

Metastatic Gastric Linitis Plastica from Breast Cancer: A Case Report

S. Jellal, M.A. Lkouss, A. Ait Errami, S. Oubaha, Z. Samlani and K. Krati

Department of Gastroenterology, Mohammed VI University Hospital, Marrakech, Morocco

ARTICLE INFO

Article history:

Received: 28 February 2022;

Received in revised form:

5 July 2022;

Accepted: 13 July 2022;

Keywords

Breast Cancer,
Metastatic Gastric Linitis
Plastica.

ABSTRACT

Breast cancer is the most common cancer in women worldwide. In Morocco, it is a real public health issue. It is responsible for lymphatic, bone, pulmonary, hepatic and cerebral metastases; gastrointestinal metastases remain however rare (0.3%) . Gastric linitis plastica is the most frequent form of gastrointestinal metastasis. The diagnosis of gastric linitis plastica is based mainly on endoscopy and histology. Immunohistochemistry plays a fundamental role in differentiating primary from secondary gastric cancer. Therapeutic modalities usually include palliative chemotherapy and hormonal therapy. A 27 years old female patient, admitted to the hospital because of developing progressive distension of the abdomen associated with abdominal pain, asthenia, anorexia and weight loss, she denied having haematemesis or jaundice. On examination, the patient appeared pale, cachectic with significant loss of body fat and muscle but she was haemodynamically stable and afebrile. His abdomen was soft, but tender. No masses or organomegaly were palpated. On percussion, a shifting dullness was observed, which suggested ascites. Normal bowel sounds were present. at chest examination a right breast mass was noted. Initial investigations showed a hypoalbuminemia (14g/l), a low hemoglobin (9 g/dl), CT scan showed diffuse thickening of the gastric wall and a large peritoneal effusion , indurated right-sided breast mass (estimated at 2 cm) was noted on breast radiological investigations. This examination was followed by upper endoscopy, which showed thickened, erythematous and rigid gastric mucosa extending from the gastric fundus to the distal body with poor distensibility. Pathologic evaluation of breast mass biopsy revealed infiltrating ductal carcinoma that tests positive for the human epithelial growth factor receptor 2 (HER2) on immunohistochemical studies. Gastric biopsies showed an adenocarcinoma with the presence of signet ring cell type. Immunohistochemistry excluded gastrointestinal origin. There was a strong immunoreactivity for estrogen and progesterone receptors, cytokeratin (CK7) and HER2. Histological exam concluded for metastatic breast cancer with gastric linitis plastica. After Multidisciplinary team meeting, it was decided to combine chemotherapy with hormone therapy. The patient died before the treatment was started..

© 2022 Elixir All rights reserved.

Introduction

Breast cancer is the most common cancer in women worldwide. In Morocco, it is a real public health issue. It is responsible for lymphatic, bone, pulmonary, hepatic and cerebral metastases; gastrointestinal metastases remain however rare (0.3%) [1]. Gastric linitis plastica is the most frequent form of gastrointestinal metastasis [3].

The diagnosis of gastric linitis plastica is based mainly on endoscopy and histology.

Immunohistochemistry plays a fundamental role in differentiating primary from secondary gastric cancer.

Therapeutic modalities usually include palliative chemotherapy and hormonal therapy.

In this article, we report the observation of a metastatic gastric linitis plastica from breast cancer.

Case presentation:

A 27 years old female patient, admitted to the hospital because of developing progressive distension of the abdomen associated with abdominal pain, asthenia, anorexia and weight loss, she denied having haematemesis or jaundice.

On examination, the patient appeared pale, cachectic with significant loss of body fat and muscle but she was haemodynamically stable and afebrile. His abdomen was soft, but tender. No masses or organomegaly were palpated. On percussion, a shifting dullness was observed, which suggested ascites. Normal bowel sounds were present. at chest examination a right breast mass was noted.

Initial investigations showed a hypoalbuminemia (14g/l), a low hemoglobin (9 g/dl), CT scan showed diffuse thickening of the gastric wall and a large peritoneal effusion (Figure 1), indurated right-sided breast mass (estimated at 2 cm) was noted on breast radiological investigations.

This examination was followed by upper endoscopy, which showed thickened, erythematous and rigid gastric mucosa extending from the gastric fundus to the distal body with poor distensibility.

Pathologic evaluation of breast mass biopsy revealed infiltrating ductal carcinoma (Figure 2) that tests positive for the human epithelial growth factor receptor 2 (HER2) on immunohistochemical studies. Gastric biopsies showed an adenocarcinoma with the presence of signet ring cell type

(Figure 3). Immunohistochemistry excluded gastrointestinal origin. There was a strong immunoreactivity for estrogen and progesterone receptors, cytokeratin (CK7) and HER2. Histological exam concluded for metastatic breast cancer with gastric linitis plastica.

After Multidisciplinary team meeting, it was decided to combine chemotherapy with hormone therapy. The patient died before the treatment was started.



Figure 1. CT scan showed diffuse thickening of the gastric wall and a large peritoneal effusion

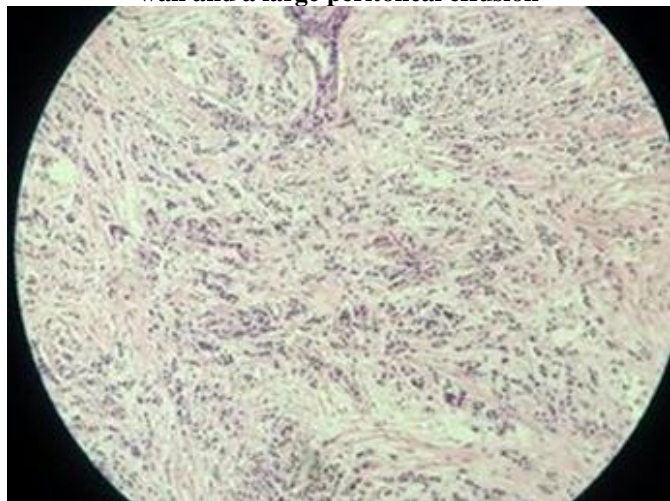


Figure 2. This figure shows an infiltrating ductal carcinoma

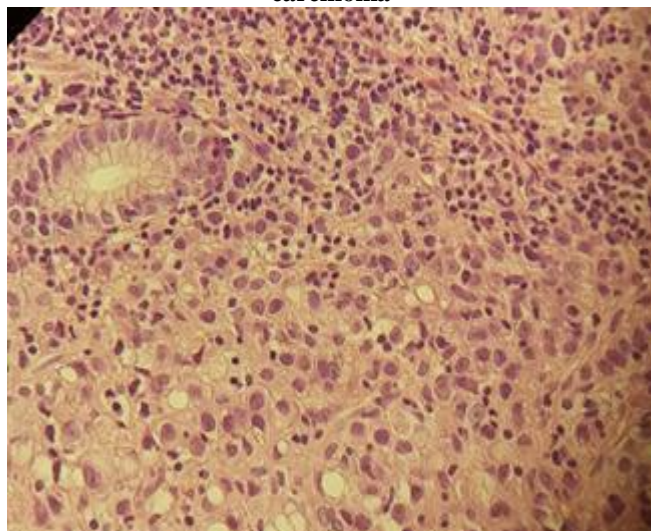


Figure 3. This figure shows an adenocarcinoma with the presence of signet ring cell type

Discussion

Breast cancer was the most common cancer in women worldwide and this is also the case in Morocco, with a standardized incidence of 35.04 per 100,000 women/year according to the RCRC [15]. It is a real public health problem. It is responsible for lymphatic, bone, lung, liver and brain metastases. However, gastrointestinal metastases remain rare with an incidence of about 0.3% in the retrospective series of 12,001 cases of metastatic breast cancer by McLemore EC and al [1], less than 1% according to Borst and Ingold [4] and 8-18% in autopsy series [5]. Compared to invasive ductal carcinoma (IDC), invasive lobular carcinoma (ILC) is more likely to cause such metastases [2]. In a cohort of 77 cases of gastric metastases of breast cancer reported in the literature, 51 cases were secondary to ILC and 19 to IDC [6]. In other studies, including that of Switzer and al 5% of gastric metastases were secondary to IDC [7] and in the TAAL and al 70% were ILC [8].

The median age of discovery of metastatic gastric cancer varies in the literature between 59 and 61 years [3,7].

The average time between the diagnosis of breast cancer and the occurrence of gastric metastasis was 7 years in McLemore EC and al [1] and 5 years in the series of XU and al [6], hence the interest of requesting an upper endoscopy in first intention in patients with a history of breast cancer and presenting digestive symptoms. However, in 21.3% of cases, gastric metastases were discovered in parallel with breast cancer [6] and the initial discovery of gastric metastases before breast cancer accounted for 17.9% of cases [6].

The coexistence of other metastatic locations at the time of diagnosis was described in 62% of cases in the series of Xu and al [6]. In particular, peritoneal carcinosis was found in 46.2% of cases.

The clinical presentation of metastatic gastric cancer is similar to the primary gastric cancer with non-specific symptoms [6,1].

In the review by Taal and al, upper endoscopy was performed in 16,000 patients with breast cancer. Endoscopic exploration revealed gastric metastases in 51 patients: as gastric linitis with diffuse infiltration in the majority of cases (57%), 18% of patients had a localized ulcerated or polypoid lesion; pyloric stenosis and localized gastric infiltration were present in 12% and 14% of cases respectively. Gastric biopsies were positive in more than 80% of cases; they were negative in 10 cases. The diagnosis in these cases was made on scannographic imaging and echo-endoscopy data [8].

Gastric linitis plastica is the most frequent form of gastric metastasis. This can be explained by the hematogenous and lymphatic dissemination of the tumor cells that reach the capillaries and subsequently infiltrate the submucosa [3]. Its diagnosis was previously based on morphological arguments obtained by endoscopy, echo-endoscopy and radiology revealing an aspect of a rigid stomach due to the thickening of the gastric wall by a neoplastic process in association with compatible histology: fibrous stroma and presence of signet ring cell type may be negative [8] hence the interest in performing deep biopsies.

Gastric tumors can in turn be responsible for breast metastasis [9], which makes the diagnosis difficult especially in the absence of a previous history of breast cancer, hence the fundamental interest of immunohistochemistry to differentiate a primary from a secondary gastric cancer.

The antigen BRST2 (gross-cysticdisease-fluid-protein-15) is considered a highly specific marker for the diagnosis of breast cancer metastases with a sensitivity of 55-76% and a

specificity of 95-100% [10, 3]. Cytokeratin CK7 expression is strongly positive in almost 90% of breast cancers; it is positive in only 50-64% of cases in gastric metastases of breast cancer [11, 12]. The demonstration of strong positive estrogen and progesterone receptors is in favor of breast cancer metastasis [13], whereas the CK20 receptor is typically positive in primary gastric cancers [14]. HER2 receptor expression is not useful for diagnosis as it can be positive in both primary and metastatic gastric cancer.

There is no consensus regarding the treatment of gastric metastatic breast cancer, given the low incidence of this metastatic form and the low number of published series on this subject. Treatment is mainly discussed in multidisciplinary consensus meetings.

Treatment modalities generally involve palliative chemotherapy and hormonal therapy; palliative surgery is reserved for cancers complicated by hemorrhage, stenosis, or perforation. [8]

The median survival was 10 months in Taal and al and 28 months in McLemore EC and al [1].

Conclusion

Gastrointestinal metastases from breast cancer are rare. Gastric linitis represents the most frequent form of this type of metastasis. Diagnosis is often late, helped by immunohistochemistry which plays a fundamental role. The treatment remains palliative and the prognosis is poor.

References

[1] E. C. McLemore et al., 'Breast Cancer: Presentation and Intervention in Women With Gastrointestinal Metastasis and Carcinomatosis', *Ann. Surg. Oncol.*, vol. 12, no. 11, pp. 886–894, Nov. 2005.

[2] H. Wang, C. Zhang, J. Zhang, L. Kong, H. Zhu, and J. Yu, 'The prognosis analysis of different metastasis pattern in patients with different breast cancer subtypes: a SEER based study', *Oncotarget*, vol. 8, no. 16, Apr. 2017.

[3] W. K. Eo, 'Breast Cancer Metastasis to the Stomach Resembling Early Gastric Cancer', *Cancer Res. Treat. Off. J. Korean Cancer Assoc.*, vol. 40, no. 4, pp. 207–210, Dec. 2008.

[4] M. J. Borst and J. A. Ingold, 'Metastatic patterns of invasive lobular versus invasive ductal carcinoma of the breast', *Surgery*, vol. 114, no. 4, pp. 637–641; discussion 641-642, Oct. 1993.

[5] K. Koike, K. Kitahara, M. Higaki, M. Urata, F. Yamazaki, and H. Noshiro, 'Clinicopathological features of gastric metastasis from breast cancer in three cases', *Breast Cancer*, vol. 21, no. 5, pp. 629–634, Sep. 2014.

[6] L. Xu et al., 'Metastatic gastric cancer from breast carcinoma: A report of 78 cases', *Oncol. Lett.*, vol. 14, no. 4, pp. 4069–4077, Oct. 2017.

[7] N. Switzer, A. Lim, L. Du, R. Al-Sairafi, K. Tonkin, and D. Schiller, 'Case series of 21 patients with extrahepatic metastatic lobular breast carcinoma to the gastrointestinal tract', *Cancer Treat. Commun.*, vol. 3, pp. 37–43, 2015.

[8] B. G. Taal, H. Peterse, and H. Boot, 'Clinical presentation, endoscopic features, and treatment of gastric metastases from breast carcinoma', *Cancer*, vol. 89, no. 11, pp. 2214–2221, 2000.

[9] T. Sato et al., 'Metastatic breast cancer from gastric and ovarian cancer, mimicking inflammatory breast cancer: report of two cases', *Breast Cancer Tokyo Jpn.*, vol. 15, no. 4, pp. 315–320, 2008.

[10] G. P. Bravo Neto, E. G. dos Santos, F. C. Victor, and C. E. de S. Carvalho, 'Lymph node metastasis in early gastric cancer', *Rev. Col. Bras. Cir.*, vol. 41, no. 1, pp. 11–17, Feb. 2014.

[11] F. Hara et al., 'Metastatic Breast Cancer to the Stomach Resembling Early Gastric Cancer', *Case Rep. Oncol.*, vol. 3, no. 2, pp. 142–147, Apr. 2010.

[12] A. Iesato et al., 'Breast metastases of gastric signet-ring cell carcinoma: a report of two cases and review of the literature', *OncoTargets Ther.*, vol. 8, pp. 91–97, 2015.

[13] P. Sarkut, A. Ozer, B. Gulcu, E. Ozturk, S. Gokgoz, and N. Ugras, 'An extremely rare cause of gastric outlet: breast lobular carcinoma metastases to stomach', *Breast J.*, vol. 20, no. 3, pp. 312–313, Jun. 2014.

[14] T. Tot, 'The role of cytokeratins 20 and 7 and estrogen receptor analysis in separation of metastatic lobular carcinoma of the breast and metastatic signet ring cell carcinoma of the gastrointestinal tract', *APMIS Acta Pathol. Microbiol. Immunol. Scand.*, vol. 108, no. 6, pp. 467–472, Jun. 2000.

[15] L'édition 2012 du Rapport du Registre des Cancer de la Région du Grand Casablanca