

**MIXED MUCINOUS CARCINOMA OF BREAST – A CASE REPORT**

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**ABSTRACT**

Mucinous carcinoma (MC) is a rare variant of invasive breast cancer accounting for 1-7%. It is most commonly seen in perimenopausal and postmenopausal women. MC is represented by the presence of large extracellular mucin pools. Based on the mucin content two main subtypes are identified: Pure Mucinous Carcinoma (PMC) and Mixed Mucinous Carcinoma (MMC). MC shows fewer axillary lymph node metastases and more frequent ER expression, and has a low frequency of androgen receptor and low incidence of androgen receptor with ER and/or PR co-expression when compared to intraductal invasive carcinoma. We report the case of a 52-year-old patient with a 6 month disease course characterized by the appearance of a slow-growing tumor in the right upper outer quadrant of the right breast, in which the core biopsy showed mucinous breast carcinoma of a low nuclear grade. The patient underwent right modified mastectomy with right axillary dissection and was diagnosed as mixed type of mucinous carcinoma breast by histopathological examination. It was confirmed by immunohistochemistry which showed positivity for ER, PR and negativity for Her2neu.

**KEYWORDS:** Mucinous carcinoma, mixed mucinous breast cancer, Prognosis.

**INTRODUCTION**

Mucinous carcinoma of the breast, also known as colloid carcinoma, is a rare histological form characterized by high mucin production. It represents 1 to 7% of all infiltrating carcinomas of the breast.<sup>[1]</sup>

MC has a better prognosis (90% survival at 10 years) and a higher incidence in peri- and post-menopausal patients.<sup>[2]</sup> Pathologically, MC is divided into two subtypes, pure and mixed.<sup>[3]</sup>

The distinction between these subtypes is based on the quantification of cellularity. The mucinous component varies from 30% to more than 90% of the tumor.<sup>[4]</sup> Currently, there is no established percentage for making a positive diagnosis of mucinous carcinoma. However, most pathologists agree that the diagnosis of pure mucinous carcinoma (PMC) should be reserved for tumors with at least 90% mucinous components.<sup>[5]</sup> The pure type consists almost exclusively of tumor tissue with extracellular mucin production, whereas the "mixed" type is defined by the World Health Organization (WHO) as a tumor with 50-90% of the surface area mucinous with other in situ or invasive components.

**CASE REPORT**

A 52-year-old patient presented with a breast lump, primiparous and primigravida, Her medical history was unremarkable with no family history of breast cancer.

On clinical examination a painless, well-circumscribed mass measuring 3x2cm was noted in upper outer quadrant without retraction or nipple discharge, and without skin changes. The examination of the left breast was strictly normal, the axillary and supra-clavicular lymph nodes were free. The rest of the clinical examination was unremarkable.

Findings on mammography showed dense, microlobulated mass at right upper areolar margin with the presence of micro calcifications. There was no thickening of the subcutaneous tissue and no nipple retraction [Figure 1,2].

Sonography showed a nodular, oval, circumscribed microlobulated, very hypoechoic, homogeneous mass on the right upper outer quadrant, surrounded by a hyperechoic halo. It that measures 24x11.5 mm. With a background of bilateral microcystic dystrophy, made of thin-walled microcysts and anechoic contents. [Figure 3].

In conclusion, it was a lesion of the upper outer Quadrant of the right breast classified as BI-RADS 4c which the core biopsy showed mucinous breast carcinoma of a low nuclear grade.

The patient underwent right mastectomy and axillary dissection. The histopathologic diagnosis was intracystic papillary carcinoma.

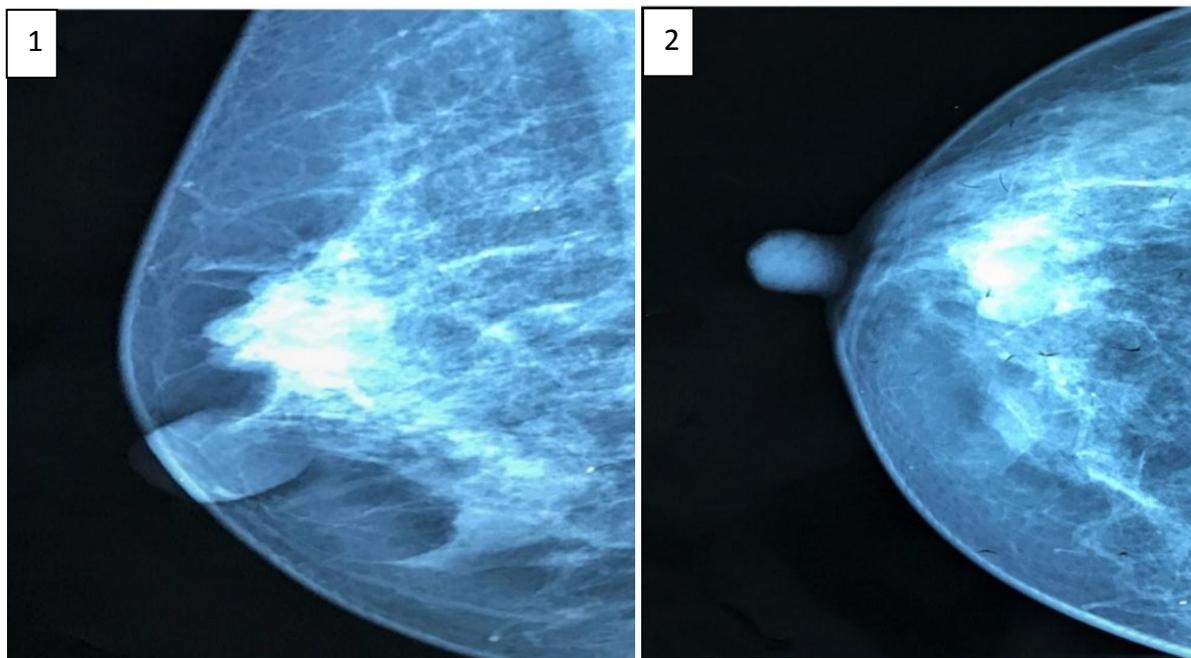
Gross examination showed a glistening, gelatinous lesion with pushing margins and fairly soft consistency, measuring 28×12 mm, Histological examination identified mixed mucinous carcinoma arranged in trabeculae and glands floating in mucus-filled cavities, was found astride the two upper quadrants, with an intraductal carcinomatous component of solid architecture, micropapillary and cribriform of high

nuclear grade without comedonecrosis noted mostly at the periphery of the tumor mass. and representing 20% of the tumor volume.

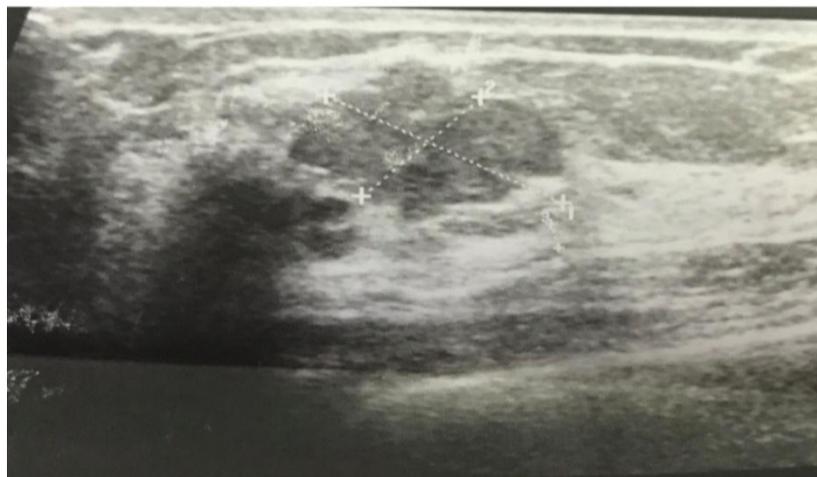
The anatomopathological study of the right axillary curage included 14 lymph nodes that were free. 14 N-/14 N.

Immunohistochemical study showed a high expression at progesterone receptors and estrogen receptors, there was also an absence of HER2 oncoprotein overexpression: score +1.

The patient received an adjuvant treatment based on endocrine therapy. There was no recurrence at 13 months of follow-up.



**Figure (1-2): Mammography showed dense, micro lobulated mass at right upper areolar margin micro calcifications.**



**Figure 3: Sonography showed non-vascular homogeneous mass, very hypoechoic with microlobulated borders at right upper outer quadrant that measures 24×11.5 mm.**

## DISCUSSION

Mucinous carcinoma is more frequently found among postmenopausal women with an average age between 55 and 67 years old.<sup>[1]</sup>

Autopalpation of a breast nodule is the most frequent revealing sign, found in over 80% of cases.<sup>[2,3]</sup>

Clinically, CMs are a slow-growing tumor,<sup>[9]</sup> They often present as well-limited, mobile, or even lobulated masses that can simulate benign tumors.<sup>[4,5]</sup>

The size of the tumor varies from 1 to 20 cm, the average tumor diameter reported is 1.5 cm with extremes ranging from 0.3 to 19 cm.<sup>[6]</sup> On the other hand, authors have reported that CMMs often have a larger diameter than CMPs.

Mammography shows, in the case of pure colloid carcinoma, a as a low-density, round or oval shaped mass, with clear edges. Tumour borders could vary from microlobulated (high mucin content) (54.5%),<sup>[7]</sup> The typical image proposed is "cotton ball" image related to the tumor's displacement of the surrounding tissue without true invasion.<sup>[8]</sup> whereas mixed colloid carcinoma appears as a mass with irregular or spiculated contours (low mucin content). Consequently, the mucin content is correlated with peripheral characteristics. Mammography may be normal in 5% to 15% of cases.<sup>[9]</sup>

The sonographic appearance differs according to the type of colloid carcinoma; pure CM presents as a well-limited heterogeneous isoechoic mass with posterior acoustic enhancement, the latter being explained by the large amount of water within the tumor and the transmission of ultrasound through the mucus,<sup>[10]</sup> Usually PMC shows heterogeneous internal echoes more frequently compared to MMC.<sup>[11]</sup>

Colloid carcinoma of the breast should also be suspected on ultrasonography in the presence of a complex image (liquid and solid) with posterior enhancement in an elderly woman.<sup>[12]</sup>

At MRI MC appears as a circumscribed mass with high signal intensity in T2-weighted sections, low intensity in DWI phases, gradual and persistent enhancement and benign-appearing kinetics. Despite that, some MRI characteristics, such as the presence of internal enhancing septations and higher apparent diffusion coefficient (ADC), could help to differentiate MC from benign lesions, such as fibroadenomas and low-grade phylloides tumours.<sup>[13]</sup>

In this review 50% of the patient's imaging was reported as low probability of malignancy. The non-alarming radiological appearance of these cases has contributed to some element of delay.

Biopsy is confirmatory in all cases. Mucinous breast carcinoma may also be associated with lobular or ductal neoplasia and some may present with neuroendocrine differentiation.<sup>[14]</sup>

Macroscopic examination reveals a well-limited tumor mass, crepitating to palpation, with a gelatinous surface. The consistency is soft, greyish or yellowish grey in color.<sup>[5]</sup>

Histologically, The distinction between pure and mixed types is crucial because of its prognostic impact.<sup>[5]</sup>

Pure colloid carcinoma is characterized by the presence of tumor tissue completely surrounded by abundant extracellular mucus, with no infiltrative ductal component or when present, it does not exceed 10% of the overall tumor volume.<sup>[28]</sup> The transition between mucus and surrounding connective tissue is abrupt;

Colloid carcinoma is mixed if more than 10% of the invasive component is non-mucinous morphology.

Previous studies have reported that MC had a lower histologic grade, higher hormonal receptor expression (ER and PR) and less HER2/neu gene overexpression.<sup>[5,15]</sup>

MC also demonstrated less axillary lymph node involvement than IDC, with a statistically significant difference.

PMC tends to remain localized, the mixed forms have a greater capacity to metastasize to lymph nodes (25% versus 10% with a mean of 12e14%).<sup>[16,17]</sup>

According to previous data, local and distant failures in patients with mucinous breast cancer are rare and occur in fewer than 6% of patients.<sup>[15,17,18]</sup>

The primary protocol of treatment in patients suffering from mucinous breast carcinoma is surgery with post-operative adjuvant treatment: radiotherapy, chemotherapy, endocrine therapy.

Patients with pure mucinous carcinomas, except those invading the local skin, are suitable candidates for breast-conserving therapy. Most pure mucinous carcinomas can be treated with this therapy. probably even large tumours up to 5 cm in diameter. A mixed mucinous carcinoma should be treated in the same manner as an infiltrating ductal carcinoma NOS associated with mixed type tumours was of would be.<sup>[5]</sup>

A recent analysis recommended axillary staging by sentinel lymph node biopsy, and administration of adjuvant radiotherapy and endocrine therapy after breast conserving surgery for mucinous carcinoma.<sup>[15]</sup>

Adjuvant endocrine therapy is indicated for hormone responsive tumors as most of mucinous carcinomas are

positive for estrogen receptor and/or progesterone-receptor.<sup>[19]</sup>

MC prognosis is more favorable compared to invasive breast carcinoma of no special type (NST) cancers. MC patients had a 5-year disease-free survival rate of 91.6% (versus 70.2% of NST) and a 5-year overall survival of 95.8% (versus 75.3% of NST).<sup>[20,21]</sup>

mucinous carcinoma of the breast is rarely seen in clinical practice, mammographic screenings enable early stage cancer detection, which leaves the possibility of introducing breast-conserving treatment. In view of nodal involvement, it is important to differentiate between PMC and MMC. PMC usually shows a better prognosis and a lower lymph node metastatic rate compared to MMC.

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