



Case report

Breast tuberculosis: A forgotten diagnosis

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ABSTRACT

Breast tuberculosis is a rare entity even in endemic countries. It is often considered as a diagnostic conundrum given the non-specific clinical and imaging characteristics. Therefore, the definitive diagnosis is based on the identification of bacilli by microbiological or histopathological examination. We report the case of a 52-year-old woman, with a 2-month history of a painful lump of the left breast. The imaging features were consistent with a breast abscess. The purulent collection was aspirated and a tuberculous mammary abscess was diagnosed by molecular biology (GeneXpert). Through this observation, we discuss the clinical, radiological and biological signs by highlighting the contribution of molecular biology in the rapid management of this rare pathology.

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Introduction

Tuberculosis (TB) is an infectious disease caused by the *Mycobacterium tuberculosis* bacillus that commonly involves the lungs. It is mostly encountered in developing countries, mainly in immunosuppressed individuals [1]. Tuberculous mastitis (TM) was first described by Sir Astley Cooper in 1829 [2]. However, it remains a rare entity, even in endemic countries [3]. TM diagnosis is challenging as it can simulate many other pathologies especially breast cancer.

Through this observation, we discuss the clinical, radiological and biological signs by highlighting the contribution of molecular biology in the fast management of this rare pathology.

Case report

A 52-years-old female was referred to the radiology department of our hospital for a painful lump of the lower inner quadrant of her

left breast, which appeared two months before. The patient had a well-controlled type 2 diabetes. No history of fever, night sweats, respiratory complaints, or weight loss was found. There was no family history of breast cancer or recent exposure to a person with TB. Physical examination revealed an ill-defined, firm mass in the lower inner quadrant of the left breast, measuring about 4 cm, without any underlying skin abnormalities, nor nipple discharge. No palpable axillary lymph nodes were found. The right breast showed no anomalies.

Initial breast ultrasound showed an ill-defined hypoechoic, fluid-containing mass of the inner lower left quadrant, that was reported as BIRADS 4 lesion (Fig. 1). Breast MRI was then performed for precise characterization. It showed a hyperintense lesion of the left breast on T2-W images, with irregular margins and rim enhancement on post-contrast sequences, consistent with an abscess of the left breast (Fig. 2). No suspicion of malignancy nor abnormal enhancement were found. The patient underwent an ultrasound-guided fine-needle aspiration. 2 mL of bloody purulent material were aspirated and a cytobacteriological evaluation was performed. It showed no cellular reaction and no bacterial flora. Aerobic and anaerobic cultures for 24 h remained sterile. Moreover, auramine and ziehlneelsen staining showed the presence of acid-fast bacilli, 1–10 acid fast bacilli /100 fields and GeneXpert MTB RIF quickly confirmed the presence of *Mycobacterium tuberculosis* and the absence of rifampin resistance. Subsequently, both solid medium Lowenstein-Jensen and liquid medium MGIT (*Mycobacteria Growth*

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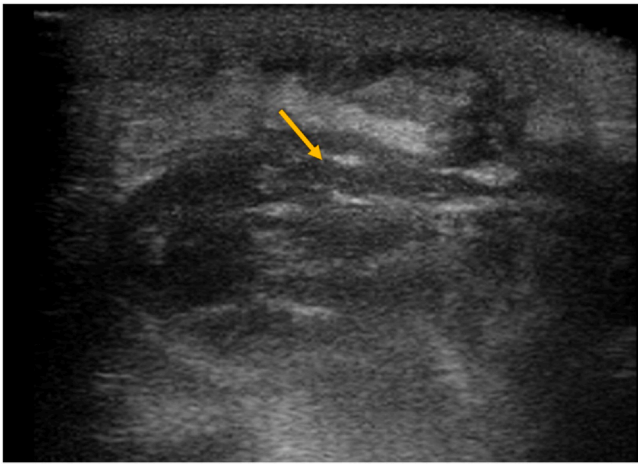


Fig. 1. Ultrasound image of the left breast demonstrating an ill-defined hypoechoic, fluid-containing mass of the inner lower left quadrant (yellow arrow). (For interpretation of the references to colour in this figure, the reader is referred to the web version of this article.)

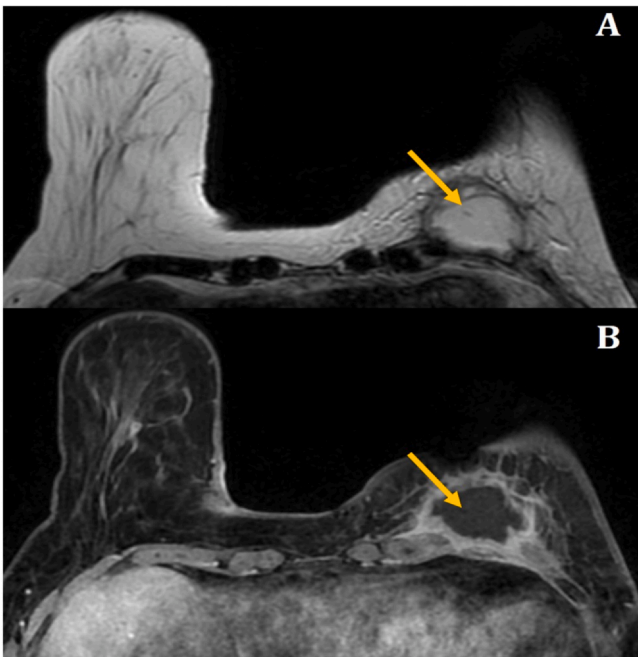


Fig. 2. Axial T2-W (A) and post contrast T1 FAT SAT (B) breast MRI images showing a hyperintense lesion of the left breast on T2-W images, with irregular margins and rim enhancement on post-contrast sequences (yellow arrow). (For interpretation of the references to colour in this figure, the reader is referred to the web version of this article.)

Indicator Tube) confirmed the growth of *Mycobacterium tuberculosis*. They were positive respectively 25 days and 13 days later. The anatomopathological study, although very specific, was not prescribed in our patient because of the purulent aspect of the sample. Thoracic CT scan was also performed and showed no anomalies.

A diagnosis of primary breast tuberculosis (BT) was then confirmed, and the patient was transferred to the breast clinic. Later, the patient was put under conventional antitubercular protocol made of 2 months of rifampin, isoniazid, pyrazinamide and ethambutol followed by 4 months of rifampin and isoniazid. The treatment was well tolerated and no signs of recurrence was detected clinically 3 months later.

Discussion

BT is an uncommon localization of *Mycobacterium tuberculosis* bacillus infection, as it accounts for less than 0.1% of all breast pathologies and represents 0.06%–0.1% of all TB localizations [3,4]. BT is named a “great masquerader” as it is often mistaken for breast cancer given the non-specific clinical and imaging characteristics [4,5]. Two forms may be distinguished; primary BT that is caused by the spread of infection through abrasions in the skin, and secondary BT which is the result of retrograde spread from infected axillary lymph nodes, or by direct spread from adjacent tissue [3].

BT commonly occurs in multiparous and lactating women in the second to fourth decades of life. Other risk factors include a history of trauma and immunosuppressive conditions such as diabetes [3]. BT usually manifests as a painless, irregular lump that may be fixed to the skin or chest wall. It is often found in the upper outer quadrant or central area of the breast. Multiple breast masses may be found [5]. Sometimes, the clinical presentation can mimic a carcinoma. Moreover, skin retraction, inflammation, swellings, nipple discharge, axillary lymphadenopathies, and sinus formations can be observed. Sometimes, the initial findings may be an abscess. Systemic symptoms such as fever, weight loss, night sweats, and anorexia may be missing [3].

Tuberculous abscess presents as a dense tract connecting an ill-defined breast mass to a localized skin thickening and bulge on breast mammograms [6]. Ultrasound shows a heterogeneous fluid-containing mass with or without mobile internal echoes. Axillary and/or intra-mammary lymphadenopathy, macro-calcifications, and skin sinuses may be present [5]. MRI demonstrates a breast lesion with high signal intensity on T-2 W images, with smooth or irregular margins and rim enhancement on post-contrast sequence. However; these findings are non-specific for breast tuberculous abscess. MRI may depict chest wall involvement or a fistulous tract with the pleura [5].

The diagnosis of BT due to *Mycobacterium tuberculosis* complex species remains difficult due to the low number of mycobacteria present in clinical specimens compared to that observed in pulmonary infections and the inefficiency of conventional methods reported in various studies [3]. The anatomopathological study, although very specific, was not prescribed in our patient because of the purulent aspect of the sample. PCR amplification of nucleic acids of *Mycobacterium tuberculosis* in biological specimens can facilitate the diagnosis due to a higher sensitivity and specificity than culture, and results can be obtained in 48 h instead of 6–8 weeks [12]. This laboratory test can also identify possible drug resistance, such as rifampin or isoniazid [12].

This molecular diagnostic tool allowed us to confirm the presence of *Mycobacterium tuberculosis* complex in this paucibacillary sample and to eliminate the essential differential diagnosis of breast cancer, which is a disease whose different therapeutic management can complicate and compromise the functional or even vital prognosis of the patient.

In highly endemic countries such as Morocco, anti-tubercular therapy is initiated even if acid fast bacilli are absent. However, a biopsy should be performed if sarcoidosis, fungal infection, or co-existing malignancy is suspected.

There is no specific treatment guide to BT. Anti-tubercular chemotherapy is administered for 6–18 months depending on the case. Surgery can be performed if there is no response to medical treatment [3].

It is also important to be aware that breast carcinoma and BT may occasionally coexist, hence; the diagnosis of BT does not exclude the presence of concomitant breast carcinoma, therefore; close monitoring is necessary to depict signs of malignancy [7].

Conclusion

Primary BT is often difficult to diagnose. High suspicion based on clinical and radiological examination should motivate specific research for *Mycobacterium tuberculosis*, particularly by molecular biology which offers rapid diagnosis with high accuracy rates.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Author statement

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in the IDCases journal.

Author contributions

OS, AH and BE have been involved in drafting in the manuscript, EI, BF, AM, EJ have, revised the manuscript and ELM has given final approval of the version to be published.

Competing interests

The authors declare no competing interest.

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