

Adnexal Mass: An Unusual Presentation of Small-Bowel Adenocarcinoma

Syed Husain, MD; Daniel Thompson, MD; Louys Thomas, MD; Brian Donaldson, MD; and Raja Sabbagh, MD

New York, New York

Malignancy of the small bowel presents unique diagnostic and therapeutic challenges resulting in a delayed diagnosis in many cases. Small-bowel tumors respond poorly to most forms of treatment. Metastatic lesions to the ovaries comprise a small percentage of all ovarian malignant neoplasms. Ovarian metastases from primary small-bowel tumors are often difficult to differentiate from primary ovarian tumors. Only few reports have described ovarian metastases from small-bowel sources. A high index of suspicion can lead to an earlier diagnosis and can have an impact on the therapeutic options as well as the survival of the patients. The current report also underscores the importance of careful review of symptoms, investigative studies and pathology.

Key words: small-bowel tumor ■ ovarian metastasis ■ adnexal mass

CASE REPORT

A 45-year-old African-American woman presented to the emergency room with lower abdominal pain, specifically in the periumbilical region. The patient denied associated symptoms, such as nausea, vomiting, fever, chills, weight loss and changes in bowel habits. Physical exam was unremarkable. Baseline labs were within normal limits except for significant anemia. Abdominal computerized tomography (CT) scan with oral and intravenous contrasts demonstrated a 6.9-x-5.7-cm, heterogeneously enhancing left adnexal mass and mild small-bowel thickening. Based on the CT findings with a working diagnosis of ovarian neoplasm, the patient was admitted to gynecology service, and a surgical consult was obtained. The patient underwent exploratory laparotomy and left salpingo-oophorectomy. Frozen section biopsy of the contralateral ovary was obtained, and peritoneal fluid washings were sent for cytology. The small bowel was examined intraoperatively; however, no gross lesions were identified. The patient was discharged home after an uncomplicated hospital course. The pathology report showed a left ovarian adenocarcinoma, endometrioid type. Frozen section of the right ovary and peritoneal fluid washings were negative for malignancy.

The patient continued to experience abdominal pain. An upper gastrointestinal endoscopy, performed as an outpatient, showed no significant findings. One year after the initial presentation, the patient was seen in the emergency room with similar abdominal complaints. Physical examination revealed a well-healed, lower midline scar from the previous surgery and tenderness in the lower abdomen. The rest of the exam was unremarkable. Laboratory tests again showed severe anemia. CT demonstrated a right adnexal mass with small-bowel obstruction.

Operative exploration revealed a stricture-like annular constricting lesion in the jejunum with dilated proximal and collapsed distal loops (Figures 1 and 2). An omental nodule was also encountered.

© 2006. From the Department of Surgery (Husain and Thompson, residents) and College of Physicians and Surgeons (Thomas, assistant clinical professor of pathology; Donaldson and Sabbagh, assistant clinical professor of surgery), Columbia University, Harlem Hospital Center, New York, NY. Send correspondence and reprint requests for *J Natl Med Assoc.* 2006;98:799-802 to: Dr. Raja Sabbagh, Assistant Clinical Professor of Surgery, College of Physicians and Surgeons, Columbia University, Harlem Hospital Center, 506 Lenox Ave., New York, NY 10037; phone: (212) 939-4122; e-mail: rs2051@columbia.edu

The involved segment along with its mesentery and the right adnexal mass were removed, and a primary bowel anastomosis was performed. The omental nodule was excised. Initial impression at laparotomy was that the left ovarian adenocarcinoma that had been excised one year earlier had metastasized to the small bowel, omentum and contralateral ovary.

On pathological examination, the resected bowel, omental nodule and right ovary showed moderately differentiated small-bowel adenocarcinoma with mesenteric lymph node involvement. These findings prompted a review of a previous ovarian specimen with immunohistochemical staining.

The specimens were uniformly reactive for CK-20 and CEA while being nonreactive to CA-125 and CK-7. This confirmed that the left adnexal mass, initially labeled as primary ovarian adenocarcinoma, was a metastatic lesion from the small-bowel malignancy that was clinically inapparent at that time. Figure 3 shows a section through the interface between metastatic deposit (right half of the picture) and normal-looking ovarian stroma (left half of the picture). Figures 4 and 5 show similar sections stained with CEA and CK-20. The postop course was uneventful, and the patient was referred to the oncology department for further management.

DISCUSSION

Malignancy of the small bowel is a rare disease that presents unique diagnostic and therapeutic challenges. The symptoms are vague, and diagnostic studies are often inconclusive, resulting in a delayed diagnosis. Small-bowel tumors respond poorly to most forms of treatment and, in many cases, have metastasized at the time of diagnosis. Ovarian metastasis from primary small-bowel tumor is rare and often difficult to differentiate from primary ovarian tumors.

Epidemiology

Malignant tumors of the small bowel comprise <2% of all gastrointestinal malignancies,¹ with an

incidence of 1/100,000 and prevalence of 0.6%.² About two-thirds of small-bowel neoplasms are malignant.³

Metastatic lesions to the ovaries comprise a small percentage of all ovarian malignant neoplasms. The exact incidence of small-bowel metastatic lesions to the ovaries is not known. Few reports have described ovarian metastases from small-bowel sources. Of 168 patients with ovarian metastases studied by Ayhan et al., only four cases originated from small bowel.⁴ Additionally, Moore et al. described the incidence of 4% small intestinal source in 59 patients with ovarian metastatic disease.⁵

Presentation

A review of reports of small-bowel metastatic lesions presenting as ovarian masses indicated that these patients typically present with vague abdominal pain, nausea, vomiting, anemia, weight loss, diarrhea and adnexal masses.^{6,7} Many of these patients are diagnosed as having adnexal masses at the time of laparotomy performed for malignant small-bowel obstruction.⁸

Diagnosis

Despite recent advances in diagnostic modalities, the small bowel remains difficult to evaluate.⁹ The preoperative diagnosis can be as low as 19% in cases of small-bowel adenocarcinoma.¹⁰ No single radiographic modality can be reliably used for detecting small-bowel tumors. Abdominal plain films are non-diagnostic, although signs of obstruction or free air are frequently demonstrated.¹¹ Upper gastrointestinal endoscopy, barium series and CT scans of the abdomen, which are the most commonly used investigative tools for abdominal diseases, have low sensitivities—31%, 43% and 57%, respectively—for diagnosing small-bowel tumor.¹² Of note is the observation that enteroclysis is more sensitive than UGI series¹³ and has been considered a useful tool for diagnosis of small-intestinal tumors. Additionally, the introduction of CT enteroclysis may further

Figure 1. Small-bowel lesion



Figure 2. Small-bowel lesion, mucosal surface



improve the diagnostic yield of small-bowel tumor detection.¹⁴ In specific cases, laparoscopy and intraoperative enteroscopy may be of use. Swain et al. reported the use of an ingestible video capsule, which allows video access to the entire GI tract and is performed in an ambulatory setting.¹⁵ This newer technique overcomes the range limitation of upper GI endoscopy but is still in the developmental stage.

Ovarian Metastases

The ovaries are the most common site of the female genital tract for metastatic invasion. Metastatic lesions to the ovary comprise 3–8% of all ovarian tumors and 10–30% of malignant ovarian tumors.⁹ Primary large-bowel and breast tumors presenting as metastasis to the ovaries have been well described in the literature. A lesser percentage of metastatic ovarian tumors arise from the stomach appendix, pancreas, gall bladder, liver or esophagus.¹⁶ Other primary sources include lung, cervix and urinary bladder tumors. Rarely, malignant melanoma, lymphomas, leukemias and carcinoids metastasize to the ovaries. A detailed history is essential when working up a gynecological cancer.¹⁶

The majority of patients presenting with metastatic small-bowel cancer to the ovaries develop intestinal obstruction within six months of oophorectomy due to undiagnosed intestinal primary at the time of initial surgery.¹⁶ This underscores the importance of thorough bowel examination, which may potentially save the patient another major procedure.

Differentiation between primary ovarian carcinoma and metastatic disease to the ovary is difficult. Characteristics of ovarian masses that favor metastatic carcinoma include bilaterality (60–75% of ovarian metastases are bilateral), a multinodular pattern, extensive necrosis, the lack of a fibrous capsule and focal surface deposits.^{16,17} Dirty necrosis—a pseudocystic change that results from central necrosis of tumor nodules containing prominent neutrophil infiltrate—is indicative, however, not diagnostic, of an intestinal primary source.^{7,18,19}

Immunohistochemistry provides the most reliable information to differentiate between ovarian and gastrointestinal primaries.⁸ Specimens are usually tested for the presence for carcinoembryonic antigen (CEA), CK-7 and CK-20 and CA-125. CEA is not as valuable as once believed, as 80% of primary mucinous carcinomas of the ovaries are CEA positive.¹⁶ Tumors of mullerian origin are CK-7 positive and CK-20 negative; conversely, tumors originating in the GI tract generally stain CK-7 negative and CK-20 positive.¹⁶ The presence of CEA and CK-20, especially when supported by the absence of CA125 and CK-7, improves the discriminatory value of these markers.^{7,8,20} The immunohistochemistry, in our case, revealed that small bowel as well as ovarian specimens were uniformly reactive for CK-20 and CEA, and uniformly nonreactive for CA-125 and CK-7.

Treatment

Malignant small-bowel tumors are resistant to most forms of treatment. Once diagnosed, the only treatment modality that has been proven beneficial is surgical resection. Curative resection is achieved only in approximately 50% of cases.¹¹ The role of chemotherapy is unclear. When used with nonresectable tumors or as adjuvant therapy, the overall survival rate is poor. No effective role has been demonstrated for radiation therapy.¹¹

CONCLUSION

Our report highlights the importance of a thorough work-up to rule out an intestinal source in any patient who presents with adnexal masses and vague abdominal complaints. A high index of suspicion can lead to an earlier diagnosis and may have an impact on the therapeutic options as well as the survival of the patients. The current report also underscores the importance of careful review of symptoms, investigative studies and pathology.

REFERENCES

1. Barclay TH, Schapira DV. Malignant tumors of the small intestine. *Cancer*. 1983;51(5):878-881.

Figure 3. H&E staining

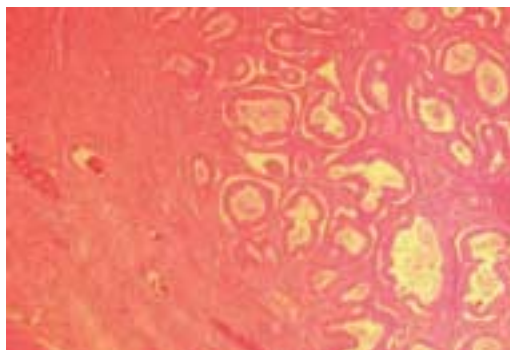


Figure 4. CEA staining

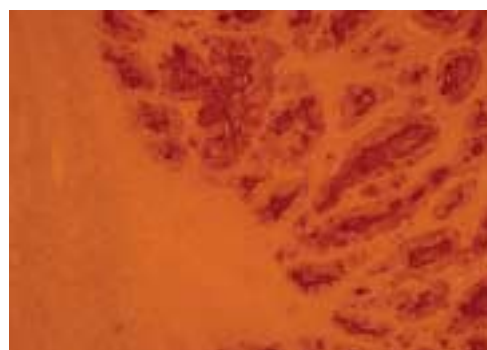
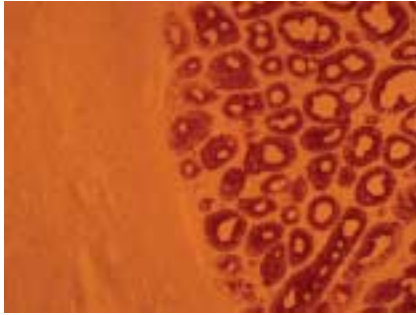


Figure 5. CK-20 staining

2. Attanoos R, Williams GT. Epithelial and neuroendocrine tumors of the duodenum. *Semin Diagn Pathol.* 1991;8(3):149-162. Review.
3. Rubin JT. Neoplasms of Small Intestine. In: Bland KI, Daly JM, Karakousis CP, eds. *Surgical Oncology: Contemporary Principles and Practice.* New York: McGraw-Hill; 2001:685-696.
4. Ayhan A, Tuncer ZS, Bukulmez O. Malignant tumors metastatic to the ovaries. *J Surg Oncol.* 1995;60(4):268-276.
5. Moore RG, Chung M, Granai CO, et al. Incidence of metastasis to the ovaries from nongenital tract primary tumors. *Gynecol Oncol.* 2004;93(1): 87-91.
6. Tsuruchi N, Kubota H, Tsukamoto N, et al. Primary jejunal adenocarcinoma masquerading as a primary ovarian malignancy. *Gynecol Oncol.* 1995;58(1):129-132. Review.
7. Young RH, Hart WR. Metastatic intestinal carcinomas simulating primary ovarian clear cell carcinoma and secretory endometrioid carcinoma: a clinicopathologic and immunohistochemical study of five cases. *Am J Surg Pathol.* 1998;22(7):805-815.
8. Kilic G, Abadi M. Jejunal adenocarcinoma presenting as a primary ovarian carcinoma. *Gynecol Oncol.* 2000;78(2):255-258.
9. North JH, Pack MS. Malignant tumors of the small intestine: a review of 144 cases. *Am Surg.* 2000;66(1):46-51.
10. Cunningham JD, Aleali R, Aleali M, et al. Malignant small bowel neoplasms: histopathologic determinants of recurrence and survival. *Ann Surg.* 1997;225(3):300-306.
11. Arber N, Weinstein IB. Small Intestinal Neoplasms. In: Rustgi AK, Crawford JM, eds. *Gastrointestinal Cancers: A Companion to Sleisenger and Fordtran's Gastrointestinal and Liver Disease.* Philadelphia, PA: London: W.B. Saunders; 2003:355-366.
12. Naef M, Buhlmann M, Baer HU. Small bowel tumors: diagnosis, therapy and prognostic factors. *Langenbecks Arch Surg.* 1999;384(2):176-180.
13. Zollinger RM Jr. Primary neoplasms of the small intestine. *Am J Surg.* 1986;151(6):654-658.
14. Bender GN, Maglente DD, Kloppel VR, et al. CT enteroclysis: a superfluous diagnostic procedure or valuable when investigating small-bowel disease? *AJR Am J Roentgenol.* 1999;172(2):373-378. Review.
15. Gong F, Swain P, Mills T. Wireless endoscopy. *Gastrointest Endosc.* 2000;51(6):725-729.
16. Russel P, Robboy SJ, Anderson MC. Miscellaneous and Metastatic Tumors of the Ovaries. In: Robboy SJ, Anderson MC, Russel P, eds. *Pathology of Female Reproductive Tract.* Edinburgh: Churchill Livingstone; 2002: 691-719.
17. Kallir T. Metastatic Tumors of the Ovary. In: Altchek A, Deligdisch L, Kase NG, eds. *Diagnosis and Management of Ovarian Disorders.* San Diego, CA: London: Academic; 2003:127-131.
18. Lash RH, Hart WR. Intestinal adenocarcinomas metastatic to the ovaries. A clinicopathologic evaluation of 22 cases. *Am J Surg Pathol.* 1987;11(2):114-121.
19. DeCostanzo DC, Elias JM, Chumas JC. Necrosis in 84 ovarian carcinomas: a morphologic study of primary versus metastatic colonic carcinoma with a selective immunohistochemical analysis of cytokeratin subtypes and carcinoembryonic antigen. *Int J Gynecol Pathol.* 1997;16(3):245-249.
20. Lagendijk JH, Mullink H, van Diest PJ, et al. Immunohistochemical differentiation between primary adenocarcinomas of the ovary and ovarian metastases of colonic and breast origin. Comparison between a statistical and an intuitive approach. *J Clin Pathol.* 1999;52(4):283-290. ■

**Is the
pen your
sword?**

The *Journal of the National Medical Association* invites members to submit creative works for its "Art in Medicine" section. Send a summary of your artistic endeavors to shaynes@nmanet.org for consideration.

George Dawson, MD
JNMA Art in Medicine Editor

