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Rectal Carcinoma-Associated Metastasis to the Breast: A Case Report

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ABSTRACT

We report a case of carcinoma originating in the rectum that, during the disease course, presented metastasis in both mammary glands. Metastases to the breast are rare, and among those observed with greatest frequency are lymphoma-related infiltration, melanoma, and sarcomas. The presence of metastasis of rectal carcinoma in the breast is an unusual event. (J CANCEROL. 2014;1:36-40)

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INTRODUCTION

Colorectal cancer occupies third place in cancer incidence worldwide, placed below only lung and breast cancer[1]. Around 60-70% of patients are diagnosed at stage I-III, of which half will have recurrence and die from cancer. The survival of these patients has increased from between 3-5 months with the best support treatment up to 20-24 months with multidisciplinary management and the incorporation of novel combinations of chemotherapy and monoclonal antibodies[2-5]. This increase in survival has allowed for observation of uncommon sites of metastasis of colorectal carcinoma such as brain, bone, pleura, and breast. The latter is a rare site for extramammary-neoplasia metastatic disease; the reported frequency is 0.5-6.6% of all malignant neoplasias[6]. Melanoma, lymphomas, and sarcomas are the main neoplasias that involve metastasis to the breast. The first case in our experience is presented herein of rectal adenocarcinoma metastasis in mammary glands.

CASE REPORT

A female aged 36 years without important prior incidents who had a history of rectorrhagia and a non-quantified weight loss during five months of evolution. On medical examination, she had no relevant clinical data and on physical exploration, a tumor localized in the rectum 4 cm from the anal margin was palpated. Initial laboratory studies divulged slight anemia and normal blood chemistry and carcinoembryonic antigen (CEA). During colonoscopy, an ulcerated tumor was observed, localized in the distal third of the rectum; a biopsy of the lesion was performed. The histopathological study revealed poorly differentiated adenocarcinoma in rectal signet-ring seal cells (Fig. 1). Computed tomography (CT) study of the abdomen/pelvis demonstrated 2 cm thickening of the rectal wall without metastatic disease.

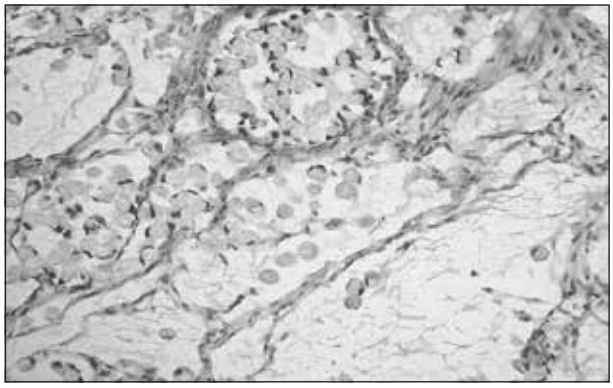

Figure 1. The histological slices show myxoid stroma separated by thin bands of vascularized, lax, fibrous connective tissue, among which there are neoplastic cells with rejection of the nucleus to the periphery (signet-ring seal cells) (H&E, 10×).

Abdominal-perineal resection with hysterectomy was performed on August 11, 2003 at another hospital. The pathological report was high-grade, colloid-type, mucinous adenocarcinoma with infiltration in muscle layers and serum; the anal mucosa also exhibited contiguity related infiltration and metastasis to two regional lymph nodes, which was staged as T3N1M0 = IIIB (AJCC 6th edition).

The patient received adjuvant treatment with radiotherapy (45 Gy) to pelvis from November 25 to December 24, 2003, as well as 12 cycles of adjuvant chemotherapy with the FOLFOX combination (folinic acid, 5-fluorouracil, oxaliplatin) from October 14, 2003, to March 30, 2004.

After 13 months of surveillance (to April 2005), the patient noted growth in both breasts, left axilla, and right groin. Two months later, the patient presented for medical examination; a tumor was documented in the left side of the abdomen and the presence was confirmed of a 9 cm tumor in right breast, a 10 cm tumor in left breast, with 2 cm left axilla and 2 cm right groin adenopathy. Blood studies determined a rise in serum-level CAE of 58.2 ng/ml (reference values, 0-10 ng/ml) and the presence of an abdominal tumor by CT (Fig. 2).

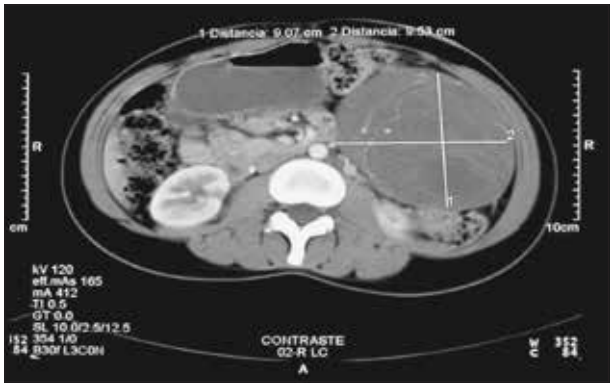

Figure 2. Computed tomography of the abdomen. Tumor in left side of the abdomen of 9.5 cm; heterogeneous and well delimited.

Heterogeneous fibroglandular tissue asymmetry was observed in the mammographic study, in addition to an increase in left-breast density, right-breast nipple retraction, and the presence of bilateral nodules (Fig. 3). Bilateral breast ultrasound (US) showed multiple nodular images of defined borders, vascularity in their interior, and bilateral subcutaneous tissue edema.

On July 28, 2005, exploratory laparotomy was conducted, with tumorectomy of a 45 40 cm cystic lesion in peritoneum and incisional biopsies of both breasts. The histopathology report was mucinous, poorly differentiated adenocarcinoma with signet-ring seal cells in surgical pieces. The complementary IHQ study was CEA- and cytokeratin 20-positive, while cytokeratin 7 (CK7) was negative (Fig. 4 and 5). Treatment was again administered with FOLFIRI (irinotecan, 5-fluorouracil and folinic acid) plus bevacizumab every two weeks, supported with colony-stimulating factor (CSF). The patient received nine treatment cycles with maximal response but short (4 months) duration. During application of this treatment scheme, the following were observed: neutropenia, nausea, vomiting, and grade 3 diarrhea, with two hospital stays. She also presented anemia and grade 2 asthenia. After cycle nine, disease progression was documented in the abdominal cavity with peritoneal carcinomatosis, with the latter in soft parts. The patient was observed clinically with greater deterioration of her general

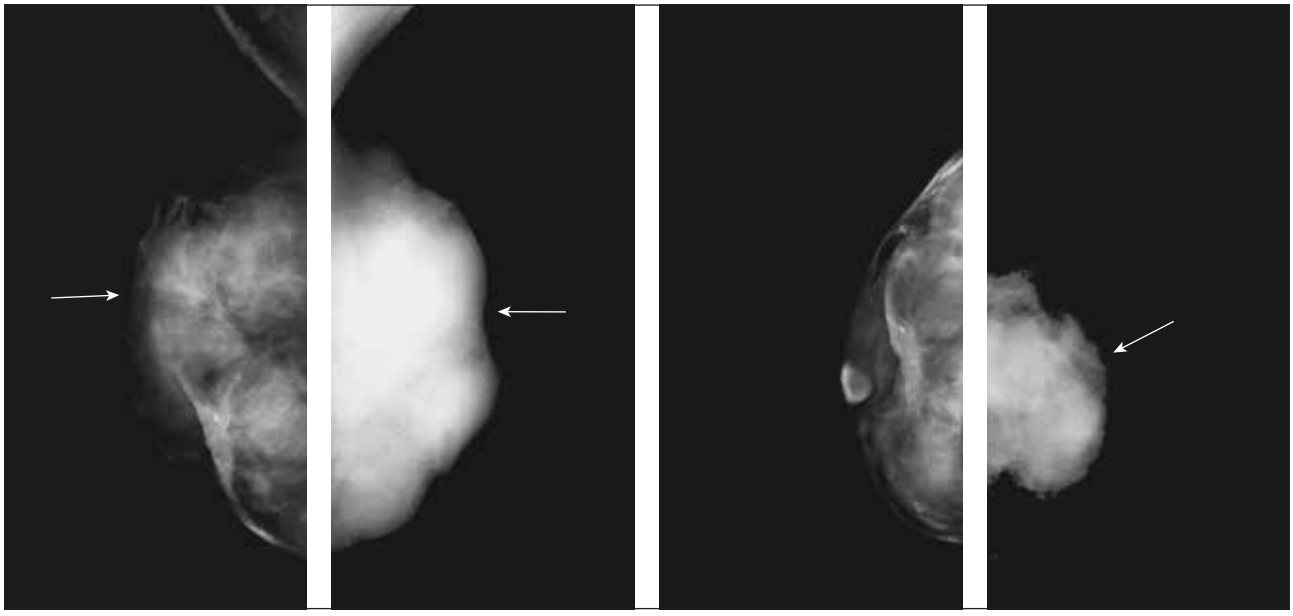

Figure 3. Bilateral mammography. Caudal cranium and lateral-medial oblique projections with evidence of tumors in both mammary glands, nodular.

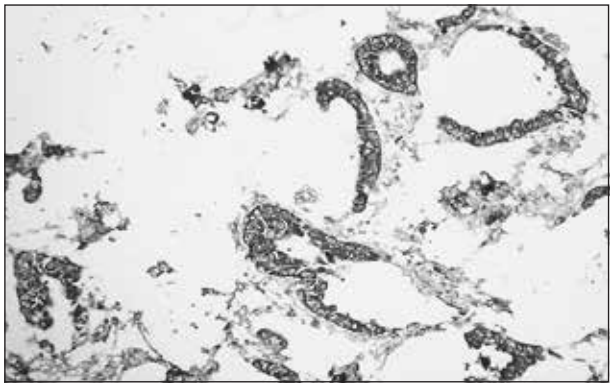

Figure 4. The immunohistochemical (IHQ) reaction with the anti-cytokeratin 20 antibody is positive in the cytoplasm of neoplastic cells (tobacco-brown in color) that form tubular structures of variables sizes (IHQ, 20×).

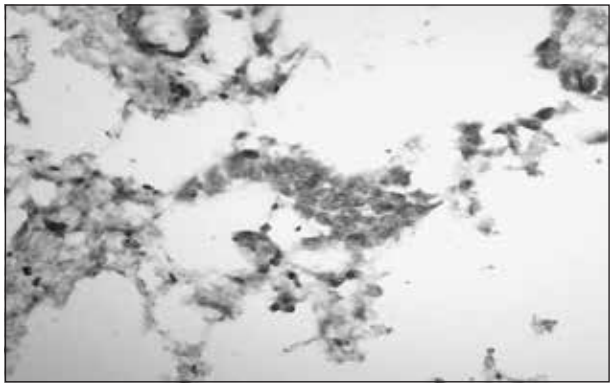

Figure 5. The immunohistochemical (IHQ) reaction with the anti-cytokeratin 7 antibody resulted negative in neoplastic cells (IHQ, 20×).

condition, and died two months afterwards due to tumor activity.

DISCUSSION

Mammary gland-associated neoplasias are infrequent and constitute 2.7% of all malignant lesions of this organ[7,8]. Reports of autopsies cite an incidence of 1.7-6.6% and clinical series of 0.5-1.3%[8]. The most common metastases in breast in order of frequency are as follows: lymphoma, melanoma, rhabdomyosarcoma, pulmonary neoplasias, ovarian neoplasias, and renal carcinomas[8,9]. Sporadically, metastases have been reported of thyroid, endometrial, cervicovaginal, and gastrointestinal origin[3] (Table 1).

Table 1. The most frequently found malignant neoplasias with infiltration or metastasis in breast (%)

Lymphoma	17
Melanoma	15
Rhabdomyosarcoma	12
Lung cancer	8
Ovarian cancer	8
Renal cancer	5
Leukemia	4
Cervical and thyroid cancer	4
Intestinal carcinoid	3
Epidermoid carcinoma of the head and neck	3
Leiomyosarcoma	2
Other	19

Alvarado, et al.[10] reported, in a series of 10,650 breast biopsies in a Mexican population group, 24 cases of metastatic neoplasias, whose origin corresponded to melanoma, sarcomas, and ovarian, lung, kidney, and gastrointestinal tract, but no rectal carcinomas.

On review of the literature, 10 cases have been recorded of rectal carcinomas that are metastatic to the breast during the past 25 years[11,12]. This is the first reported case in the Mexican population of bilateral metastatic rectal carcinoma to the mammary glands. The most common presentation form is unique lesions, superficial, with affectation of skin and lymph nodes. Metastatic disease in this patient was similar to that described in the literature, and affectation of both mammary glands, as in this report, is seen in up to 26% of cases, according to published series[13]. Diagnosis is carried out due to clinical suspicion upon metastatic disease, the antecedent prior to cancer in an extra-mammary site, mammography and US mammary images, and the histopathological study.

The majority of patients have a previous incidence of cancer at the time of metastatic disease, but metastases can be the first clinical manifestation in up to 25% of cases.

The findings in the mammography as well as in the mammary US in this clinical case are in agreement with the characteristics described for metastatic disease. The mammography showed variably sized, well-circumscribed tumors without spiculations, calcifications, or other desmoplastic reaction. In mammary US, solid, well-defined tumors can be found, hypo- or hyperechoic, with posterior acoustic shadow[9,13].

Definitive diagnosis is conducted by means of histopathological study; expression of CK7 and CK20 is considered the most useful tool in determining the origin of the neoplasia. The majority of mammary gland primary neoplasias are CK7-positive and CK20-negative, while colorectal carcinomas are CK7-negative and CK20-positive[11].

The breast metastatic disease scenario is considered one of poor prognosis because 80% of patients die within one year. However, due to the low incidence of metastatic disease of the rectum in breast tissue, the precise prognosis of this form of presentation is unknown. In this case report, the patient lived for 11 months from symptom initiation and recurrent disease signs (with breast tumors) until her death.

The patient received standard chemotherapy for metastatic disease, such as FOLFIRI, in addition to the antiangiogenic monoclonal antibody bevacizumab. The benefit has been confirmed of bevacizumab plus chemotherapy target therapy in the progression-free period and global survival for metastatic disease, the latter for up to 25 months[14-15]. Under the unusual circumstances of this patient, the real benefit is unknown.

REFERENCES

1. Global Cancer Facts and Figures 2nd edition. Atlanta, GA. American Cancer Society, 2011.
2. Poon MA, O´Connel MJ, Moertel CG, et al. Biochemical modulation of fluorouracil: Evidence of significant improvement of survival and quality of life in patients with advanced colorectal carcinoma. J Clin Oncol. 1989;7:1407-18.
3. Grem JL. Systemic treatment options in advanced colorectal cancer: perspectives on combination 5-fluorouracil plus leucovorin. Semin Oncol. 1997;24(Suppl 18):s18.8-18.18.
4. Meyerhardt JA, Mayer R. Systemic therapy for colorectal cancer. N Engl J Med. 2005;352:476-87.
5. Kopetz S, Chang GJ, Overman MJ, et al. Improved survival in metastatic colorectal cancer is associated with adoption of hepatic resection and improved chemotherapy. J Clin Oncol. 2009;27:3677-83.
6. Vizcaino I, Torregosa A, Higueras V, et al. Metastases to the breast from extramammary malignancies: a report of four cases and a review of literature. Eur Radiol. 2001;11:1659-65.
7. Lal RL, Joffe JK. Rectal carcinoma metastasic to the breast. Clin Oncol (R Coll Radiol). 1999;11:422-3.
8. Ançkay MN. Metastatic disease in the breast. Breast. 2002;11:526-8.
9. Vizcaino I, Torregosa A, Higueras V, et al. Metastases to the breast from extramammary malignancies: a report of four cases and a review of literature. Eur Radiol. 2001;11:1659-65.
10. Alvarado Cabrero I, Carrera Álvarez M, Pérez Montiel D, Tavassoli FA. Metastases to the breast. Eur J Surg Oncol. 2003;29:854-5.
11. Mihai R, Christie-Brown J, Bristal J. Breast metastases from colorectal carcinoma. Breast. 2004;13:155-8.
12. Van Rossen C, et al. Breast metastases from colorectal carcinoma. Breast. 2004;14:80-1.
13. Bartella, Kaye J, Perry NM, et al. Metastases to the breast revisited: radiological-histopathological correlation. Clin Radiol. 2003;58:524-31.
14. Hurwitz H, Fehrenbacher L, Novotry, W et al. Bevacizumab plus irinotecan, fluorouracil and leucovorin for metastatic colorectal cancer. N Engl J Med. 2004;350:2335-42.
15. Berry SR, Cunningham D, Michael M, et al. Preliminary safety of bevacizumab with first-line FOLFOX, CapOx, FOLFIRI and capecitabine for mCRC first BEA trial. J Clin Oncol. 2006;24:154s.