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Case report

Endometrioid adenocarcinoma of the colon arising from rare malignant transformation of extra-gonadal endometrioma

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A B S T R A C T

Background: Endometriosis is a common condition with a rare malignant potential. We report a case of a patient with a colon mass who underwent surgery for malignant endometriosis associated cancer.

Case: A 70-year-old woman with a pelvic mass who was lost to follow-up for 6 years represented with an enlarging pelvic mass involving the sigmoid colon. The patient underwent colonoscopy which revealed atypical endometrial-type glandular proliferation. She then underwent exploratory laparotomy with total abdominal hysterectomy, bilateral salpingo-oophorectomy, rectosigmoid resection, and creation of end colostomy. Final pathology revealed endometrioid adenocarcinoma arising from colon serosal endometriosis. Observation or systemic chemotherapy were considered, and patient opted for observation.

Conclusion: We report a case of malignant intestinal endometriosis. There is limited evidence to support a standardized approach to treatment due to the rare nature of this disease; the patient opted for observation. By understanding the presentation, diagnostic workup, and outcomes of each patient with malignant endometriosis, future research can be guided to ultimately improve patient outcomes.

1. Introduction

Endometriosis is a common condition defined by implantation of endometrial tissue outside of the uterine cavity, estimated to affect approximately 10% of reproductive-aged women. It is an estrogen-dependent, inflammatory condition and can present with chronic pelvic pain, dysmenorrhea, dyspareunia, and infertility (Burney and Giudice, 2012). The exact pathogenesis of endometriosis is unclear, but theories of both uterine origin and non-uterine origin have been explored, including retrograde menstruation, hematologic or lymphangitic spread, coelomic metaplasia, and immunologic dysfunction (Burney and Giudice, 2012; Wang Yang et al., 2019).

Although considered a benign condition, malignant transformation can occur in approximately 1% of patients with endometriosis (Liu et al., 2021). This transformation is most likely to occur in the ovary and is known as endometriosis-associated ovarian cancer (EAOC); this comprises about 80% of cases of malignant transformation (Krawczyk et al., 2016). Extra-gonadal malignant transformation is less common, accounting for about 20% of cases of malignant transformation, and most commonly involves the rectosigmoid colon, rectovaginal septum, and pelvic or abdominal walls (Ulrich et al., 2005). Herein, we present the case of a 70-year-old female with a colonic mass that was ultimately determined to be endometrial adenocarcinoma in a background of endometrial tissue.

2. Presentation

2.1. Initial presentation and management

The patient is a 70-year-old Caucasian female with a past medical history of type 2 diabetes mellitus, diverticulosis, diverticulitis, hypertension, and fibroids who initially presented for management of a left adnexal mass concerning for pedunculated fibroid versus complex cystic mass. Her surgical history included partial colectomy for diverticulitis, appendectomy, and cholecystectomy. The initial CT imaging showed a 4cm complex cystic mass in the left adnexa. A follow up ultrasound showed a 3.6cm left adnexal mass with two small echogenic cysts measuring 2.2cm and 1.6cm. A repeat ultrasound 4 months later showed no change in size. Tumor markers were normal (CA125 16 U/mL, He4 81 pmol/L), with a low-risk ROMA score (18.4%). She was dispositioned to surveillance with serial ultrasounds but was lost to follow-up.

The patient re-presented two years later with abdominal pain and

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was diagnosed with a small bowel obstruction, which resolved with conservative management. The etiology of her bowel obstruction was unclear, but felt to be possibly related to her surgical history or the previously noted adnexal mass. CT abdomen and pelvis revealed a fibroid uterus with two distinct masses, one at the right lateral margin of the uterus and another at the left lateral margin that abutted the sigmoid colon measuring 3 cm (Fig. 1). There were no adnexal masses at this time. Once again, tumor markers were normal, with a low-risk ROMA (18.1%). She was offered definitive surgical management for the uterine mass, but the patient declined and was subsequently lost to follow-up again.

The patient re-presented 4 years later with rectal bleeding requiring a blood transfusion. Tumor markers remained normal, with a CA125 of 17 U/mL and He4 of 122 pmol/L, resulting in a low risk ROMA score of 26.5%. Repeat CT imaging revealed an enlarging pelvic mass now involving the sigmoid colon (Fig. 2).

Colonoscopy was performed and revealed two large, purple, vascular masses noted at 10-20cm from anal verge, involving 25–50% of the lumen. Biopsies from this colonoscopy later revealed atypical endometrial-type glandular proliferation. Immunohistochemical (IHC) staining supported a Mullerian origin.

She was taken to the operating room by the gynecologic oncology and colorectal surgery teams. Intraoperative survey of the abdomen revealed no evidence of metastatic disease within the upper abdomen or pelvis. Bilateral fallopian tubes and ovaries were normal in appearance, and the uterus was of small size and normal in appearance. A colonic mass was appreciated at the level of the reflection of the pouch of Douglas. The patient underwent exploratory laparotomy with bilateral ureteral stent placement with cystoscopy, lysis of adhesions, total abdominal hysterectomy, bilateral salpingo-oophorectomy, rectosigmoid resection, and creation of end colostomy. There were extensive adhesions from prior surgery with multiple loops of small bowel adherent to the abdominal wall, prior end-to-end anastomosis (at level of sacral promontory), and interloop adhesions. The 3cm mass was palpable on the left side of the proximal rectum and adherent to the posterior vagina, but free from the uterus. The total hysterectomy and bilateral salpingo-oophorectomy was performed first. The tumor was then removed en-bloc by partial proctectomy and posterior vaginectomy. The patient's post-operative course was notable for paralytic ileus and syndrome of inappropriate anti-diuretic hormone secretion (SIADH), both of which resolved with conservative management. The patient was ultimately discharged on post-operative day 23.

2.2. Pathology and disposition

Final pathology revealed no evidence of carcinoma within the uterus, cervix, fallopian tubes or ovaries. The rectum contained a 5 x 3.5 x 2cm, partially exophytic lesion, consistent with FIGO grade 2 endometrioid adenocarcinoma arising from colon serosa endometriosis. The *peri*-colonic lymph nodes and surgical margins were negative for carcinoma. See Fig. 3. There was no other evidence of endometriosis on the resected tissue. In summary, this patient has an isolated malignant transformation of an endometriosis lesion on the colon serosa into a grade 2 endometrioid adenocarcinoma.

The patient and pathology were reviewed at the Gynecologic Oncology interdepartmental tumor board and observation or systemic chemotherapy were offered. At her post-operative outpatient follow-up visit, the provider had a shared decision-making process resulting in the patient opting for observation. The current length of follow up time at time of case report is 11 months with no evidence of disease recurrence. The patient has followed up every 3 months since surgery and will continue to follow up every 3 months for 2 years then every 6 months out to 5 years.

3. Discussion

Malignant transformation can occur in 0.7–1% of those with endometriosis lesions. Most commonly, this involves endometriosis of the ovary (Burney and Giudice, 2012; Krawczyk et al., 2016). There are few cases studies in the literature of extra-gonadal endometrioid adenocarcinoma arising from endometriosis tissue (Kawate et al., 2005).

In the 1920s, Sampson and Scott were the first to define endometriosis-associated malignancy. There are four criteria for the diagnosis of endometriosis-associated cancer (EAC). These include: (1) identification of malignant and benign endometrial cells in the same tissue, (2) malignancy originates from the same tissue, without metastasis or infiltration from other sites, (3) no other primary sites, and (4) the adjacent endometriosis focus is contiguous with the carcinoma (Scott, 1953; Sampson, 1925).

Surgical inspection and systemic evaluation of pelvic surfaces may improve the surgical detection of EAC, however, the clinical appearance can mimic endosalpingiosis, endometriosis, or pelvic infection (Djordjevic et al., 2012 Dec 1). Hence, microscopic examination of biopsy samples with immunohistochemical (IHC) stains is essential in the diagnosis of EAC. A panel of IHC stains including cytokeratin (CK) 7, CK20, vimentin, carcinoembryonic antigen (CEA), CD10 and ER, may be useful for the differential diagnosis. Endometrial glands are immunoreactive for CK7 and ER, stromal cells are positive for CD10 and ER, and intestinal glands express CDX2 and CK20 (Djordjevic et al., 2012 Dec 1). The colon biopsy for the patient described was positive for CK7, ER, and PAX8, while negative for CK20 and CDX2, which supported the final diagnosis of endometrial adenocarcinoma.

Yang et al. (2019) described a case of endometrioid adenocarcinoma of the rectovaginal septum with invasion into the rectum. This patient went on to receive adjuvant chemotherapy for 6-month, and has been free of disease for 12 months since the surgery. A follow-up at that time, which included enhanced CT and transvaginal ultrasound, showed no evidence of recurrence (Yang et al., 2019). Similarly, Li et al. (2018) described a patient with endometriosis-associated intestinal carcinoma of the rectosigmoid. This patient also received adjuvant chemotherapy

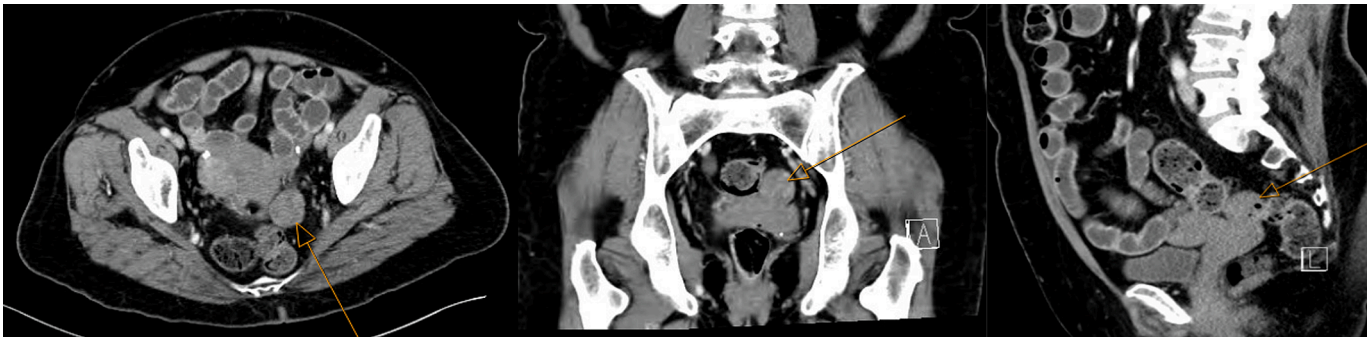

Fig. 1. CT abdomen/pelvis with IV contrast. Fibroid appearing uterus with two distinct enhancing masses, both approximately 3 cm and separate from the endometrial cavity. Arrow pointing at mass of interest. (a) axial view. (b) coronal view, (c) sagittal.

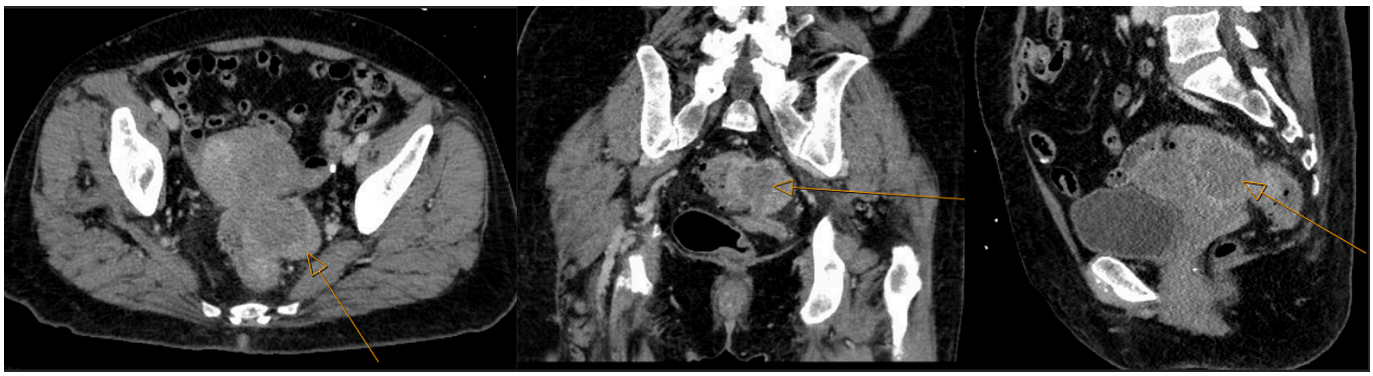

Fig. 2. CT abdomen/pelvis, 4 years after initial presentation. Arrow pointing at the mass of interest that now measures 4 cm in size (previously 3 cm). Appearance now concerning for primary colonic neoplasm as it is contiguous with the colon. (a) axial, (b) coronal, (c) sagittal.

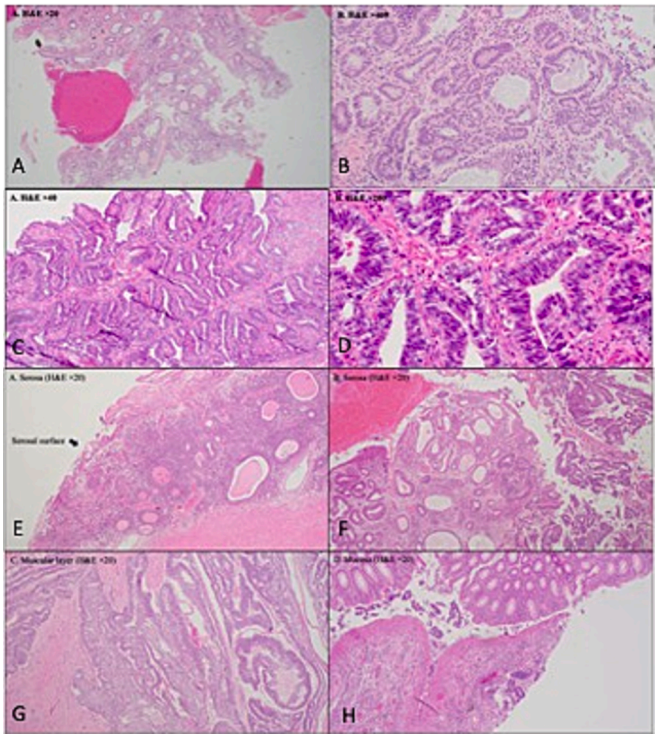

Fig. 3. Rectum biopsy showed haphazardly arranged columnar cell proliferation (A) demonstrating bland cytological features (B). The colon biopsy (C, D) showed invasive adenocarcinoma with pseudostratified columnar cells in the neoplastic glands, mimicking invasive colorectal adenocarcinoma. Tumor cells were positive for CK7, ER and PAX8 and negative for CK20 and CDX2, ruling out colorectal adenocarcinoma and consistent with endometrioid adenocarcinoma. Final rectosigmoid pathology revealed endometriosis and atypical endometrial hyperplasia on the serosal surface (E, F), with transition to endometrioid adenocarcinoma. Both glandular and solid patterns were observed in the muscular layer of the colon (G). The mucosal aspect of colon showed mainly granulation tissue mixed with scant endometrioid adenocarcinoma (H).

consisting of Taxol and carboplatin for eight cycles. At 23-months, the patient had a follow-up appointment and reported difficult defecation at the 22nd month. The CT scan, PET-CT and colonoscopy revealed local recurrence in the lower rectum, which was confirmed by pathological diagnosis. The patient has received Taxol and carboplatin chemotherapy again and was planned to receive another surgery after two cycles of chemotherapy. There was no subsequent report following chemotherapy and/or surgery (Li et al., 2018).

Primary resection is typically the first step in diagnosis and treatment. Generally, the same therapeutic principles guiding the treatment of ovarian cancer can apply to EAOC. However, the therapeutic value of chemotherapy for extra-gonadal endometriosis-associated cancer is unclear. Treatment including chemotherapy, radiation, and hormone therapy have all been considered. Our patient was reviewed at the institutional tumor board and based on complete resection, the shared-decision was made to proceed with surveillance after considering both observation or systemic chemotherapy.

4. Conclusion

Endometriosis-associated intestinal cancer is rare, and clinical suspicion is required for diagnosis. In patients with history of endometriosis or suspected colorectal malignancy, immunohistochemical examinations are important for differential diagnosis. Current management for these rare tumors includes surgical resection, chemo-radiation therapy, and hormonal therapy. Understanding the different presentations, disease progression, and outcomes of patients with rare EAC will help guide future research that will ultimately lead to therapeutic approaches that decrease morbidity and mortality.

5. Statement of consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. IRB exemption was received from the University of Rochester Research Subjects Review Board. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions.

ASt manuscript writing, manuscript editing. YA manuscript writing, manuscript editing. LM manuscript writing, manuscript editing. JM manuscript writing, manuscript editing. NZ conception, manuscript writing, manuscript editing. ASm manuscript editing. CA manuscript editing. BD manuscript editing. AV manuscript editing. Path manuscript editing, pathology review. RM conception, manuscript editing, supervision, pathology acquisition.

CRediT authorship contribution statement

Anne Stoklosa: Writing – review & editing, Writing – original draft. **Youngeun Armbuster:** Writing – review & editing, Writing – original draft. **Lila Marshall:** Writing – review & editing, Writing – original draft. **Jamie L McDowell:** Writing – review & editing. **Naixin Zhang:** Writing – review & editing. **Ashlee Smith:** Writing – review & editing, Supervision. **Cynthia Angel:** Writing – review & editing, Supervision. **Aaron Varghese:** Writing – review & editing. **Wei Huang:** . **Richard Moore:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [RM receives research grants under Angle Inc and consulting/speaker fees from Fujirebio Diagnostics Inc. No disclosures from other authors. All fees are outside of submitted work and the authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper].

References

Burney, R.O., Giudice, L.C., 2012. Pathogenesis and pathophysiology of endometriosis. Fertil Steril. 98 (3), 511–519. https://doi.org/10.1016/j.fertnstert.2012.06.029.

Djordjevic, B., Westin, S., Broaddus, R.R., 2012 Dec 1. Application of Immunohistochemistry and Molecular Diagnostics to Clinically Relevant Problems in Endometrial Cancer. Surg Pathol Clin. 5 (4), 859–878. https://doi.org/10.1016/j.path.2012.08.004. PMID: 23687522; PMCID: PMC3653323.

Kawate, S., Takeyoshi, I., Ikota, H., Numaga, Y., Sunose, U., Morishita, Y., 2005. Endometrioid Adenocarcinoma Arising from Endometriosis of the Mesenterium of the Sigmoid Colon. Japanese Journal of Clinical Oncology 35 (3), 154–157. https://doi.org/10.1093/jjco/hyi037.

Krawczyk, N., Banys-Paluchowski, M., Schmidt, D., Ulrich, U., Fehm, T., 2016. Endometriosis-associated Malignancy. Geburtshilfe Frauenheilkd. 76 (2), 176–181. https://doi.org/10.1055/s-0035-1558239.

Li N, Zhou W, Zhao L, Zhou J. Endometriosis-associated recto-sigmoid cancer: a case report. BMC Cancer. 2018;18(1):905. Published 2018 Sep 20. doi:10.1186/s12885-018-4797-4.

Liu, G., Wang, Y., Chen, Y., Ren, F., 2021. Malignant transformation of abdominal wall endometriosis: A systematic review of the epidemiology, diagnosis, treatment, and outcomes. Eur J Obstet Gynecol Reprod Biol. 264, 363–367. https://doi.org/10.1016/j.ejogrb.2021.08.006.

Sampson, J.A., 1925. Endometrial carcinoma of the ovary arising in endometrial tissue in that organ *. Am J Obstet Gynecol. 9 (1), 111–114.

Scott, R.B., 1953. Malignant changes in endometriosis. Obstet Gynecol. 2 (3), 283–289.

Ulrich, U., Rhiem, K., Kaminski, M., et al., 2005. Parametrial and rectovaginal adenocarcinoma arising from endometriosis. Int J Gynecol Cancer. 15 (6), 1206–1209. https://doi.org/10.1111/j.1525-1438.2005.00184.x.

Wang Yang H, Gu JJ, Qi Y, Zhao W, Wang XL. Endometrioid adenocarcinoma of the rectovaginal septum with invasion of the rectum: a case report and review of literature. World J Surg Oncol. 2019;17(1):206. Published 2019 Dec 4. doi:10.1186/s12957-019-1743-0Y, Nicholes K, Shih IM. The Origin and Pathogenesis of Endometriosis. Annu Rev Pathol. 2020;15:71-95. doi:10.1146/annurev-pathmechdis-012419-032654.

Yang, H., Gu, J.j., Qi, Y., et al., 2019. Endometrioid adenocarcinoma of the rectovaginal septum with invasion of the rectum: a case report and review of literature. *World J Surg Onc* 17, 206. https://doi.org/10.1186/s12957-019-1743-0.