

Imaging of Pure Mucinous Breast Cancer: Insights from a Clinical Case and Literature Review

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ABSTRACT:

Pure mucinous breast cancer, marked by excessive mucin production, is a rare and distinct subtype of breast cancer, comprising approximately 2% of all breast cancer cases. This article delves into the imaging characteristics of this unique pathological entity through an illustrative clinical case and offers a review of existing literature to underscore the diagnostic challenges and therapeutic management implications.

Keywords : *Mucinous breast cancer, Breast imaging, Mammography, Breast ultrasound, MRI.*

INTRODUCTION:

In breast oncology, pure mucinous breast cancer emerges as a rare and fascinating pathological entity, posing diagnostic and therapeutic challenges for clinicians. Its prolific mucin production sets this breast cancer subtype apart, garnering particular interest due to its unique histopathological features and often indolent clinical course. Medical imaging plays an indispensable role in detecting and characterizing this cancer form, providing invaluable insights into its nature and thereby guiding management decisions.

Clinical Case:

We present an 82-year-old female patient with no significant personal or family history of breast or ovarian cancers, who sought consultation after self-palpating a mass in her left breast that had been present for 18 months, with no associated inflammatory skin changes or nipple discharge. Clinical examination revealed a soft, mobile mass approximately 22 mm in

diameter in the upper outer quadrant of the left breast, without skin changes or ipsilateral axillary lymphadenopathy. The TNM classification was T2N0M0. Breast radiological assessment revealed a high-density, lobulated mass in the upper outer quadrant of the left breast on mammography, with no microcalcifications and indistinct contours in places (Figure 1a). Ultrasound complementation showed a hypoechoic, lobulated mass measuring 25×15 mm in diameter with micro-lobulated, non-attenuating contours (Figure 1c). The radiological file was classified as BI-RADS 4 by the ACR. Microbiopsy under ultrasound guidance of the mass was suggestive of mucinous carcinoma. Following a multidisciplinary team meeting, the decision was made for mastectomy with sentinel lymph node biopsy. Histopathological examination of the mastectomy specimen confirmed the mucinous histological type, grade II SBR, with strongly positive estrogen and progesterone receptors, and a negative sentinel lymph node (Figure 2).

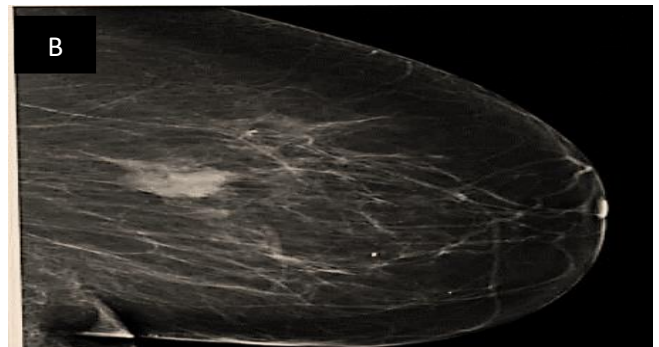
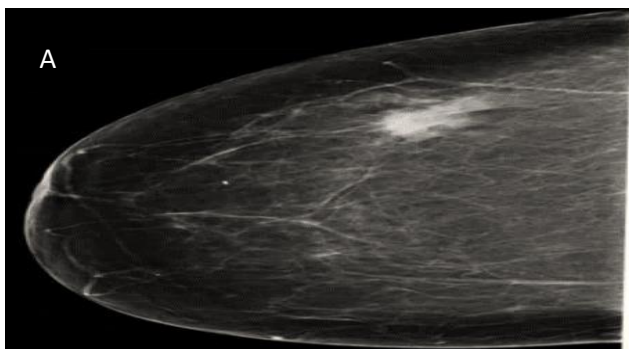


Figure 1. Pure mucinous carcinoma (colloid) in an 82-year-old patient, with no particular history: a: mammographic image of the left breast from the front; b: mammographic image of the left breast in external oblique incidence: lobulated mass (white arrows) with indistinct contours of the superior-external quadrant; C: Ultrasound showing a lobulated (star) mass with a long oblique axis at the cutaneous plane, isoechogenic with respect to the fat lobules.

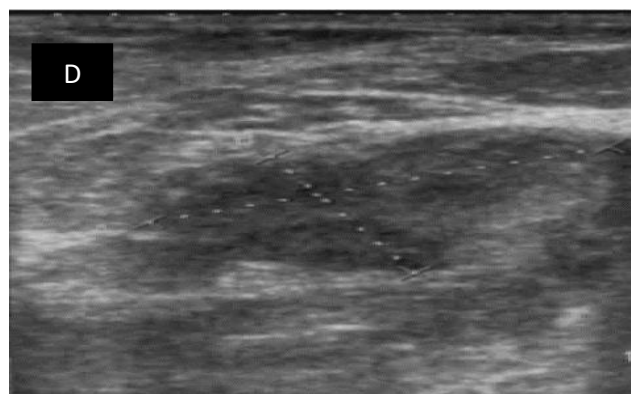
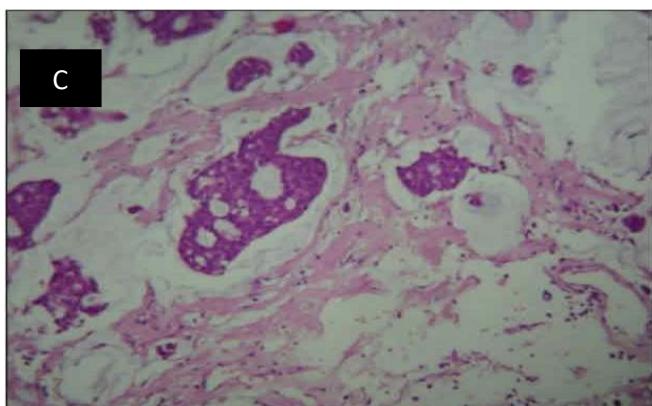


Figure 2. Microscopic appearance with low magnification showing carcinomatous cells in puddles of mucus.

DISCUSSION:

Mucinous carcinoma, also known as colloid carcinoma of the breast, represents an uncommon form of breast cancer, accounting for no more than 7% of all breast carcinoma cases, with the pure form constituting less than 2% [1, 2, 3,4]. This pathology predominantly affects older patients, particularly those over 60 years of age [5]. The most common clinical presentation is a breast nodule, observed in over 80% of cases, typically located in the upper outer quadrant of the breast[6]. Mammographically, pure mucinous carcinoma is characterized by a round or oval, dense mass with well-defined, often polycyclic contours, while the mixed form presents as a mass with irregular contours blending into the surrounding glandular tissue. The presence of microcalcifications is not specific and is generally associated with the ductal component rather than the mucinous component of the tumor [7]. Ultrasound reveals distinctions based on the type of mucinous carcinoma: the pure form appears as a lobulated, homogeneous mass of variable density with well-defined contours, while the mixed form presents as a heterogeneous mass with posterior acoustic attenuation, reflecting the tumor's infiltrative nature[8]. Macroscopically, the tumor presents as a well-demarcated mass with a soft consistency and a gelatinous cut surface, ranging in color from grayish to yellowish-gray. Histologically, the tumor consists of islands of epithelial cells immersed in extensive lakes of extracellular mucin. Distinguishing between pure and mixed forms is crucial due to their different prognostic implications[9]. The treatment of mucinous carcinomas does not follow specific guidelines, but surgery remains the principal treatment modality. Due to their favorable prognosis, pure forms can be managed conservatively. Although mucinous carcinomas are less likely to metastasize to lymph nodes compared to other histological types, lymph node metastases remain a key prognostic factor[10].

CONCLUSION:

Imaging of pure mucinous breast cancer unveils a distinctive spectrum of images, reflecting the unique composition of these tumors. A deep understanding of the imaging characteristics specific to this cancer subtype is essential for early diagnosis and optimal patient management. The presented clinical case and literature review highlight the significance of medical imaging in identifying and characterizing pure mucinous breast cancer, thereby enhancing clinical outcomes for patients afflicted with this rare but treatable condition.

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