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Metachronous ovarian cancer metastasis of large bowel presenting similar imaging features of GIST

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The authors stated that the written consent was obtained from the patient presented with images in the study.

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Abstract

Ovarian cancer most likely spreads into the peritoneal cavity or can be only superficially invasive. Although the most common metastatic pathway used by ovarian cancer cells involves peritoneal seeding, hematogenous and lymphatic dissemination can also occur. Metastatic colorectal cancers arising from the ovary are extremely rare. A mass arising from the colon wall at the level of the hepatic flexure was detected by tomography during routine follow-up of a patient who underwent abdominal hysterectomy + bilateral salpingo oophorectomy for ovarian cancer two years ago. Radiological findings revealed that the mass mimicked a gastrointestinal stromal tumor, and the patient underwent surgery based on a pre-diagnosis of gastrointestinal stromal tumor. Pathological examination of the specimen showed that the present mass was an ovarian tumor metastasis. Immunohistochemical staining of the sample was positive for CK7, PAX-8, WT-1, P16, and P53 and was negative for CK20 and CDX-2. A case of gastrointestinal metastasis of ovarian cancer is presented in which the imaging features mimicked a gastrointestinal stromal tumor that appeared two years after the first surgery. Although similar imaging characteristics of these two tumors were present, it was thought that gastrointestinal metastasis of ovarian cancer should be considered first in the differential diagnosis of patients who had history of previous ovarian cancer. The clinical presentation, management, and outcome in that case are discussed.

Keywords: Colon, Metastasis, Ovarian cancer

Introduction

The most common cancers of gastrointestinal tract are colorectal. Colorectal cancer is the third most frequent malignancy worldwide. However, metastatic neoplasms in the colon are an uncommon finding. Only 1% of colorectal cancers are metastatic [1].

Ovarian cancers are the sixth most frequent malignancy in the worldwide, and ovarian cancer is the most common cause of cancer-related deaths from gynecological malignancies [2]. Ovarian cancer cells mainly metastasize to the peritoneal cavity, sigmoid colon, and reproductive organs (ovaries, uterus, and fallopian tubes) [3]. Hematogenous spread is less common. Distant metastases usually occur in the liver, brain, and/or lungs.

This case report aimed to determine clinical features and differential diagnosis of gastrointestinal metastasis of ovarian cancer and review the literature concerning this topic.

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Case presentation

A 66-year-old patient with a previous history of total abdominal hysterectomy + bilateral salpingo-oophorectomy and chemotherapy due to ovarian carcinoma was found to have a colonic mass during her routine examination. Upper abdominal tomography revealed a large exophytic, heterogenous mass with a diameter of 28 x 14 mm that was projecting into the lumen and involved the hepatic flexure (Figure 1, 2). Laboratory findings indicated that the level of cancer antigen 125 (CA 125) has increased slightly (46.8 U/mL (reference range: 0-35)). The patient had no clinical complaints. Standard colonoscopy revealed no gastrointestinal mucosal lesions, and colonoscopic findings were thought to be the mass suggestive of a gastrointestinal stromal tumor (GIST) as shown in Figure 3. A biopsy was not taken from the patient with suspected GIST. Thoracic and lower abdominal tomography were normal.

Figure 1: Tomography image of the mass located intramurally in the hepatic flexure, in the transverse plane

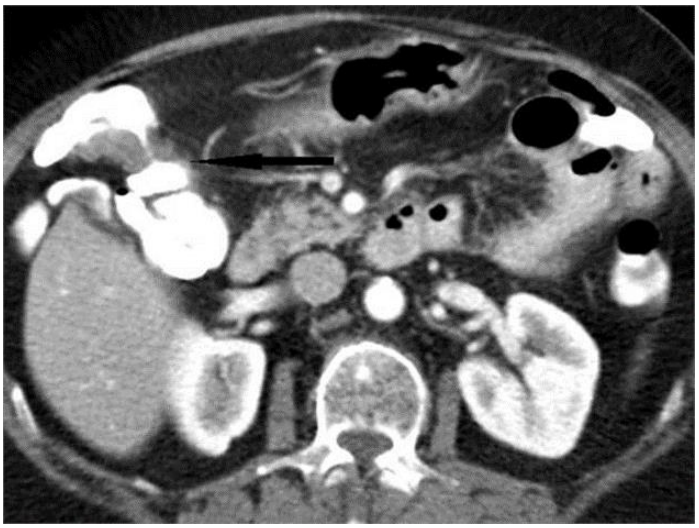


Figure 2: Tomography image of the mass located intramurally in the hepatic flexure, in the coronal plane

Figure 3: Colonoscopic view of the mass in the hepatic flexure

After considering endoscopic and radiological findings, the lesion was initially considered to be a GIST. During a laparotomy an intramural mass was observed, and the serosa was normal. Wedge resection was performed, and the specimen sent for frozen sectioning. Because the intra-operative frozen section confirmed the adenocarcinoma, right hemicolectomy was performed.

Microscopic examination revealed solid, isolated, or papillary clusters of neoplastic epithelial cells infiltrated within the lamina propria of the colon, but the mucosal surface was normal (Figure 4). Tumor cells have prominent cytoplasmic membranes, moderate amounts of eosinophilic cytoplasm, and intermediate- to high-grade nuclei, which are markedly atypical. Immunohistochemical staining of the tumor showed positivity for cytokeratin-7 (CK-7) as shown in Figure 5, Wilms tumor-1 (WT-1) protein and PAX-8 as shown in Figure 6, and P16 and P53 but was negative for CK-20 and cdx-2. These findings indicated that the tumor was consistent with high-grade serous ovarian carcinoma. No lympho-vascular invasion or regional lymph nodes metastasis was detected. Without development of any problems, the patient was discharged on the sixth post-operative day. No findings suggesting recurrence or metastasis were found on the first month follow-up tomography. Adjuvant chemotherapy treatment is ongoing after the post-operative medical oncology follow-up. Informed consent was obtained from the patient for this study.

Figure 4: Hematoxylin and eosin (H&E) staining shows solid and papillary cluster of neoplastic cells infiltrated within lamina of colon. (HEx10)

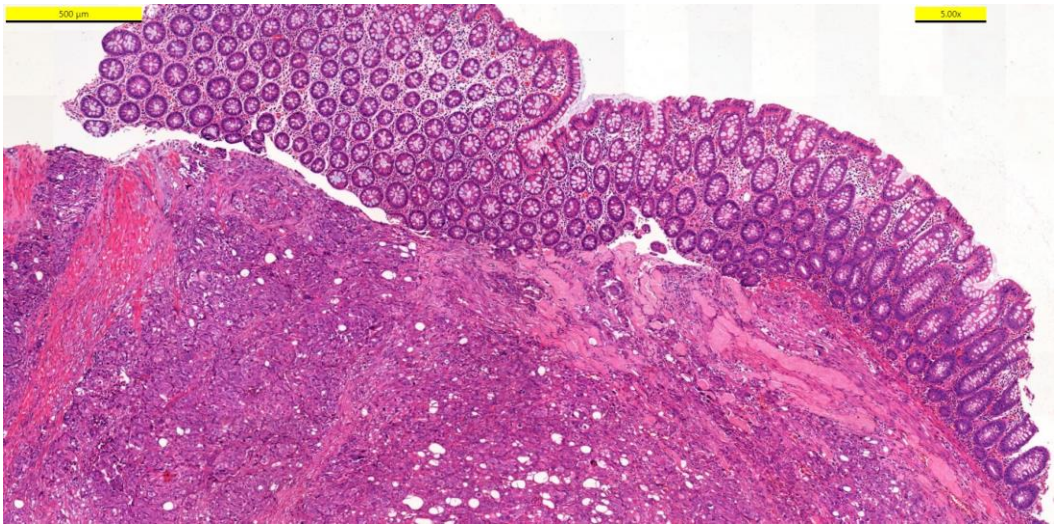


Figure 5: Figure shows positivity of CK-7 staining (CK7x20)

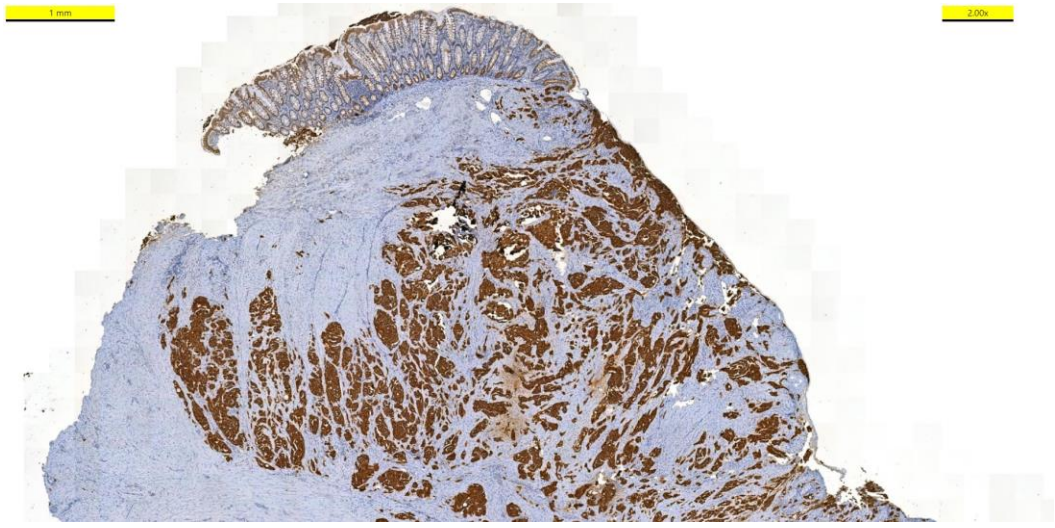
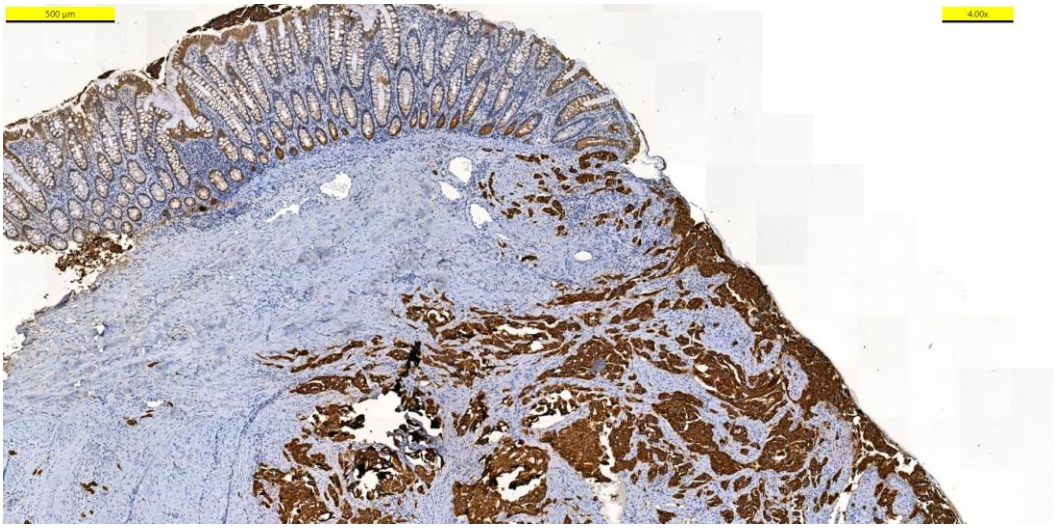


Figure 6: Figure shows positivity of PAX-8 staining (PAX8x20)



Discussion

Ovarian cancer metastasis usually occurs in the peritoneal cavity or on the peritoneal surface. Although less common, hematogenous and lymphatic spread may also occur. Distant metastasis generally occurs in the pleura, lung, liver, and/or lymph nodes [4]. At the time of diagnosis, approximately 70% of ovarian cancer patients present with extensive disease, but distant metastasis is rare. The presence of synchronous colonic metastasis with ovarian carcinoma is also extremely rare.

Several authors have reported that colorectal metastases originating from ovarian cancer are very rare in Japan with ratio of 6.0% of cases while others have reported only 19 cases in Japan since 2005 [5, 6]. The study also showed that the median age of the patients was 58.8 (34–77) years. According to location, the number of patients presenting with colorectal metastases was equally distributed in rectum and sigmoid, descending transverse, and ascending colons [5]. Macroscopic appearance was variable, but most of the cases showed

protrusion into lumen; however, only a few cases were located in the submucosa. Therefore, the authors thought that based on the macroscopic appearance, distinguishing colorectal metastasis from ovarian carcinoma or primary colon cancer would be difficult. Our case was also localized in the submucosa.

Colorectal metastasis of ovarian cancer can be synchronous or metachronous. Metachronous tumors may occur over a period of time ranging from 1 to 22 years [5]. In the present case, colorectal metastasis from ovarian cancer was observed two years after the patient had undergone ovarian cancer surgery. Ovarian cancer generally metastasizes through the pelvic lymph nodes and within the peritoneal cavity. However, recent publications have shown that ovarian cancer can also metastasize via a hematogenous route. The most common pathway of metastatic spread to the bowel is through direct invasion to the serosa or hematogenous and lymphatic or peritoneal dissemination [7]. In most cases, the colonic serosa undergoes invasion first after which the tumor infiltrates the subserosa, muscularis propria, and mucosa [5]. Although rare, the mucosa may be infiltrated hematogenously via the submucosal capillary network [5]. In our case, no infiltration of the serosal surfaces or mesocolon occurred, and tumoral involvement was not detected in any lymph nodes. Therefore, it was thought that the patient's metastasis resulted from infiltration of the capillary network.

Patients may present with dyspepsia, intestinal obstruction, intussusception, palpable mass, or may not have any symptom [1]. Although the presence of high levels of CA 125 is used as a diagnostic marker of disease progression, it may also remain at normal levels in such cases. For diagnosis, tomography and ultrasonography may help detect pelvic masses, regional lymphadenopathy, a mass extending into the colon wall or lumen, and/or ascites [1]. Endoscopy or fine needle biopsy is helpful for making a definitive diagnosis [8].

It is sometimes difficult to distinguish ovarian from colon carcinomas, and immunohistochemical methods may be needed. Serous ovarian carcinomas are often CK20 negative and CK7 positive, but gastrointestinal carcinomas tend to be CK20 positive and CK7 negative [5]; however, colon and gastric adenocarcinomas can express CK7, and 33% of ovarian mucinous adenocarcinomas are CK20 positive, so this expression pattern is not always organ specific. To confirm that the cancer was of an ovarian origin immunohistochemical staining of CEA, PAX-8, and WT-1 protein was also performed. WT-1 is essential in the normal development of the genitourinary tract organs and mesothelium. Wilms tumors and most serous carcinomas of the peritoneum and ovary have been shown to express WT-1. PAX-8 is a transcription factor involved in the development of the Müllerian system, and it shows positive nuclear staining in most serous carcinomas.

Indeed, tumors are usually involved the seromuscular site of the intestinal wall or mesocolon in patients having colon metastasis from ovarian cancer [7]. In the present case, an intramural mass without infiltration of the serosal surface or any involvement in the mesocolon was found during surgery. The patient underwent a right hemicolectomy after the frozen examination was reported as malignant. Six days after surgery the patient was discharged without any complications. Up to the follow-up at six months, the patient received adjuvant chemotherapy.

The main treatment of metastasis includes surgery and adjuvant chemotherapy [7]. The efficacy of surgical options, such as metastasectomy or wide surgical resection, is not clearly defined. However, the general opinion is that bowel resection, including at least with paracolic lymph node excision, should be performed [9].

Conclusion

In conclusion, a successfully treated case of ovarian cancer with metachronous metastasis to the colon is presented. In evaluating our findings together with the literature, several conclusions were drawn:

- Metastatic ovarian carcinoma spread to the colon may occur as an intramural lesion with serosal sparing even in the absence of peritoneal disease.
- Radiologic appearance may mimic GIST.
- Despite spending two years disease-free after surgery, anamnesis of the patient's ovarian cancer history should be kept in mind.
- Because the treatment and prognosis of metastatic colorectal cancer originating from ovary and primary colorectal cancer are similar, histopathological diagnosis is important.
- Immunohistochemistry for CK7, CK20, WT1, and PAX8 can be helpful for making a differential diagnosis of colonic metastasis originating from ovarian cancer.

References

1. Galanopoulos M, Gkeros F, Liatsos C, Pontas C, Papaefthymiou A, Viazis N, et al. Secondary metastatic lesions to colon and rectum. Ann Gastroenterol. 2018 May-Jun;31(3):282-7.
2. Chornokur G, Amankwah EK, Schildkraut JM, Phelan CM. Global ovarian cancer health disparities. Gynecol Oncol. 2013 Apr;129(1):258-64.
3. Lengyel E. Ovarian cancer development and metastasis. Am J Pathol. 2010 Sep;177(3):1053-64.
4. Otsuka I. Cutaneous Metastases in Ovarian Cancer. Cancers (Basel). 2019 Sep 2;11(9):1292.
5. Shibahara K, Endo K, Ikeda T, Sakata H, Sadanaga N, Morita M, et al. Colon metastasis 20 years after the removal of ovarian cancer: Report of a case. Surg Today. 2009;39(2):153-6.
6. Haraoka S, Iwashota A, Nakayama Y. Metastatic tumor of the gastrointestinal tract. Stomach Intestine. 2003;38:1755–71.
7. K G S, Mirza AA, Swamy S, S A, Ks G. Metachronous Synchronous Sternal and Colonic Metastasis with Asymptomatic Colo-colic Fistula from Carcinoma Ovary Rare Presentation of Ovarian Cancer. Indian J Surg Oncol. 2017 Dec;8(4):615-8.
8. Rekhi B, George S, Madur B, Chinoy RF, Dikshit R, Maheshwari A. Clinicopathological features and the value of differential Cytokeratin 7 and 20 expression in resolving diagnostic dilemmas of ovarian involvement by colorectal adenocarcinoma and vice-versa. Diagn Pathol. 2008 Sep 18;3:39.
9. Slimani KA, Debbagh A, Torreis M, Sbitti Y, Errihani H, Ichou M. An Unusual Case of Rectal Metastasis from Ovarian Cancer. Austin J Clin Case Rep. 2016;3(4):1099.

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