



PAPILLARY NEOPLASM ON CORE BIOPSY CAMOUFLAGING HIGH-GRADE INVASIVE DUCTAL CARCINOMA IN A MALE BREAST: A CASE OF HISTOLOGICAL UNDERESTIMATION

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PAPILLARY NEOPLASM ON CORE BIOPSY CAMOUFLAGING HIGH-GRADE INVASIVE DUCTAL CARCINOMA IN A MALE BREAST: A CASE OF HISTOLOGICAL UNDERESTIMATION [ENGLISH]

SUMMARY

Introduction: Male breast cancer (MBC) is a very rare cancer, with the prevalence being less than 1 percent of all breast cancers. Diagnostic workup is based on the same principles of triple assessment in female breast cancer. Nevertheless, certain histological subtypes, especially papillary lesions, are difficult to diagnose and are likely to be underestimated on core-needle biopsy (CNB).

Presentation Case: A 41-year-old male has been presented with a left breast mass that is locally advanced. Triple assessment showed a palpable and irregular tumor with skin involvement. Imaging revealed an area of a 38mm hypoechoic lesion with microcalcifications. Ultrasound-guided CNB showed an odd papillary neoplasm at first sight with foci of suspicion but not invasion. After a multidisciplinary discussion, a left total mastectomy was performed, and a sentinel lymph node biopsy was done on the patient.

Management and Outcome: Surprisingly, final histopathology revealed that the case was a 40mm high-grade invasive ductal carcinoma (no special type) and the invasion involved the nipple dermis and pectoral muscle, which improved the initial diagnosis dramatically. The surgical margins were bare, and the deep margin was 1mm. Sentinel nodes were negative (pN0). The tumor was positive for Estrogen Receptor (ER). As such, the patient needed a complete combination of adjuvant regimen, which included chemotherapy, post-mastectomy radiation therapy (PMRT), and endocrine therapy using Tamoxifen.

Conclusion: The case demonstrates the possibility of considerable underestimation of disease severity in male breast papillary lesions on core biopsy. It also highlights the critical need to match all elements of the triple assessment and proceed with full removal surgery if clinical suspicion remains, to facilitate proper diagnosis and stimulate appropriate multimodal adjuvant therapy.

KEYWORDS

male breast cancer, papillary neoplasm, underestimation, core biopsy, invasive ductal carcinoma, adjuvant therapy.

INTRODUCTION

In the male population, the disease is rare and is usually diagnosed at a more advanced stage than in females due to low awareness [1, 2]. The diagnostic model is based on the principle of triple assessment, which includes clinical testing, imaging, and core-needle biopsy. Intraductal papilloma and the papillary carcinoma are some of the rare papillary neoplasms of the breast, common in men [3]. The presence of these lesions makes diagnosing invasion notoriously difficult, and CNB is associated with a risk of underestimating the final pathology [4]. We give an example of a male breast papillary lesion on CNB that was greatly graded as a high-grade invasive carcinoma with chest wall involvement during final excision, which predetermined a complicated and extensive adjuvant treatment.

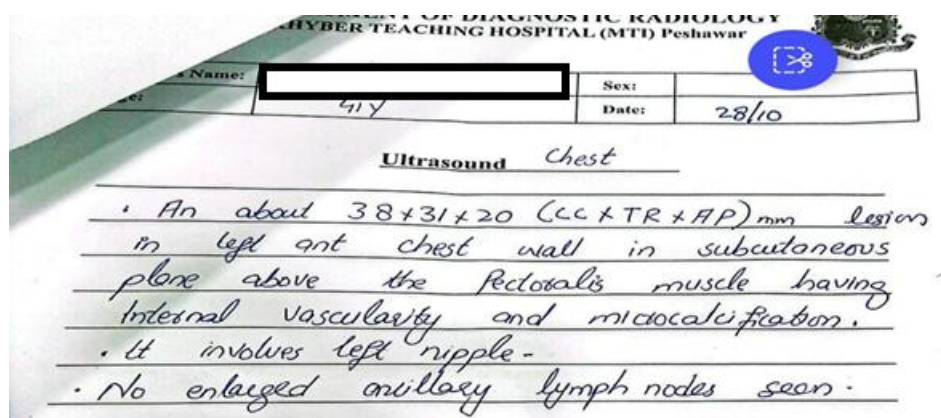
CASE PRESENTATION

The patient is a 41-year-old male who presented to the clinic of breast surgery with a painless lump in the left breast. He claimed that the mass had been present for some months but had been growing, prompting him to visit a doctor. His past medical history was not significant, and he did not have any history of breast or ovarian cancer in his family. Genetic screening was recommended per NCCN guidelines, but the patient could not afford the test.

**INVESTIGATIONS**

Clinical Examination: Palpation of the left breast showed a hard and irregular mass of about 4cm in diameter. There were related skin alterations and nipple retraction. Axillary lymphadenopathy was not palpable.

Imaging: Focused ultrasound of the left breast revealed a 38 x 31 x 21 mm hypoechoic lesion, with internal vascularity and microcalcifications, in the center of the nipple-areola complex. Sonography of the axilla showed no cause for suspicion.



On ultrasound, the hypoechoic lesion shows microcalcifications. Left breast ultrasound with a 38mm hypoechoic lesion with internal vascularity and punctate microcalcification.

Core Biopsy: A core needle biopsy was done with the help of ultrasound. Histological examination revealed an atypical papillary neoplasm. The pathologist observed a few foci of tumor cells that were suspicious of but not diagnostic of invasion.

Test : Histopathology (Gross, Microscopy, Special)	
Specimen Nature: TRUCUT BIOPSY	
Specimen Site: LEFT BREAST	
History: Not stated.	
Gross: Specimen container is labeled with the patient's name and medical record number	
Fixative: Formalin	
Number of cores: Multiple tissue core fragments	
Core size and block key: Collectively measuring 8 x 4 mm. The entire specimen is submitted in a single block	
(Gross assisted by: Muhammad Imran)	
Micro: Sections of breast reveal a papillary neoplasm composed of a nests of mild to moderately atypical cells and a focus suspicion for invasion.	
Screened By: Zulfikar Ali Dr.	
IMMUNO/HISTOCHEMICAL/IN SITU HYBRIDIZATION (ISH) STAIN(S):	
WT1:	Negative
Synaptophysin:	Negative
p63:	Negative
CK7:	Non-contributory
ER:	Positive
GATA3:	Positive
Calretinin:	Weak focal positive
BAP1:	Retained expression
Diagnosis: LEFT BREAST, TRUCUT BIOPSY: Papillary neoplasm with atypia, see note.	

Staging: A CT scan of the chest, abdomen, and pelvis was performed with contrast enhancement for staging. This identified an incidental hepatic hemangioma, and no signs of metastatic disease.

This case was officially addressed during the institutional Multidisciplinary Meeting (MDM). Given the clinical suspicion of invasion (skin changes, firm mass), the major size of the lesion on radiograph, and the atypical biopsy result, it was decided to proceed directly to a left total mastectomy and sentinel lymph node biopsy (SLNB) instead of a diagnostic excision.

Treatment

The patient was also subjected to a left total mastectomy with SLNB that was performed without complications.

Outcome and Follow-Up

The concluding surgical pathology report on the mastectomy specimen gave the definitive diagnosis, greatly changing the profile of the disease:

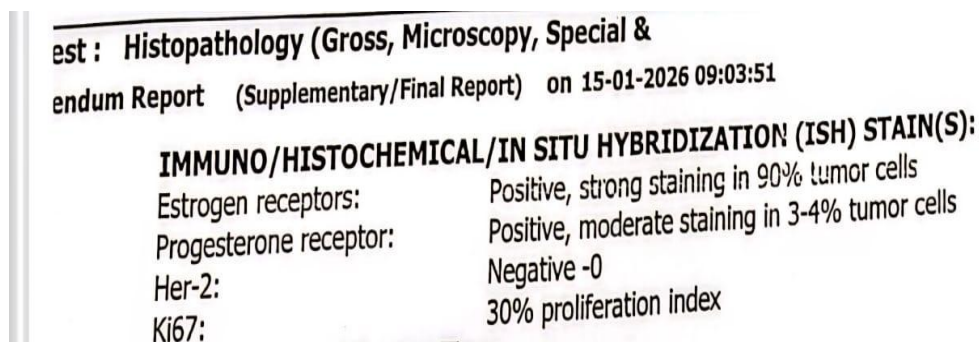
- Invasive Carcinoma of no Special Type (NST): Grade 3, 40 mm maximum dimension.
- Ductal Carcinoma In Situ (DCIS): Large nuclear grade, solid and comedo necrosis pattern.

Local Extension: The tumor involved the nipple dermis (without Paget disease) and showed direct invasion into the underlying skeletal muscle.

Margins: All resection margins were tumor-free. The nearest was the deep margin, and an invasive tumor was observed 1 mm below the inked surface.

Lymph Nodes: Two sentinel lymph nodes were removed; both showed only reactive changes, with no evidence of metastatic carcinoma (pN0).

Receptor Studies: Immunohistochemistry showed that the tumor was strongly positive with Estrogen Receptor (ER) (Allred score 8/8).



High-grade invasive ductal carcinoma is demonstrated in photomicrographs (H&E stain) and high ER (IHC stain). Figure 2: (A) High-power picture of the invasive ductal carcinoma, Grade 3 (H&E, x200). (B) Strong and diffuse nuclear positivity of Estrogen Receptor (IHC, x200).

The MDM suggested an extensive adjuvant treatment plan based on these high-risk pathological parameters: high grade, large size (T2), invasion of dermal tissue, invasion of skeletal muscles, and a close deep margin (1mm):

Adjuvant Chemotherapy: To reduce the high likelihood of micrometastatic disease, an Anthracycline-Taxane regimen (e.g., AC-T) was recommended.

Adjuvant Radiotherapy (PMRT): The close deep margin (1mm) and direct invasion of skeletal muscles strongly suggested that radiation be directed to the left chest wall to maximize local control.

Adjuvant Endocrine Therapy: According to the conventional approach to treating ER-positive male breast cancer, the patient was put on Tamoxifen (20mg daily), which was bound to last between five and ten years, to be sequenced after the course of chemotherapy and radiation.

During his six-month follow-up, the patient was responding well to adjuvant treatment, with no evidence of local recurrence or distant metastasis.

DISCUSSION

The case is an example of a known diagnostic trap in breast pathology, the histological underestimation of disease in a core biopsy, especially with papillary lesions [5]. The first CNB showed an unusual papillary neoplasm with only questionable signs of invasion. Nevertheless, the excision specimen of the final excision revealed a 40mm high-grade invasive ductal carcinoma with aggressive biological behavior, direct invasion of the muscle.

It is important to highlight that this high disparity is caused by a number of factors. Papillary lesions are complicated three-dimensional formations. A core biopsy can sample the noticeable intraductal papillary component and not the peripheral, leading edge of invasion [6]. Moreover, when microcalcifications are observed on imaging, as in this case, a high index of suspicion should be maintained for an underlying high-grade component. Most importantly, the clinical red flags, which were skin changes, nipple retraction, and a large palpable mass, were crucial in steering the MDM to final surgery despite an inconclusive biopsy. This case

highlights that, when discordant triple assessment is involved, clinical and radiological suspicion should prevail over a benign or indeterminate biopsy result.

Male breast cancer is especially prone to the risk of underestimation. Its rarity may result in a lack of familiarity with its radiological and pathological manifestations [7]. Additionally, the anatomic limitations of the smaller male breast mean that tumors are closer to the skin and the pectoral muscle. Any delay in the ultimate diagnosis and treatment could therefore result in rapid chest wall involvement, as in this case.

Clear margins and local control were possible by deciding to go straight to mastectomy based on the initial MDM. But the final pathology revealed the true scope of the illness, which determined the need for intensive, combined-modality adjuvant care. As illustrated in this case, CNB is considered the gold standard for diagnosis, but it also has limitations, and full excision during surgery is important to enable proper pathological staging and risk stratification in some high-risk presentations.

Diagnostic trap: Papillary lesions. Core-needle biopsy of papillary lesions in the male breast carries a risk of underreporting invasive disease. Clinicians are required to remain with a high level of suspicion.

Triple assessment is essential: all components must be concordant. Any discordance, particularly between an innocuous biopsy and non-benign clinical/radiological findings, warrants further investigation or complete removal.

MDM discourse is important: Multidisciplinary discussion is needed to integrate all available data and develop an appropriate management plan, even when initial histology is inconclusive. The gold standard is surgical excision: to achieve accurate final pathology, complete excision of high-risk or discordant lesions is required, as this is essential for informing decisions about adjuvant therapy.

Patient's Perspective

I had been aware of the lump for a long time, but I did not take it too seriously. I got concerned when the doctors indicated that the initial biopsy was not clear. I owe it to them for suggesting the surgery immediately, although the final outcome proved worse than we had imagined. Now I am concerned with my treatment completion.

Patient Consent

The patient gave informed consent for the publication of this case report and any accompanying images.

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