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Case report

# Mucinous carcinoma of the breast: Diagnosis and management of an unusually young patient ☆

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ABSTRACT

Mucinous carcinoma of the breast is a type of well-differentiated adenocarcinoma, a rare subtype of infiltrating ductal carcinoma. It represents approximately 2% of all invasive breast carcinomas. The mean age of presentation is 65 years, with an incidence of 1% in women younger than 35 years. Depending on the mucin content of the carcinoma, they are described as pure or mixed; the distinction between the 2 is important for prognosis and

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treatment. The treatment of special types of breast cancer is still controversial due to the limited amount of evidence, however, the main treatment for breast cancer is still surgery. We present a case of a 29-year-old patient with mucinous carcinoma of the breast with a delay in its management, but with a favorable postoperative result.



## Introduction

Mucinous carcinoma of the breast is a type of well-differentiated adenocarcinoma, a rare subtype of infiltrating ductal carcinoma. It typically contains abundant extracellular mucin, excreted by more than 90% of tumor cells [1]. It represents approximately 2% of all invasive breast carcinomas [2]. The mean age of presentation is 65 years, with an incidence of 1% in women younger than 35 years. Half of the patients present with palpable abnormalities, however, the other half are diagnosed with mammography [3].

We present a case of an unusually young patient with mucinous carcinoma of the breast, diagnosed late, but with successful medical and surgical treatment.

## Case report

A 29-year-old female patient with no medical or family history. She came to the outpatient service due to a palpable mass in the left breast that was painless on palpation, without weight loss, and without constitutional symptoms. Physical examination revealed a mobile mass in the lower quadrant of the left breast. The ultrasound revealed a lesion classified as BI-RADS 4A (Fig. 1), a histopathological study was indicated, however, the patient decided to delay study for 2 years. After 2 years, she returned to the clinic, finding on physical examination a mobile mass of 5 × 4 cm, not painful, without skin retraction or discharge from the nipple. A pathological study was performed that reported mucinous carcinoma without lymphovascular or perineural invasion with ER +++ 90%, PR 90%, HER2 negative, Ki67 positive in 15% (T3N0M0).

One month later, a mammographic control was performed, cataloged as BI-RADS 6, observing an irregular mass with circumscribed angled contours, with amorphous microcalcifications, and a nodule of 18 cc in volume (Fig. 2). It was decided to perform neoadjuvant treatment with Placitaxel 150 g/wk for 12 weeks.

After 5 months, the patient completed neoadjuvant treatment with a taxane phase, with a partial response of 60%, showing a 7.8 cc nodule in a new mammogram (Fig. 3), starting an anthracycline phase for 3 months, after which she was performed a mastectomy modified radical with uncomplicated breast reconstruction. Follow-up at 36 months without tumor recurrence with new images showing no alterations (Fig. 4).

## Discussion

Mucinous carcinoma of the breast commonly presents as well-circumscribed, round, or lobular masses, and the remaining cases presented with focal asymmetry, with lower lymph node involvement rates than infiltrating ductal carcinoma. On mammography, pure mucinous carcinomas appear as a well-defined, smooth, lobulated mass and on palpation they have a firm to soft texture, depending on their higher mucin content [4], as in our patient. Mixed lesions have infiltrating, spiculated, or poorly defined margins and may cause a surrounding fibrous stromal reaction; due to the varied histological composition, mixed mucinous lesions tend to be much firmer on palpation [5].

The pathologic examination, mucinous carcinomas are round, circumscribed, nonencapsulated tumors with a typical gelatinous cut surface [6]. MRI features in the pure subtype combine benign and malignant features. On mammography, ultrasound and magnetic resonance imaging (MRI), it presents as a well-circumscribed lobulated mass and, therefore, can be confused with a benign lesion [7]. Compared with other benign

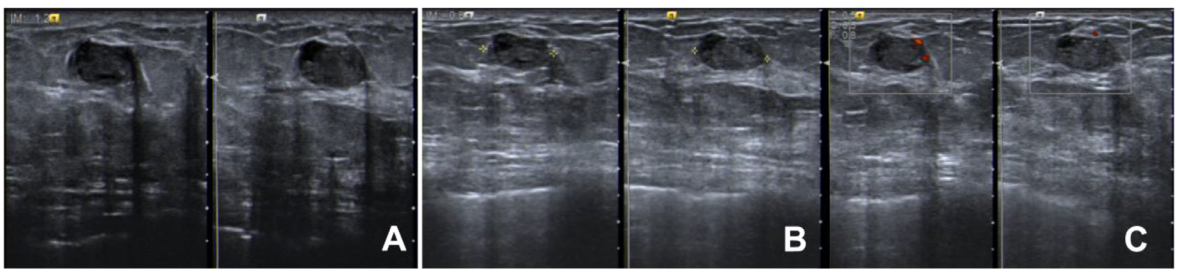


**Fig. 1 – Mammography. (A and B) Left breast, in the radius of 9 to 5 cm from the nipple, a predominantly hypoechoic complex nodule with anechoic areas is identified. (C) Does not show vascularity after Doppler application, which measures approximately 11 x 12 x 7 mm. It is classified as BI-RADS 4 A.**

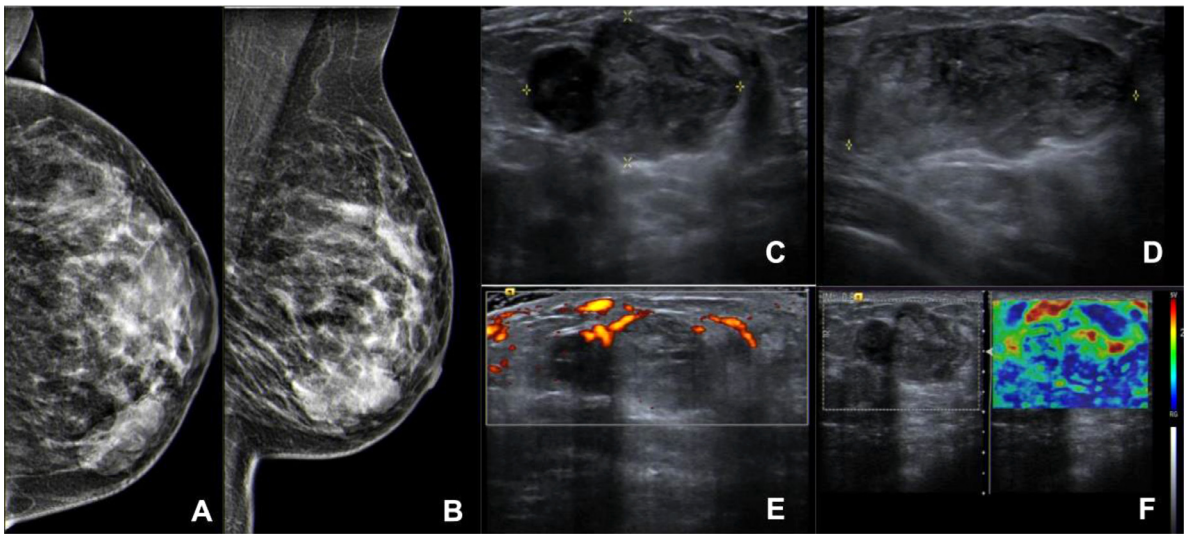


**Fig. 2 – (A and B) In mammography in CC and OML projections in the lower and inner quadrant of the left breast, an irregular mass is observed, with circumscribed, angular contours, which is associated with amorphous microcalcifications, which by ultrasound corresponds to a nodule heterogeneous, predominantly hypoechoic. (C and D) Mass with peripheral vascularity on color Doppler application. (E) Rigid pattern to the application of elastography. (F) Mass approximately 47 x 36 x 19 mm for a volume of 18 cc, it is cataloged as BI-RADS 6.**

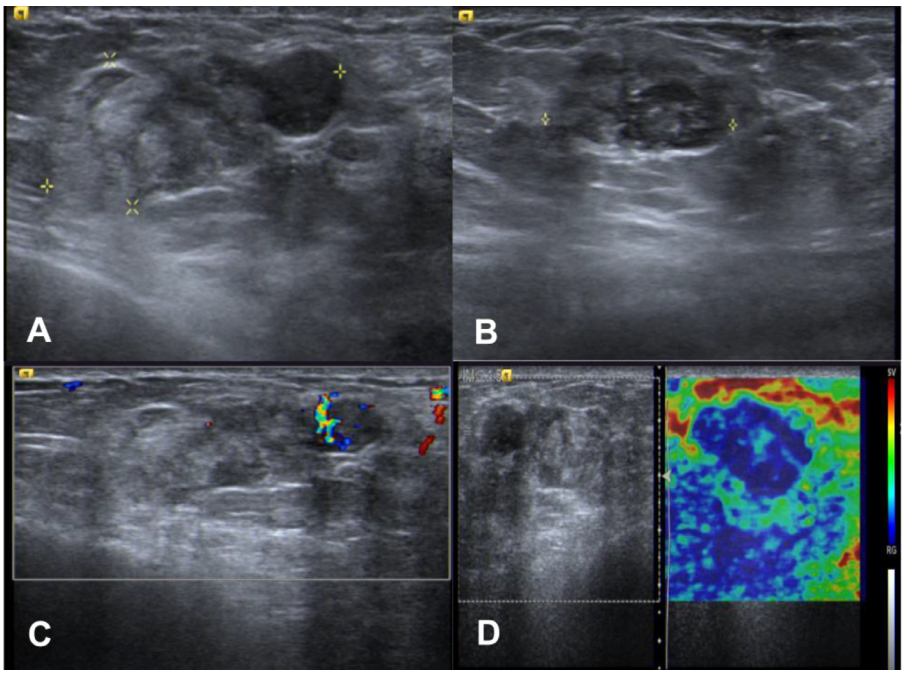


**Fig. 3 – (A and B) In the left breast, in the lower inner quadrant, a nodule with a known diagnosis is observed, with similar characteristics described in previous ultrasounds, currently measuring 38 x 16 x 24 mm for a volume of 7.8 cc. (C and D) With peripheral vascularity on color Doppler application Its dimensions have decreased compared to previous studies. It is classified as BI-RADS 6.**

and malignant lesions, mucinous carcinomas show markedly high diffusion coefficient values on MRI.

According to the World Health Organization, microscopically, mucinous carcinoma is characterized by a proliferation of groups of small, uniform cells floating in large amounts of extracellular epithelial mucin, sufficient to be visible to the naked eye [8]. Depending on the mucin content of the carcinoma, they are described as pure or mixed; the distinction between the 2 is important for prognosis and treatment [2]. Pure mucinous lesions are defined by the composition of the

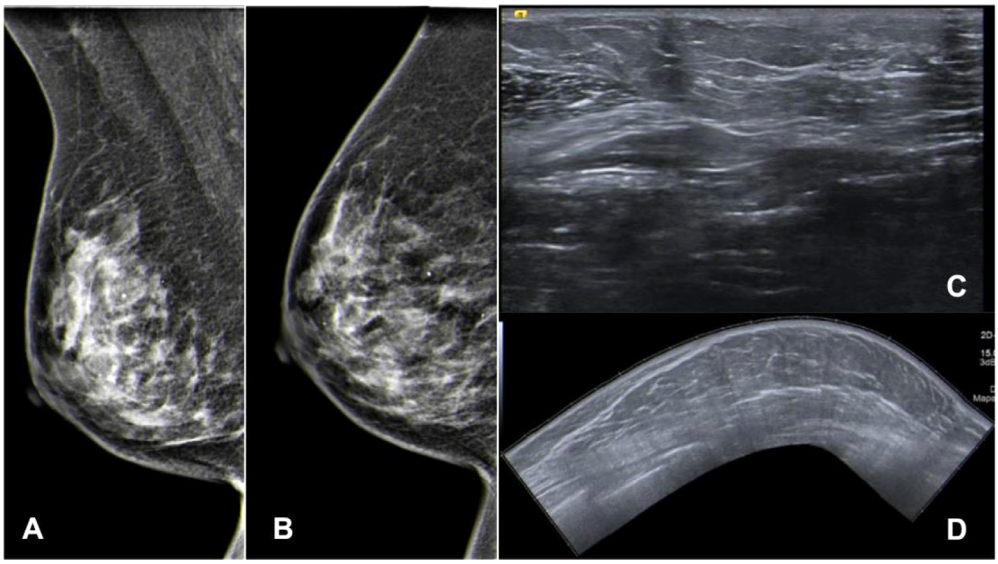


**Fig. 4 – (A and B) *Mammography*. Left breast reconstruction area with no evidence of alterations or suspicious lesions (OML and CC projection). (C and D) Ultrasound without evidence of alterations. BI-RADS 2.**

tumor cells, of at least 90% mucinous pattern without other associated subtypes, as in the case of our patient; and mixed lesions comprise a mucionous pattern of less than 90% and a greater variety of mixed components [1,9]. Pure mucinous cancers tend to be less aggressive and have a lower frequency of axillary metastases and a better overall survival rate than mixed ones [2,6].

The treatment of special types of breast cancer is still controversial due to the limited amount of evidence, however, the main treatment for breast cancer is still surgery, in the case of mixed-type mucinous carcinoma they require more frequent chemotherapy adjuvant (31.6% vs 7.4%, $P < .001$), and undergo more mastectomy (32.9% vs 11.1% $P < .001$) than those of the pure subtype [10]. The decision to treat a patient with mastectomy depends on her category, indicated mainly from the early stage (T2N1) that may or may not require radiotherapy, this will depend on whether the patient has a tumor with deep margins or lymph node involvement. However, radiotherapy has not shown a significant difference in the overall survival of patients with mucinous carcinoma of any subtype [11]. Systemic hormonal neoadjuvant treatment will depend on the characteristics of the tumor, especially aimed at locally advanced tumors (T3N0M0) [12].

Reported 10-year survival for pure tumors is 87%-90% and that of the mixed subtype is 54%-66% [10,11]. Although the benign appearance of mucinous carcinomas on mammography can cause a delay in diagnosis, it is also true that they have a favorable prognosis, as they are low-grade, slow-growing tumors that rarely metastasize. The largest cohort of this type has shown that the prognostic factor continues to be lymph node involvement, followed by age, tumor size and having hormone receptors [11]. Our patient had no lymph node involvement, which probably led to her good prognosis and favorable postoperative outcome.

## Patient consent

We declare that the patient described in this study gave informed consent prior to inclusion in this study.

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