement of pelvic endometriosis. Technique and results. *Gynecol Obstet Fertil.* 2002;30:979-984.
- Sharpe DR, Redwine DB. Laparoscopic segmental resection of sigmoid and rectosigmoid colon for endometriosis. *Surg Laparosc Endosc.* 1992;2:120-124.
- David BR, Jeremy TW. Laparoscopic treatment of complete obliteration of the cul-de-sac associated with endometriosis: long-term follow-up of en bloc resection. *Fertil Steril.* 2001;76:358-365.
- Jerby BL, Kessler H, Falcone T, Milsom JW. Laparoscopic management of colorectal endometriosis. *Surg Endosc.* 1999;13:1125-1128.
- Duepree HJ, Senagore AJ, Delaney CP, Marcello PW, Brady KM, Falcone T. Laparoscopic resection of deep pelvic endometriosis with rectosigmoid involvement. *J Am Coll Surg.* 2002;195:754-758.
- Garry R. The effectiveness of laparoscopic excision of endometriosis. *Curr Opin Obstet Gynecol.* 2004;16:299-303.
- Sakamoto K, Maeda T, Yamamoto T, Takita N, Suda S, et al. Simultaneous laparoscopic treatment for rectosigmoid and ileal endometriosis. *J Laparoendosc Adv Surg Tech A.* 2006;16:251-255.
- Bailey HR, Ott MT, Hartendorp P. Aggressive surgical management for advanced colorectal endometriosis. *Dis Colon Rectum.* 1994;37:747-753.
- Cameron IC, Rogers S, Collins MC. Intestinal endometriosis: presentation, investigation and surgical management. *Int J Colorect Dis.* 1995;10:83-86.

# Review

Steven J. Stryker, MD

*Northwestern University Feinberg School of Medicine,  
Chicago, Illinois*

The case reported by Akbar and colleagues is an interesting and timely reminder of the difficulties often encountered in distinguishing colorectal cancer from less common benign intestinal disorders. The middle-aged postmenopausal patient in this case was evaluated for progressive abdominal discomfort associated with a change in the caliber of her stools. An ulcerated mass lesion was found on colonoscopy and, despite non-neoplastic histology, was appropriately referred for surgical consideration when it persisted on follow-up at 3 months. The sigmoid colon containing the lesion was resected, and following an uneventful recovery, the patient was reported to be free of symptoms. Unfortunately, no other operative findings in the pelvis were described.

Although some women with intestinal endometriosis may be asymptomatic, some degree of intestinal complaints is frequently found in women with moderate-to-severe disease. Bowel involvement occurs in 12–37% of endometriosis cases, and symptoms vary depending upon the site of involvement. In those with intestinal endometriosis, the rectosigmoid is involved in over 70% of cases, followed by the small bowel and appendix. Rectosigmoid disease often results in alterations in bowel habits such as constipation, diarrhea, decreased caliber of stool, or tenesmus. Notably, rectal bleeding is typically absent, as in the patient reported by Akbar and associates. In premenopausal women, symptoms appear more often around the time of menses. In postmenopausal women, the symptoms are less often cyclic. Colonic endometriosis can present with obstruction and may be difficult to differentiate from other more frequent causes of large bowel obstruction such as cancer, diverticular disease, or Crohn's disease. The concern for malignancy is most pertinent in the postmenopausal woman.

For those patients with asymptomatic intestinal endometriosis, the natural history appears to be benign. Our group followed 44 patients with known intestinal endometriosis for a period of 1–12 years and found that

only 1 patient developed clinically significant gastrointestinal symptoms. Consequently, intestinal resection in these asymptomatic patients is probably unwarranted.

Small bowel disease is frequently asymptomatic, and the terminal ileum is the involved segment in the vast majority of cases. Often, this is noted incidentally at surgery or laparoscopy. When symptoms occur, they are usually nonspecific ones such as recurrent abdominal pain or bloating. Occasionally, acute or chronic small bowel obstruction develops from extensive fibrotic adhesions. Again, confusion with Crohn's disease is common. Both can produce similar endoscopic and even histologic findings.

Malignant transformation of endometriosis is an uncommon complication of the disease and should be suspected in postmenopausal women with accelerating symptoms. Nearly 80% of these malignancies arise from ovarian implants, and two thirds are endometrioid carcinomas. The rectosigmoid colon is the most common site for extragonadal malignancy arising from endometriosis. Prolonged unopposed estrogen exposure is a significant risk factor, and rectal bleeding is the most common symptom suggesting malignant transformation. Endometrioid carcinoma is the most common tumor type and must be shown to arise from the colon, not invading it from another source. In addition, endometriosis contiguous with the invasive neoplasm is necessary to confirm malignant degeneration.

The diagnosis of intestinal endometriosis is usually suspected in a patient with a history of endometriosis with or without physical findings of pelvic endometriosis as well as a histology failing to confirm a primary colonic malignancy. Laboratory studies are limited. Serologic tumor markers such as CA-125 and, more recently, an assay of various interleukin cytokines have been investigated as a means of diagnosing significant endometriosis, but the sensitivity and specificity of these tests are poor. Likewise, colonoscopy is often unhelpful, as the lesions begin outside of the intestine, initially involving the serosa. Endoscopically, the mucosa is generally intact, with variable luminal narrowing. Involvement of the mucosa or submucosa, as in the patient treated by Akbar and coworkers, is less common and can be associated with inflammation or polypoid lesions that may be difficult to visually differentiate from Crohn's disease, ischemia, or malignancy. Rarely is the diagnosis of endometriosis definitively confirmed by endoscopy or from endoscopic biopsies. Imaging techniques used to facilitate the diagnosis of endometriosis have included ultrasonography, barium enema, computed tomography, magnetic resonance imaging, and immunoscintigraphy. Many of these tests are obtained for the evaluation of chronic pelvic pain and/or bleeding from the reproductive tract or colon. They

Address correspondence to:

Dr. Steven J. Stryker, Professor of Clinical Surgery, Northwestern University Feinberg School of Medicine, 251 East Huron Street, Galter 3-150, Chicago, IL 60611-2950.

are primarily utilized to rule out more common conditions, but there are some findings (most notably, an intact mucosal surface) that may strongly suggest the diagnosis of endometriosis before visual or pathologic confirmation with laparoscopy or laparotomy.

As mentioned above, incidental involvement of the intestinal tract with endometriosis is often left undisturbed, once malignancy has been excluded. Symptomatic endometriosis, as found in this patient, requires either medical or surgical intervention for relief. Medical therapy alone has significant potential disadvantages. In premenopausal women, all hormonal therapies have side effects and often require prolonged treatment. They manipulate the hormonal environment to suppress the cyclic secretion of ovarian estrogen and progesterone. This induces atrophy of the ectopic endometrium, and over several months, the implants regress. Advanced lesions, particularly those with a nodular, proliferative histology will often regress only partially. No current hormonal regimen can completely eradicate these lesions, and upon cessation of therapy, the lesions will again become symptomatic. Thus, hormonal therapy is often used in concert with laparoscopic ablation in premenopausal women with symptomatic endometriosis. In postmenopausal women, cessation of oral and topical estrogens may be warranted but is of limited success, particularly with advanced lesions and obstructive symptoms.

In the absence of adequate symptomatic response to hormonal manipulation or castration, surgical resec-

tion of the involved segment is undertaken. Segmental resection of the sigmoid is appropriate for larger lesions or when neoplasia is a concern. Surgical margins are made to the grossly normal colon, and unless there are multiple lesions, a large colonic resection is not required. Recent experience with laparoscopic bowel resection has extended to the use of this modality in the treatment of intestinal endometriosis. The woman described in this report, as expected, was relieved of her symptoms following resection.

In summary, the case reported by Akbar and associates provides an excellent outline of the diagnostic challenges that occur with colonic symptomatology arising from endometriosis. Although one might wonder whether a trial of exogenous hormones was warranted, particularly after initial biopsies failed to confirm malignancy and a period of observation was undertaken, the patient was certainly a candidate for resection and was well-served by that procedure. Endometriosis of the intestine should always be in the differential diagnosis for women with pathology not immediately documented as malignant.

### Selected references

Prystowsky JB, Stryker SJ, Ujiki GT, Poticha SM. Gastrointestinal endometriosis. Incidence and indications for resection. *Arch Surg*. 1988;123:855-858.

Snyder MJ, Stryker SJ. Endometriosis. In: Fleshman JW, Pemberton JH, Wexner SD, Wolf BG, eds. *The ASCRS Textbook of Colon and Rectal Surgery*. New York, NY: Springer; 2006.