



From benign nodule to Cancer IIB: the importance of ultrasound findings in breast pathology: Case Report

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Abstract

A Case is presented of a 53-year-old woman with a history of a breast nodule and left-sided mastodynia of two years' duration. Previous ultrasound studies had demonstrated a lesion suspicious for malignancy; however, two fine-needle aspiration biopsies (FNAB) yielded negative results for malignancy, leading to discharge without follow-up.

One year later, the patient returned due to persistent pain. A new breast ultrasound revealed, in the upper inner quadrant of the left breast, a hypoechoic lesion with spiculated margins, antiparallel orientation, architectural distortion, and marked posterior acoustic shadowing—findings highly suggestive of malignancy, classified as BI-RADS 5 ($\geq 95\%$).

Mammography and core needle biopsy (CNB) were subsequently performed for histological confirmation, with results positive for invasive ductal carcinoma. This case underscores the relevance of meticulous ultrasound interpretation, the appropriate selection of the biopsy technique (avoiding fine-needle aspiration in solid lesions), the need for periodic surveillance of breast nodules even when initially deemed benign, and the value of a multidisciplinary approach in the management of complex breast pathology.

Keywords: breast cancer, fine-needle aspiration biopsy, loss to follow-up, fibroadenoma, core needle biopsy.

Introduction

Suboptimal diagnostic decisions and/or insufficient follow-up may delay the identification of malignant lesions and therefore increase the likelihood of larger tumor size or lymph node involvement. The breast imaging reporting and data system (BIRADS) allows the interpretation of the findings found in breast ultrasound to be homogenized, avoiding subjectivity, and also allowing the classification of risk, giving us a guide in the medical conduct to follow (1). An image suggestive of malignancy by ultrasound should be followed and addressed multidisciplinarily in such a way that there is a radiological-pathological concordance that affirms or rejects the diagnosis and, if there is no such concordance, the follow-up of the patient is mandatory (2). The empowerment of physicians involved in breast injury care in this standardization system plays a crucial, life-or-death role in patient treatment, prognosis, and quality of life.

Next, we present the report of a clinical case where there was a contrariety between the ultrasound findings and the pathological methods chosen, which led to a delay in the diagnosis of a malignant

pathology. Cases related to delays in the diagnosis of breast cancer are unfortunately frequent, the literature contemplates cases where the images are misinterpreted (3) or where the initial biopsy concludes a benign lesion that ends up being cancer in its definitive excision (4), however this case reflects not only the error in the pathological interpretation, but also the failure of him to send an adequate test and the omission of follow-up in a breast that had highly suspicious imaging criteria.

Patient Information:

A 53-year-old female patient, hypertensive, takes ibersartan 150 mg ID, with no family history of cancer, consulted for two years of evolution of left breast nodulation, initially painless, but over time began to present pain that slightly affected mobility of the left upper limb, previously patient had already undergone imaging and cytological studies, ultrasonographically the findings were designated as BIRADS 4C, fine needle aspiration biopsy (FNA) was indicated, the result of this study was proliferative breast disease, coinciding with fibroadenoma, cytology was repeated on two occasions with the same result, with these studies they decided to discharge the patient without follow-up.

Table 1: Timeline of the main clinical events and procedures performed during the follow-up of the case

At the beginning of October of this year, the patient went to the clinic, physical examination showed nodulation in the upper internal quadrant of the left breast, not very mobile, painful to palpation, in the armpit another nodulation more or less 1 cm, breast ultrasound with characteristics of malignant nodulation BIRADS 5 was indicated, bilateral mammography was indicated, Both studies with high suspicion of malignancy, core needle biopsy was guided.

Relative Time	Clinical Event or Finding	Studio/ Intervention	Result or Evolution	Technical Observations
10/10/2025	Consultation for persistent breast pain	Bilateral breast and armpit ultrasound	Lesion of 31x21x18mm, 1 cm of nipple and 1.2 mm of skin, palpable, in the upper inner quadrant of the left breast, irregular, spiculated margins, of antiparallel orientation, hypoechoic and marked posterior acoustic shadow, in color Doppler mode no vascularization was observed, highly suggestive findings of malignancy, BIRADS 5 (≥95%).	12 Hz linear transducer is used
18/10/2025	BIRADS 5	Bilateral mammogram	Dense radial nodular image with spiculated borders, in the upper inner quadrant of the left breast measuring 20x15 mm BIRADS 5	
5/11/2025	Nodule suspected of malignancy BIRADS 5	Biopsia TRUCUT	Histological type: non-special infiltrating breast carcinoma (ductal) Nottingham Histoprognostic Grade: 1 (Score 4: 2+1+1)	

Source: Own elaboration

Clinical Findings

The patient’s main consultation was persistent pain in the left breast, it has already been studied but has not improved, on physical examination a nodulation of more or less 3x2.5 cm in the hourly axis 12 to 1 cm of the nipple areola complex (PDA) is palpated in the upper internal quadrant of the left breast, without infiltration of the skin but folding it, associated with 1.5 cm ipsilateral adenopathy, this lesion does not have as much mobility, is slightly painful on palpation, no distortion of the external mammary architecture is observed, there are no secretions through the nipple, there are no changes in coloration or increase in temperature.

Diagnostic evaluation:

Mindray P30 equipment was used, with a 12 Hz linear probe, a tracing technique was followed, starting from the right armpit, right breast by quadrants and then left armpit and ipsilateral breast; At the level of the upper inner quadrant of the left breast, hypoechoic nodulation measuring 31x21x18 mm was observed, 12 mm of skin and 1 cm of nipple, irregular, the margins were spiculated, with a marked posterior acoustic shadow, without peripheral vascularity

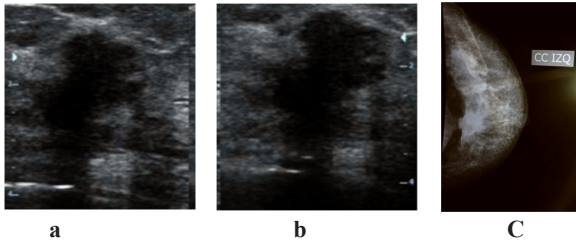


Figure 2

Caudal cranial mammography of the patient’s left breast is shown, showing between the middle and posterior third, dense radiographic image of spiculated borders

Diagnostic

Non-special (ductal) infiltrating ductal carcinoma of the breast, with Nottingham histological grade: 1 (score 4: 2 +1+1), no evidence of lymphovascular permeation, with necrosis and intraductal component present, positive leukocyte infiltrate, Gyneco-oncology assessment confirms the presence of an ipsilateral node, cataloguing the patient as left breast cancer IIB (T2N1Mx).



a and b. Ultrasound image of the left breast of a 53-year-old patient showing a hypoechoic lesion with a spiked border and a marked posterior acoustic shadow, c. application of color Doppler in the lesion.

Patient Perspective

Both the relatives and the patient expressed frustration at the delay in the diagnosis, the patient stated that she had always insisted even after her discharge that she did not feel well, however, now with a clear diagnosis, although sad about what it implies, they know what they are facing and are optimistic in their recovery.

Discussion

Breast cancer is an extremely common and potentially fatal disease; in the Americas they accounted for almost a quarter of new breast cancer cases globally in 2022, with more than 525,000 new cases (5), in the United States breast cancer is the most commonly diagnosed non-cutaneous cancer (6); however, in Latin America and the Caribbean, the proportion of women affected before the age of 50 (31%) is much higher than in North America; in Nicaragua, according to Globocan of this same year 2022, new cases of breast cancer were 1209 cases, which constituted 26% of the cancers diagnosed in women, placing it in the first place of incidence among all other cancers (7).

According to the American Cancer Society, when breast cancer is detected early and is in a localized stage, the relative 5-year survival rate is 99%. Martinez-Perez also found that being exposed to a delay in total diagnosis increases the probability of an advanced stage by 2 times ($OR=2.15$; 95% CI: 1.21 – 3.79) (8). The purchasing power of the country plays a fundamental role, since according to PAHO figures (5) between 1980 and 2020 high-income countries have had a 40% decrease in mortality from breast cancer by age, due to the introduction of early detection programs and standardized treatment protocols; on the other hand, countries with limited resources continue to be a challenge to detect early and access effective treatment for despite the existence of proven and cost-effective interventions.

CT scans are the most common and widespread screening method worldwide. Other methods used are breast examination, ultrasound, magnetic resonance imaging, tomosynthesis, and the identification of certain genetic oncogenes. These programs offer an advantage in early diagnosis, as well as the identification and prevention of risk factors and timely treatment to reduce morbidity (9). However, one of the disadvantages of tomography is the early detection of precancerous lesions such as ductal carcinoma in situ and the approach to breasts with dense breast patterns, in these cases breast ultrasound allows the diagnosis of invasive carcinoma in women with breast density 2 to 4 according to the classification of the American College of Radiology (ACR). Nothacker determined that ultrasound can identify mean tumor sizes from 9.9 mm and 90% with negative nodes (10), making breast ultrasound a fundamental tool in the early detection of cancer, improving the patient's prognosis.

However, cases of delayed diagnosis are a frequent cause of medical malpractice lawsuits, according to a study by The Doctor's Company and CRICO, the professional liability insurer of Harvard-affiliated hospitals and medical groups, medical malpractice lawsuits related to undiagnosed or delayed breast cancer cases are common (11). A total of 562 breast cancer-related medical malpractice claims were studied between 2009 and 2014 and the factors that contributed most to delays in diagnosis were: misinterpretation of diagnostic studies (49%), delay or failure to request diagnostic tests (27%), delay in obtaining a consultation (17%), lack of communication between patient and clinician (12%) and lack of communication between clinicians (12%).

The delay in diagnosis in our case was one year, the first challenge began with the choice of the pathological method that the clinician decided to send, in this sense we have two options; the core needle

biopsy (BAG) and the fine needle aspiration biopsy (FNA), they are the most used non-surgical methods of tissue sampling for the diagnosis of breast cancer. Reviewing the literature, BAG presents greater diagnostic accuracy and allows determining the molecular subtype for neoadjuvant chemotherapy, Hongki Gwak et al. (12) concluded that breast cancer patients who underwent a fine needle aspiration (FNA) as a primary biopsy had a worse prognosis than those who underwent a core needle biopsy (BAG) for highly suspicious breast nodules. therefore, they determined that performing BAG before FNA is a promising strategy to achieve a good prognosis. Likewise, Muhammad Aslam Javed (13) conducted a systematic review whose most notable result was that the diagnostic accuracy of FNA was 71.4 and 96%, while those of BAG showed a greater and more consistent accuracy between 82.8% and 100%, so false negatives are more frequent in the group of patients to whom se les realizo BAAF. Entendemos que los bajos costos de la biopsia por aspiración con aguja fina la hacen atractiva en el abordaje de las nodulaciones mamarias, pero esto termina siendo relativo cuando se toma en cuenta su baja sensibilidad y especificidad, altas tasas de falsos negativos que terminan ocasionando costos adicionales para un diagnóstico concluyente (14).

The next question in our case is the clinician's abrupt decision to discharge a patient whose ultrasound findings were clearly of a lesion highly suspicious of malignancy, BIRADS 4C was her classification by imaging which has between 50% and 95% malignancy, according to the 5th edition of BIRADS (1), these patients should be sent to the Biopsy and in the event that the biopsy does not conclude malignancy, the conduct is not to rule out lesions without follow-up, but to declare the classification, in this case to BIRADS 3, allowing periodic monitoring of the patient and observing behavior at the time of discovery.

We are clear that there was a discordance of the diagnostic methods performed on our patient, while one alert of a malignant lesion the other gave a reassuring respite to the clinician, we ask ourselves the question, which criterion should have greater relevance at the time of evaluating the patient if we have two different results?, in this unknown Yi Xuan Lee (3) She highlights that in symptomatic patients, the doctor's clinical criteria, based on the anamnesis and an exhaustive physical examination is essential to determine the next step in care, so based on this our patient should have received follow-up and more thorough diagnostic alternatives since her symptoms never disappeared. Here also arises a need that we will not know if the clinician addressed and that is the obligation to address this case together with other specialists; Studies show that the existence of a multidisciplinary team dedicated to decision-making in the treatment of breast cancer is directly correlated with an increase in survival rates, reduction of breast cancer mortality by 18% (15); the incorporation of the patient's vision, together with the support of psycho-oncologists, nutritionists, specialized nurses and physiotherapists, is crucial to improve quality of life, reduces anxiety and depression ensuring greater tolerance to treatment, Viñan et al. (16) demonstrate that multidisciplinary management is an independent prognostic factor, increasing the survival rate and significantly improving the patient's quality of life. In our case, in the face of doubt and discordance in the imaging and cytological results, an approach with oncology and radiology was key in an early diagnosis, thus changing the patient's prognosis.

Conclusion

Ultrasound findings in the breast are an invaluable tool in the diagnosis and monitoring of breast pathologies and must be given the importance it implies, so the clinician is obliged to know and interpret their results; highly suspicious solid breast nodulations benefit from histological

biopsy that provides molecular patterns for treatment; The joint management of difficult patients is essential in the prognosis of the case.

Ethical Considerations and Consent

Both family members and the patient were asked for authorization to use the images of the studies performed, protecting the patient's identity

Statements

The author declares that he has no conflict of interest, there is no financing.

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