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Colonic Metastasis from Carcinoma of the Breast that Mimicks a Primary Intestinal Cancer

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Although the lung, liver, or bones are the most common location for distant metastases in breast cancer patients, metastases to the intestinal tract are very rarely recognized in the clinic. We will present an unusual case of colonic metastasis from a carcinoma of the breast that mimics a primary intestinal cancer, along with a through review of English language medical literature. Despite the fact that isolated gastrointestinal (GI) metastases are very rare and much less common than benign disease processes or second primaries of the intestinal tract in patients with a history of breast cancer, metastatic disease should be given consideration whenever a patient experiences GI symptoms.

Key Words: Breast cancer, metastasis, colon

INTRODUCTION

Distant metastasis is the most common cause of death in breast cancer patients and these sites often occur in the bone, lungs, brain, and liver. However, metastasis to the GI tract is an unusual presentation despite the fact that intestinal tract metastases are not rare at post mortem examination.[1-4] The most frequent sites of GI tract involvement are the stomach and the small intestine, while colorectal metastases is very rare.[3,5] Colorectal metastases can mimic a primary large bowel cancer and may present confusing diagnostic problems.[2,6]

In this paper, the case of a 43 year-old woman with breast carcinoma developing into colonic metastasis (this was recognized antemortem) is described.

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CASE REPORT

A 43-year-old woman underwent right modified radical mastectomy and an axillary curettage in 1997 for a ductal and lobular mixed type carcinoma. She was staged as T2N0M0 postoperatively and found to have been estrogen receptor (ER) negative, progesterone receptor (PR) positive. Following six cycles of adjuvant chemotherapy, she was then treated with a daily dosage of 20 mg tamoxifen (TMX). Thirty-six months after the operation, she began to complain of pelvic pain. A bone scan revealed an increased uptake in the right acetebular area and left proximal femur. The TMX was stopped and a luteinizing hormone-releasing hormone analog (goserelin 3.6 mg monthly) was started due to the metastatic evidence in the bone scan. She also received palliative radiotherapy on the metastatic areas at a dosage of 3000 cGy in ten fractions.

Six months after the diagnosis of bone metastases, the patient was admitted to the regional State hospital because of a one-week history of alteration in her bowel habits, abdominal colicky pain and distension, and nausea/vomiting that had aggravated in the previous 2 days. There was no history of hematemesis, melena, fever, or previous abdominal surgery. On physical examination, the abdomen was distended and bowel sounds were present. There was a tenderness and mild guarding of the lower abdomen. A tender mass was palpated in the right lower quadrant. Rectal examination revealed no abnormalities. No rash, lymphadenopathy, or hernia was detected.

Stool examination for occult blood was negative and tumor markers (CEA, CA19-9) were normal. The erythrocyte sedimentation rate was 14 mm per hour and white blood cell count was 10.6×10^3 per cubic millimeter. Other blood chemical and enzyme values were normal.

A plain film procedure done in the upright position revealed distended loops of gut with fluid levels being present. Abdominal ultrasonography did not reveal the nature of the mass. Then, abdominal computed tomographic scan showed marked ascending colonic wall thickening extending from the cecum to the proximal portion of the ascending colon, and this caused a narrowing of the lumen and also an infiltration of the pericolic fat (Fig. 1). The scan also revealed distended small bowel loops of gut, free fluid retention in the latero-choanal fascia, perihepatic, and right paracolic gutter and regional lymph nodes smaller than 1 cm in diameter. The patient underwent an exploratory laparotomy, which revealed a large, firm mass in the right abdomen and enlarged indurate lymph nodes in the mesocolon. The distal part of the terminal ileum and the right colon were thickened and indurated. A right-hemicolectomy with end-to-end anastomosis was performed. No evidence of liver, ovarian, uterine, or peritoneal involvement was observed. The postoperative course of recovery was uneventful.

On the examination of the right-hemicolectomy specimen, a thickening and rigidity of the colonic wall extending from the cecum to 6 cm segment of the ascending colon was observed. Microscopic examination revealed a diffuse infiltration by neoplastic cells of the intestinal wall. The tumor cells had invaded the muscularis propria and also the serosa. Seven of the twenty lymph nodes sampled were invaded by tumor. The gross appearance was fully consistent with that of a primary colorectal carcinoma with secondary involvement of local lymph nodes. However, because of a morphological similarity (Fig. 2A, B) to the previous breast cancer and the absence of dysplasia in adjacent colonic epithelium, the histological

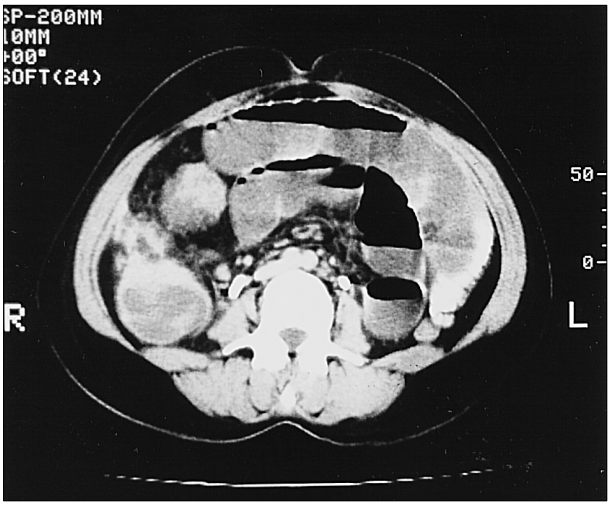

Fig. 1. CT scan demonstrates a heterogeneous soft-tissue mass that appeared to fill the cecum and the proximal portion of the ascending colon and dilated distended loops of gut with fluid levels.

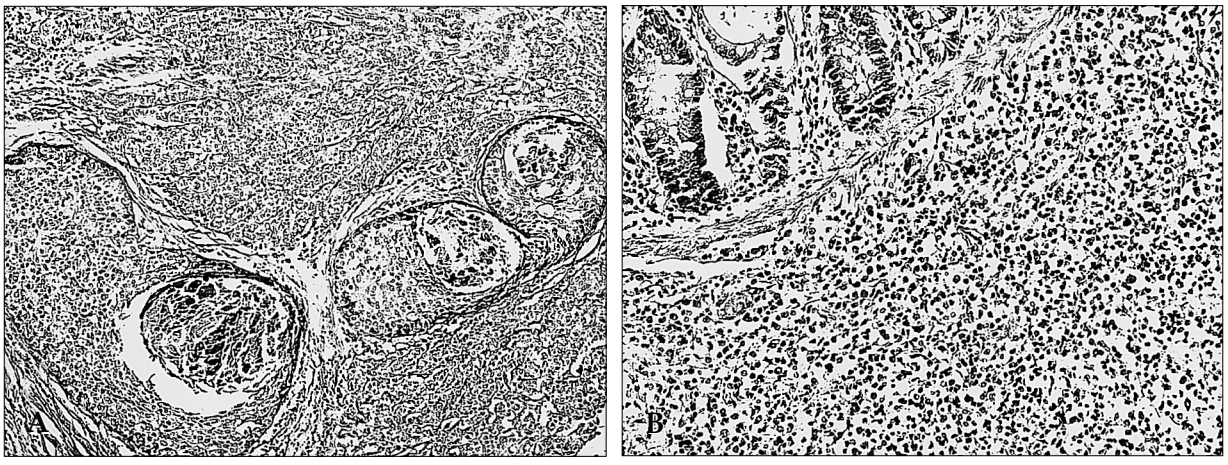

Fig. 2. (A) Mastectomy specimen obtained in 1997, showing infiltrating ductal and lobular mixed type carcinoma (H&E, × 100). (B). Right-hemicolectomy specimen, showing an intact mucosal epithelium and muscular and serosal involvement with tumor cells. The cells presenting characteristic pattern of metastatic lobular carcinoma, (H&E, ×100).

findings confirmed metastatic carcinoma. Unlike the original tumor, it was ER positive and PR negative. The cells stained positively for cytokeratin identifying their epithelial origin, and also gross cystic disease fluid protein-15 (GCDFP-15) (Fig. 3). After the operation, the patient was referred to our unit with the diagnosis of metastatic breast cancer. Postoperative abdominal computed tomographic scan and tumor markers (CEA, CA 15-3) were normal. She received 6 cycles of chemotherapy using 5-fluorouracil, adriamycin, and cyclophosphamide. Following her chemotherapy, megestrol acetate at a dosage of 160 mg daily was started. The patient is still alive 7 months after the diagnosis of colonic metastases.

Fig. 3. Positive staining with anti-GCDFP-15 (×100).

DISCUSSION

Only 5% to 15% of breast cancer patients have distant metastases at diagnosis.[7] Although the lymph nodes, lung, liver, or bones are the most common locations for distant metastases, a few cases of GI tract involvement have been reported.[4] Metastases to the intestinal tract from breast carcinoma are very rarely recogniozed in the clinic setting and its true incidence is not known. However, sixteen percent of patients with breast cancer have GI metastases at postmortem examination.[1] Of these, the most frequent organ involved is the stomach with colon involvement being less common. In a review of the literature, metastatic breast cancer that spread to the colon was found in only 20 of 720 (3%) cases.[8] In most instances, breast cancer metastatic to the large bowel that's detected during the life of patients have been described as case reports[2-5,9-11] (Table 1).

Taal et al. reported 17 cases of colorectal metastasis from breast cancer over a 15-year period.[5] The primary tumor was usually lobular carcinoma

Table 1. English Language Medical Literature Review for Breast Cancer Patients with Colonic Metastases

Reference (No.)	Patients (n)	Age (yrs)	Time from diagnosis	Primary breast cancer histology	Treatment	Outcome
Taal et al.*(5)	17	60†	53 months	Lobular 15	Resection + Systemic (3)	16 months‡
				Ductal 1	Radiotherapy (2)	
				NR 1	Systemic (12)	
Schwarz et al. (3)	1	78	0.25 years	Ductal/Lobular	Resection	NED (19 months)
Koutsomanis et al. (6)	1	65	4 years	Ductal	Resection + Systemic	NED (36 months)
Yokota et al. (2)	1	57	10 years	Ductal	Resection	NR
Vaidya et al. (9)	1	56	5 years	Ductal	Resection + Systemic	NR
Rabau et al. (4)	1	53	7 years	Lobular	Resection	NR
Gifaldi et al. (10)	1	86	10 years	Lobular	Resection + Systemic	NR
Voravud et al. (11)	1	74	0.5 years	Lobular	Resection	NR
Current case	1	38	5 years	Ductal/Lobular	Resection + Systemic	NED (7 months)

*Data of colonic and rectal metastases together (17 patients).
†Median (range 42 - 76).
‡Median survival.
NED, no evidence of disease; NR, not reported.

and patients presented their secondary condition on an average of 53 months after primary treatment. Their average survival time was 16 months. Schwarz et al. reported 7 cases with metastatic breast cancer mimicking a GI tract primary.[3] The average interval between breast cancer and GI metastasis was 6 years and the average survival time after presenting GI symptoms was 12 months. Lobular carcinoma was the predominant histological type and only one out of 7 patients had colonic metastases. For the current case, the interval between primary tumor diagnosis and colonic metastases was 59 months, and she is still alive 7 months after the diagnosis of colonic metastases.

Because of its rarity, its nonspecific clinical presentation and the variable radiographic features, the diagnosis of intestinal metastasis is difficult. In patients with history of breast cancer, isolated GI metastases are less common than benign disease processes or second primaries of the GI tract.[12] Therefore, a history of malignancy does not necessary imply GI tract metastases. Diagnostic imaging is rarely specific. In order to differentiate primary and metastatic tumors involving the GI tract, histopathological comparison of mammary and GI specimens is mandatory. The morphological similarity to the previous breast cancer and the absence of dysplasia in adjacent colonic epithelium suggests a metastatic growth. As seen in our patient, in the presence of mixed ductal and lobular infiltrative components within the primary, the metastatic growth pattern seems to favor lobular component, but again the mechanisms remain unclear.[3] Immunohistochemistry may also be useful in reaching the correct diagnosis. The ER or PR and GCDFP-15 are usually positive in metastatic breast carcinomas.[13,14] But it has been reported that up to 30 - 70% of primary colonic cancers are estrogen receptor positive.[15]

The patient may present with a variety of symptoms including asymptomatic abdominal mass, slight to severe pain or those symptoms suggesting an inflammatory bowel disease or primary GI cancer.[2] Acute presentation with perforation, GI bleeding or bowel obstruction has also been reported.[3] Obstruction of the colon does not commonly occur in cases of right sided lesions. As the lumen of the cecum is large, obstruction due to a primary malignant tumor is rare. However, a circumferential tumor can obliterate the lumen and cause an obstruction. In the current case, the patient presented with evidence of a partial bowel obstruction and abdominal surgery was performed for getting an exact diagnosis and also as a palliative treatment.

Surgery, radiation, and systemic therapy all have a place in the treatment of metastatic breast cancer. While local tumors are typically treated first with surgery and radiation (with an optional systemic therapy as an adjuvant), a multifocal disease process is usually treated with a systemic therapy. But the intestinal involvement of metastatic breast cancer suggests a systemic disease in most cases. Systemic hormonal or chemotherapy, either alone or as an adjunct to surgery, produces a favorable response in patients with GI metastases of breast cancer.[2,3,5,6] If a patient presents with acute or subacute symptoms as in our case, surgery is necessary for palliation and sometimes it is used for an exact diagnosis. Survival after diagnosis of GI metastases is poor with few patients surviving beyond two years. The average survival from time of recurrence is 12 to 16 months.[3,5]

Isolated GI metastases are very rare and are less common than a benign disease processes or second primaries of the intestinal tract in those patients with a history of breast cancer. But an alert physician should always consider the possibility of a metastatic disease process whenever a patient with such a medical history experiences and presents with GI symptoms.

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