

# Metastatic Carcinoma of the Breast Mimicking Clinically and Histologically a Primary Gastric Carcinoma: A Case Report

Yassine Bouhtouri<sup>1\*</sup>, Ihssan Elouarith<sup>2</sup>, Moad Belouad<sup>1</sup>, Abdelhamid Benlghazi<sup>1</sup>, Moulay Abdelah Baba Habib<sup>1</sup>, Moulay Mehdi El Hassani<sup>1</sup>, Mohamed Oukabli<sup>2</sup>, Jaouad Kouach<sup>1</sup>

<sup>1</sup>Department of Gynecology and Obstetrics, Military Hospital of Instruction Mohamed V Rabat, Rabat, Morocco

<sup>2</sup>Department of Anatomy and Pathology, Military Hospital of Instruction Mohamed V Rabat, Rabat, Morocco

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\*Corresponding author: Yassine Bouhtouri

Department of Gynecology and Obstetrics, Military Hospital of Instruction Mohamed V Rabat, Rabat, Morocco

## Abstract

The stomach is one of the frequent sites of metastasis from invasive lobular carcinoma of the breast. The clinical presentation and the endoscopic findings for metastasis carcinoma are nonspecific and may mimic that of a primary gastric tumor. The distinction between these two neoplasms may be very difficult but essential as the basis of the treatment is different. Histological and immunohistochemical analyses are the gold standard for establishing the diagnosis of the primary site. We report the case of a 68-year-old patient with metastatic breast cancer mimicking a primary stomach cancer.

**Keywords:** Breast, Mimicking Clinically, Gastric, immunohistochemical.

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## INTRODUCTION

Breast cancer is the most frequent cancer of women that is still a leading cause of mortality. Invasive lobular carcinoma is the second most common type of invasive breast carcinoma after ductal carcinoma. Bone, brain, liver, and lung are the most common distant metastatic sites of breast cancer. However breast neoplasms, metastasizes rarely to the gastro-intestinal tract, and when it occurs, the stomach remains one of the most frequent sites of mammary carcinoma, mainly from the lobular type. We report a case in which clinical and pathological features make it exceptional, because, in front of digestive clinical symptoms and a histological study showing a carcinomatous proliferation made up of independent ring cells, the diagnosis of a mammary carcinoma can be mistaken for a primary gastric carcinoma by the pathologist, mainly in the absence of clinical data.

## CASE REPORT

This is the case of 68 years-old female who presented with a 4–5 months history of epigastric pain associated with bleeding sine 1 day. His past medical

history was relevant for diabetes and a notion of right mastodynia for 8 months.

Clinical examination revealed normal vital signs with palpation of a right breast nodule. The patient underwent gastric endoscopy. Which aimed an indurated fundic mucosa, ulcerated and completely infiltrated, suggesting linitis or lymphoma. A biopsy of the lesions observed was realised.

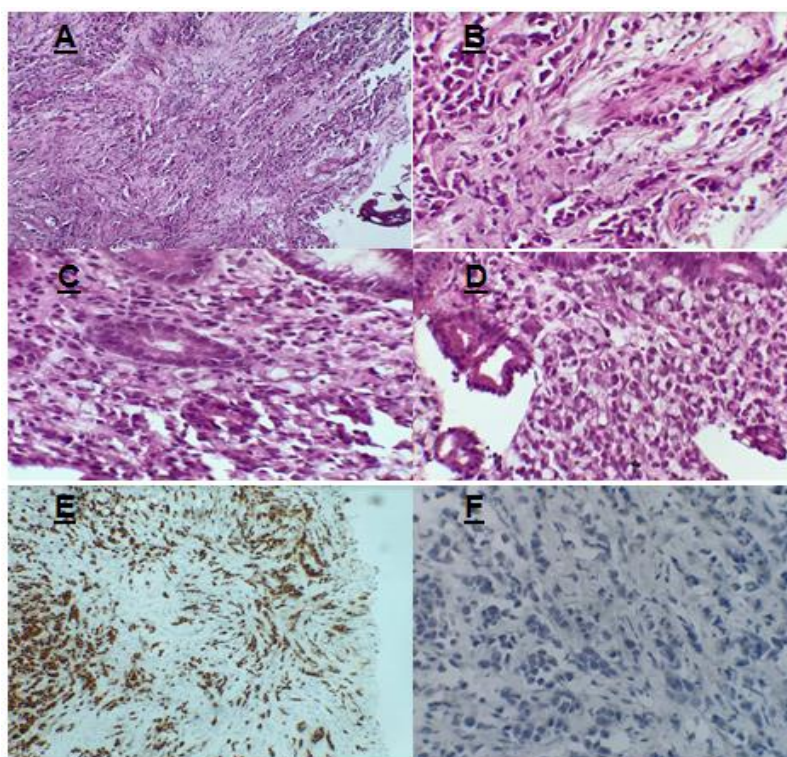
An abdominal CT scan was also carried out, it revealed a regular gastric thickening suggesting gastric linitis. Simultaneously, a breast MRI was performed it showed a breast mass measuring 17x 9mm.

The histological study showed a fundal mucosa which is the site of a tumor proliferation of diffuse and single files architecture. Tumors cells are monomorphous and discohesive with vacuolated cytoplasm, and round to slightly irregular nuclei. The tumor stroma was fibrous. Because of this morphological aspect, and taking into consideration the clinical and radiological information, an immunohistochemical study was carried out to

determine the primary gastric or mammary origin of the tumor.

Immunohistochemical staining demonstrated that tumor cells showed positive staining for

cytokeratins 7, GATA3 but negative for CK20, Hormone receptors. Given these immunohistochemical data, the diagnosis of breast cancer metastasis to the stomach was retained.



**Fig-1: Histopathological features of metastatic carcinoma of the breast to the stomach**

A: H&E-staining showed tumor proliferation arranged in single files, cords and single cells (10x original magnification).

B: Cytologically, Tumor cells are discohesive, small, and monomorphic and lacking marked atypia

C- D: Vacuolated cytoplasm (400x original magnification).

E: The tumor cells are immunopositive for GATA3 (200x original magnification).

F: The tumor cells are negative for CK20 (400x original magnification).

The patient subsequently underwent a biopsy of her breast mass, which confirmed the diagnosis of invasive mammary carcinoma of the lobular type. The patient was referred to the oncology department for chemotherapy as initial treatment.

## DISCUSSION

Breast cancer is the most common type of cancer among women worldwide [1]. Invasive lobular carcinoma is the second most common type of breast cancer (5% to 15%) after ductal carcinoma [2]. The most common distant metastatic sites of breast cancer are the bone, brain, liver, and lung [3]. The predictive sites of metastasis are different between ILC and IDC.

The mechanisms of this difference are poorly understood, some authors have linked it to a loss of expression of E-cadherin by tumor cells in infiltrating lobular carcinoma [4]. Classic ductal carcinoma of the breast tends to spread to the lung, liver, and brain [5]. Lobular carcinoma usually metastasizes to bones, gynecological organs, peritoneum and retroperitoneum [6]. GI metastases are more frequent with ILC than IDC with the incidence reported to be from 2% to 18% [7].

Clinically, the symptoms of gastric metastasis of breast carcinomas are non-specific and may resemble a primary digestive carcinoma. It includes epigastric pain, nausea and vomiting, anorexia, weight loss, dysphagia and bleeding [8, 9].

Endoscopic examination may present as normal in 50% of the cases, because gastric metastases are confined to the submucosal and seromuscular layers. (1); endoscopy may reveal different gastric lesions including polypoid masses, volcano-like ulcers, non-ulcerative masses; and multiple nodules of varying sizes. Gastric metastases may spread throughout the mucosa and infiltrate the gastric wall. In that case the endoscopic appearance may resemble primary gastric cancer and complementary investigation becomes essential to distinguish these two neoplasms [8, 9].

The definitive diagnosis is mainly based on deep and extensive endoscopic biopsy and histopathological examinations. In case of gastric metastases from invasive lobular carcinoma of the breast, histological study shows a gastric tissue infiltrated by carcinomatous proliferation composed predominantly or exclusively of non-cohesive tumor cells, which are characterized by a central, optically clear, globoid droplet of cytoplasmic mucin with an eccentrically placed nucleus [8]. This aspect is very similar to signet-ring carcinoma of the stomach; therefore it does not allow the differentiation between the mammary or gastric origin of the tumor. Immunohistochemistry is crucial for differentiating between these two neoplasms: Therefore immunohistochemical markers, including, estrogen receptor, progesterone receptor, CK7, CK20, GCDP15, and GATA3 are essential to differentiate primary gastric.

Hormone receptors are evaluated in infiltrative breast cancer because of their utility in predicting clinical benefits from endocrine therapy and its use in various clinical treatment algorithms. These receptors cannot represent suitable markers to distinguish between primary gastric carcinoma and breast cancer metastasis to the stomach because they can be negative in some infiltrative breast cancer. On the other hand, between 32% and 12% of patients with cancer of a gastric origin were ER and PR positive [10].

GCDP15 and GATA3 has been proven sensitive and specific immune-markers for identifying a malignant lesion of breast origin [11, 12].

In a literature review, the positive rates of CK7 in the metastatic carcinomas from breast cancer and primary gastric cancers were respectively 90% and 50% to 55%. However, CK20 is strongly positive in primary gastric and colorectal cancers but negative in breast carcinomas [13].

Generally, when the histological study shows a tumor proliferation made of independent tumor cells whose mammary or primary gastric origin is difficult to specify, the immunohistochemical study becomes essential. Metastatic infiltrative breast carcinoma to the stomach is generally positive for CK7, GATA3 and CD15 but negative for CK20 [14].

In the case of gastric lesion, the distinction between mammary or gastric origin is crucial given the difference in the therapeutic strategies of these two entities. A primary GI malignancy would be treated initially with surgery. However, gastric metastases from invasive lobular carcinoma of the breast would typically be treated with systemic chemotherapy [7].

## CONCLUSION

Differentiating lobular carcinoma of the breast with signet ring features from gastrointestinal signet ring carcinoma is imperative because of the therapeutic implications.

The distinction between these two entities represents a real challenge, and requires detailed clinical examination, histological analysis and immunohistochemical study.

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