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Synchronous Colonic and Ovarian Tumors: A Case Report

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
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Conflict of interest: None declared

Patient: Female, 64
Final Diagnosis: Colon cancer
Symptoms: Abdomen distension • abdominal pain • anorexia • constipation • early satiety • general weakness • night sweats • tenesmus • vomiting
Medication: —
Clinical Procedure: Laparotomy – Hartmann's procedure
Specialty: Surgery

Objective: Rare co-existence of disease or pathology
Background: Multiple primary tumors are defined as more than 1 synchronous or metachronous tumor in the same patient. It is important to diagnose each type stage accurately because the treatment is basically directed towards the most advanced and serious primary tumor.
Case Report: We report a case of advanced mucinous colon cancer and borderline mucinous ovarian tumor that was also implanted with colonic deposits, which presented with acute obstruction.
Conclusions: Multiple primary ovarian and colorectal tumors are commonly encountered. In such cases, accurate diagnoses and staging are important. Immunohistochemistry is the most important investigation to differentiate primary cancers in cases of synchronized tumors and metastases.

MeSH Keywords: Colonic Neoplasms • Neoplasms, Multiple Primary • Ovarian Neoplasms

Full-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/914993>

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Background

The incidence of multiple primary cancers in the same patient is about 2–7% [1]. In some cases, it is difficult to decide whether the second tumor is another primary or metastatic deposit from the index tumor, as in the case presented in this report. The presence of primary colorectal cancer and primary ovarian tumor has been reported in many series. Earlier reports stated that the incidence of cancer in additional organs in females with ovarian cancer is 2.8%, and the most frequent combinations are ovarian cancer and lung cancer, or ovarian cancer and colon cancer [2]. Moreover, women affected with colorectal cancer are found to have ovarian metastases at a rate of 3.4% [3].

Most primary ovarian mucinous tumors are of surface epithelial-stromal origin and demonstrate diffuse expression of cytokeratin 7 (CK7) with variable expression of cytokeratin 20 (CK20); this immunohistochemical profile distinguishes them from lower gastrointestinal tract tumors secondarily involving the ovaries because it is difficult to distinguish them grossly or morphologically. Immunohistochemistry is the investigation of choice in determining whether a particular ovarian tumor is primary or of metastatic origin in cases of multiple primaries.

Case Report

A 64-year old woman presented with a 5-day history of bowel obstruction. She had history of anorexia, significant weight loss (9 kg in 4 months), night sweating, early satiety, easy fatigability, and tenesmus in the last 3 months, without rectal bleeding or melena. The physical examination disclosed a hugely distended abdomen with tenderness in the left iliac fossa tenderness and a rectal mass 6 cm from the anal verge. Initial laboratory results were within normal limits. Plain abdomen X-rays showed multiple air-fluid levels and distended small and large bowel loops. Computed tomography (CT) scans of the abdomen and pelvis with contrast showed multilobulated cystic masses in the central abdominopelvic region, a left colonic tumor with pericolic lymph nodes and omental metastatic lesions, enlarged multiple mesenteric lymph nodes (Figure 1), and a heterogeneously enhancing rectal mass measuring 3.7×3.4 cm (Figures 2, 3).

A total colonoscopy revealed a mass located 6 cm from the anal verge and another located 40 cm from the anal verge completely obstructing the colonic lumen. Biopsies were taken from both masses. The pathology of the rectal mass was tubulovillous adenoma, and that of the descending colon was indeterminate due to the small sample size.

The patient underwent emergency laparotomy, showing widespread peritoneal and multiple liver metastases, dilated small

Figure 1. Axial computed tomography (CT) of the abdomen showing a completely obstructing left colon tumor (arrow head) with involvement of the adjacent omentum. Regional lymph nodes enlargement, a huge right ovarian cystic tumor (black arrow), and a smaller left ovarian tumor (yellow arrow) are also shown.

Figure 2. Axial computed tomography (CT) of the abdomen and pelvis, showing a large, inhomogeneous rectal mass on the anterior rectal wall (arrow head), and a large right ovarian mass (arrow).

and large bowel loops, an obstructing sigmoid tumor, and large bilateral cystic ovarian tumors. Bilateral salpingo-oophorectomy, multiple peritoneal biopsies, and end colostomy were performed just proximal to the sigmoid tumor. The patient had good post-operative recovery.

Figure 3. Sagittal computed tomography (CT) of the abdomen and pelvis showing a huge cystic right ovarian tumor (white arrow), a left cystic ovarian tumor (yellow arrow), and a large rectal mass (black arrow).

The final pathology report was that of a right ovarian cystic tumor (14×10×5 cm), a mucinous ovarian tumor of borderline malignancy, a left ovarian cystic tumor (9×7×6 cm), and mucinous cystadenoma. Peritoneal and ovarian deposits were consistent with metastatic colonic moderately differentiated mucinous adenocarcinoma with abundant mucin production. The tumor cells in the ovarian and peritoneal surfaces are positive for CK20, CDX-2, MUC5-2, P16, and villin. They were focally

negative for CK7, Ca125, and PAX8. The findings were more consistent with gastrointestinal than ovarian origin (Table 1).

K-RAS showed wild type, and this was the only available genetic study performed, so the patient was given FOLFOX and cetuximab. A CT scan after the fifth cycle showed progression in the size of omental and peritoneal metastases, and stable size of the left colon mass and liver metastases. The patient improved clinically and CEA dropped to 10. A multidisciplinary decision was made to give the patient 2 more cycles of FOLFOX and cetuximab. Unfortunately, the patient died due to a massive pulmonary embolism.

Discussion

In this case, the primary mucinous colonic adenocarcinoma metastasized to ovarian cystadenoma and borderline cystadenocarcinoma. The propensity of the ovaries to be involved by colorectal cancer metastases is well recognized [4]. Borderline tumors of the ovary or tumors of low malignant potential (LMP tumors) comprise up to 67% of mucinous neoplasms that are not considered strictly benign. The priority in acute management was to relieve the obstruction with the least invasive procedure after tumor stenting by colonoscopy was determined to be impossible. Acute bowel obstruction is the initial presentation in 7–29% of patients with colon cancer, and it requires an emergency surgical intervention [5], which has been associated with a high complication rate and poor prognosis [6]. To relieve left colon obstruction caused by colonic carcinoma, a staged surgical resection, diversion with either colostomy or self-expandable metallic stent (SEMS), and subsequent curative resection appear to be safe and improve sound oncologic resection and lymph node retrieval, and only a small percentage of patients are left with a permanent stoma.

The differentiation between ovarian primary and secondary cancer has been the subject of intense research. In our case,

Table 1. Summary of immunohistochemical markers differentiating primary mucinous ovarian cancer from secondary metastases from the gastrointestinal tract.

Immunohistochemical marker	Primary ovarian tumor	Secondary ovarian tumors form colorectal primary
CK7	+++	–
CK20	+	+++
CDX-2	–	+
MUC5-2	–	+
P16	–	+
Villin	–	+
Ca125	+	–
PAX8	+	–

the differentiation was accomplished using immunohistochemistry. In primary ovarian cancers, the cells are positive for CK7 and negative for CK20, whereas colorectal tumors are negative for CK7 and positive for CK20 [7]. CDX2 is a cloned homeobox gene that encodes an intestine-specific transcription factor, expressed in the nuclei of epithelial cells throughout the intestine from the duodenum to the rectum, and, when compared to villin, a marker of GI adenocarcinomas, CDX2 shows superior sensitivity and comparable specificity [8].

Recently, the new Mullerian markers (PAX2 and PAX8) have been recognized as useful tumor markers to differentiate Mullerian mucinous tumors from non-Mullerian (e.g., gastrointestinal) tumors [9], and they were negative in the case presented here. P16 and villin were positive.

All of these immunohistochemical tests are solid indicators of the original site and thus the metastatic deposits type. Therefore, our patient was diagnosed as having stage IV colonic cancer and was given priority treatment.

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Conclusions

Cases of multiple primary ovarian and colorectal tumors are well-known in oncologic practice. The importance of accurate diagnoses and staging of each primary cannot be overemphasized, since treatment is directed to the most advanced cancer. Immunohistochemistry is the most important diagnostic tool for use in differentiating primary from deposits.

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Conflict of interest

None.