



## BREAST TUBERCULOSIS : A CASE REPORT

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**ABSTRACT** Breast Tuberculosis is an infection that affects young women in their genitally active period. It is often primary and creates issues in terms of diagnosis and treatment. Treatment is actually based on antitubercular chemotherapy, occasionally associated to surgery. The prognosis is favorable under treatment. We have to mention that in case of breast tuberculosis, Histopathological examination remains the only mean of diagnosis. Referring to the medical literature written about the affection, we will analyze its particularities.

**KEYWORDS** :breast tuberculosis, antitubercular, histopathology

#### Introduction :

Tuberculosis is an infectious disease caused by bacteria belonging to the family Mycobacterium ("Koch's Bacillus"). The Lung remains the primary organ affected by this endemic disease, even though it could target any viscera in the organism (spreading via blood). The mammary gland represents a very rare localization, at the last rank in the list of organs that can be affected by tuberculosis.

However, there is a major issue of the differential diagnosis with other mammary pathologies, either benign or malignant, including breast cancer due to clinical and radiological similarities.

Only histopathological examination and/or the bacteriological one confirm the diagnosis and allow us to distinguish between breast tuberculosis and other malign or benign breast diseases.

#### Observation:

Our patient is a 39 years old woman, married with 3 children, from a low socioeconomic status. She was referred and admitted in our service for a breast lump, without any specific personal medical history, however she reported that her brother-in-law was treated for a case of pulmonary tuberculosis one year ago and was completely cured.

Her symptoms appeared 6 months ago when she discovered a lump in her right breast during self-examination. Her right breast was painless. It didn't increase in size and there were no skin changes. She had no fever and kept a good general health condition. The patient consulted a gynecologist at a private clinic who performed a breast ultrasound that concluded to an echogenic aspect resulting of mastitis with anechogenic images of abscess. The patient was put under Amoxicillin/clavulanic acid for 10 days.

There was no improvement and evolution was marked by the appearance of a purulent nipple discharge from one pore. In front of the clinical case, the patient was addressed in our training to supplement management.

The examination at admission found the patient in good health condition, no fever, heart rate at 71 beats/minute, normal blood pressure at 125/68 mmHg.

On the physical exam, breasts had an average size. The right breast, presented an erythematous plaque in the upper outer and lower inner quadrants. Palpation of the right breast found induration that was painless, mobile, measuring 5 cm from the major axis. The examination of the other breast was normal. There are no lymph nodes.



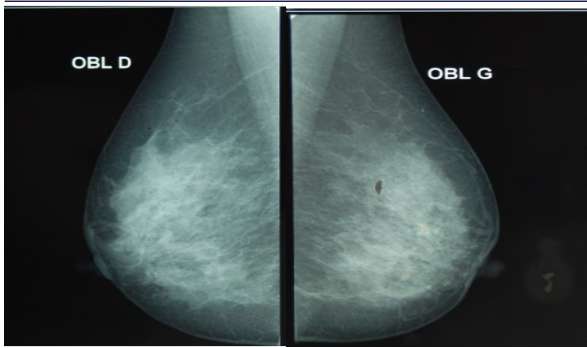
**Picture 1** : Right breast with erythematous plaque in the upper-outer and lower-inner quadrants with orange-peel skin.

Breast ultrasound has objectified the presence of multiple impure fluid collections in the right breast, some of which were in the process of fistulization evoking cold abscesses tuberculous.

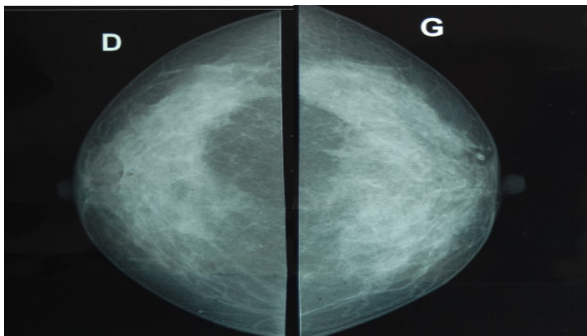
The mammary microbiopsy brought back a necrotic mammary tissue with pus. Histopathological examination of the biopsy was in favor of granulomatous epithelial-giganto-cellular mastitis without caseous necrosis, which can be related with tuberculosis.

The bacteriological analysis of pus showed an important cellular reaction along with sterile culture. The Ziehl-Neelsen stain came back negative. The Quantiferon-TB came up positive, confirming a Mycobacterium Tuberculosis infection. Prior to that the Lowenstein-Jensen culture turned out to be positive.

Based on these clinical and paraclinical elements, the diagnosis of breast tuberculosis was made and the patient was placed on anti-tuberculosis antibiotics for 6 months following the protocol of Moroccan national tuberculosis program. Treatment was well tolerated.



Picture 2 : oblic incidence of mammography



Picture 3 : face incidence of mammography



Picture 4 : breast ultrasound showing hypoechoic lesion of right breast not very well defined.

## DISCUSSION :

### Epidemiology

Mammary tuberculosis is an extremely rare pathology. It represents between 0,06 and 1% of all the localizations of tuberculosis, and 0,5 to 4,5% of breast pathologies. Its low frequency could be explained by the nature of the mammary tissue, not propitious enough for the proliferation of the tubercular bacilli. Since the first case of breast tuberculosis described by Astely Cooper in 1829 as a cold breast tumor, so far about 900 cases have been reported [1]. Breast tuberculosis is mostly encountered in tuberculosis-endemic countries. Asia has the largest percentage with 45,2% of reported cases, followed by 27,5% in Black Africa, 17,2% in North Africa, 16,2% in Europe and 4% in America [2].

ZEKRI et al. reported that in Morocco during the past 8 years, the incidence of breast tuberculosis represents 0.4% of the mammary affections compiled in the department of gynecology obstetrics "A" in the Ibn Rochd Hospital in Casablanca, which is quite similar to those published by studies done in North Africa [3].

Breast tuberculosis affects 95% of woman in their genitally active period from 20 to 50 years old. The risk factors are multiparity, breastfeeding, traumatic breast injuries, chronic mastitis and AIDS [4]. We shall add that 21 cases were seen among men [5].

## Transmission Routes

Breast Tuberculosis is considered primary in the absence of any other localizations, which is the most frequent case. In this situation, the transmission is direct, consequently to an abrasion of skin or the galactophorous ducts. It is considered secondary if the infection has started in another localization. The breast is often contaminated by contiguity through lymph nodes, intra-thoracic, cervical, supraclavicular or axillary ones, or from other neighboring foci. It spreads more rarely by hematogenous route [1-4].

In 50 to 75% of mammary tuberculosis, axillary nodes are involved, but they could be cervical or mediastinal as well. It spreads by antegrade or retrograde extensions through the lymphatic vessels from intra-thoracic or intra-abdominal tuberculous localizations. The contiguity involves pleural, costal, or sternal lesions. The blood hematogenous spread is rare, described in the case of miliary tuberculosis [6-7-8].

## Clinical Diagnosis :

Mammary tuberculosis presents a wide range of clinical features. It has almost always an insidious onset. It is rarely acute. The lesions are often unilateral and mainly at the level of the upper outer quadrant. According to Wilson and MacGregor, bilaterality has only been observed in 3% of cases [9]. Among young women, mammary tuberculosis mimics a pyogenic abscess, in the elderly, It mimics mammary carcinoma [10].

However, some clinical criterias might be useful to draw attention to the etiology of tuberculosis, namely:

The existence of a recurrent breast abscess inspite of antibiotic therapy and proper surgical drainage on previous occasions.

A fistulized axillary lymph node associated with a breast lump.

Rarely, a mammary fistula with an intermittent discharge punctuated menstrual cycles.

Four forms are usually encountered:

- The nodular form: with the presence of a hard lump, poorly defined (craggy, with irregular margins/edges) and poorly mobile, painless, accompanied or not by axillary lymph nodes, evoking a malignant tumor. (This is the case of our patient).
- The diffuse form: less frequent, it affects the whole breast which is painful and inflammatory, with axillary lymph nodes. It frequently presents a cutaneous fistulization.
- The sclerotic form: it is rather the case of the elderly with the presence of a painful mass and induration that rarely evolves towards suppuration.
- The physical examination reveals axillary lymph nodes in 75% of the cases. They are mobile and can evolve towards fistulization [12-13]. In other cases, Cervical, supraclavicular, or contralateral axillary lymph nodes may also be observed. An abnormal lymph node may precede any affection of the mammary gland and therefore constitute the only reason for consultation [7].

Radiological diagnosis is based on mammography and mammary ultrasound.

Mammography presents 4 aspects [5]:

- A dense mass of variable size and shape, with well-defined margins shape and without skin thickening.
- An oval area with undefined contours with skin retraction suggestive of malignancy.
- Stellar dense opacity with skin retraction and thickening.
- Thick, irregular margins with an abnormal architecture and a micronodular lesions of the breast. It often associated with significant Skin thickening and the aspect of miliary breast tuberculosis.

Apart from clinical manifestations (which are the recurrent abscesses with multiple fistulous orifices), TABAR identified three radio-clinical forms :

- A nodular form: that corresponds to a painless tumor mass of very slow growth, producing a dense round or oval shape with blurred margins.
- A diffuse form: characterized by an inflammatory, painful tumor mass with ulcerated skin and nipple discharge. The mammographic presents a dense mass with a skin thickening in relation to the lesion.
- A sclerosing form: pseudo-neoplastic lesions with a predominant fibrosis. It results in a higher density and homogeneity of the mammary gland: an increase in opacity with glandular retraction, which might be accompanied with architectural distortion.

Mammography ultrasound is an essential complementary exam to mammography.

Several ultrasound aspects have been described [13]:

- limited heterogeneously hypoechoic mass with discrete posterior reinforcement, and sometimes calcifications possibly evoking a complex fibroadenoma.
- thick-walled cystic lesion with fine echogenic content demonstrating gravitational change.
- dilation of the galactophorous ducts with echogenic content.

These different aspects are non-specific, although an extended fistulous path from the mass to the chest wall or the pleura is evidently very suggestive of the diagnosis.

As with any collection, ultrasound can be instrumental to guide punctures and biopsies. The fine needle aspiration cytology (FNAC) could alert to the presence of epithelioid histiocytes or by extracting of caseum in case of collected abscess. Most often, it is the histological examination of the biopsy specimens that determines the diagnosis by revealing the specific lesions [12].

In the Histopath examination, mammary tuberculosis appears in the form of a reddish or grayish yellowish lesion, sometimes along with ulceration areas suggestive of neoplastic lesion. The lump size is variable. The consistency is initially firm, then becomes soft in the case of caseum.

The histological section shows a lump strewn with whitish granulations or necrotic at the center, resulting in a yellowish granular pus.

Different forms are described in the literature [11]:

- Nodular form: 81.4%
- The sclerosing or scirrhous form: 12.2%
- Form with a cold abscess: 5.6%
- The destructive form: 1.4%
- Other rare forms: Form with hot abscess, tuberculous intra mammary lymph nodes

The histological criteria for breast tuberculosis is determined by the presence of epithelioid follicles and Langhans giant cells, with or without with caseous necrosis [8-9-10].

Two classifications are used for mammary tuberculosis:

- The classification of DELARUE [10]

This classification distinguishes four histological forms:

Tuberculous mammary lobulitis: the most common histological lesion common which affects the glandular lobules in the form of caseofollicular lesions with respect to the interlobular duct and the perilobular tissues. Two aspects are distinguished: Tuberculous galactophoritis, a lesion which electively affects the galactophoric duct, and cystic galactophoritis, in which the ducts contain a thick pus which originated from the calcified wall;

Vegetative galactophoritis: with papillary vegetations which form fleshy buds containing tuberculous follicles;

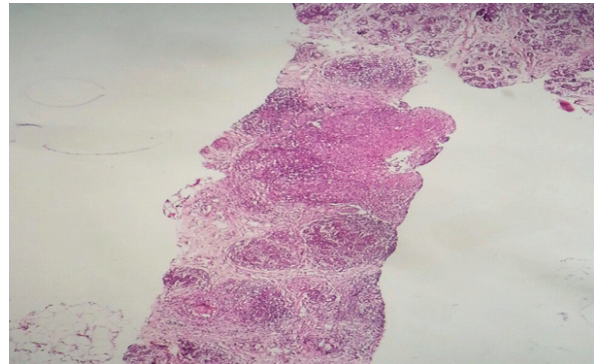
Cold abscess: which constitutes a suppurative caseus, open or not in a galactophore and containing pus with Koch Bacilli;

Miliary breast: This is an exceptional localization of the generalized

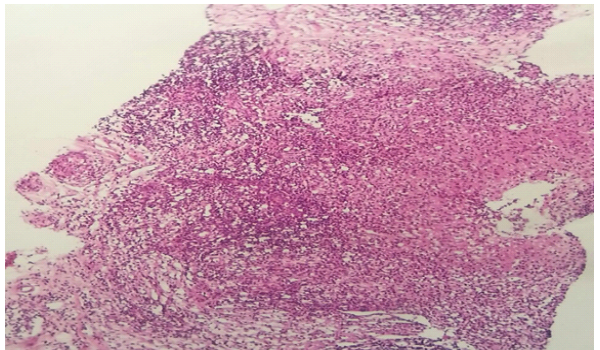
granulate, characterized by several isolated foci, the size of a pinhead, yellowish white. Histologically, the intralobular lesion presents all aspects of the miliary tuberculosis.

- The classification of Mac Keown and Wilkinson [13] is the most widely used one. It distinguishes five forms:
- Nodular tuberculosis mastitis of the breast: the most frequent form
- Disseminated tuberculosis mastitis: very common form, invading the whole breast with numerous caverns;
- Tuberculosis mastitis obliterans: rare form, due to a ductal infection with fibrosis and obliteration of the galactophoric system;
- Acute miliary tuberculosis mastitis: a rare form, observed especially in autopsy series;

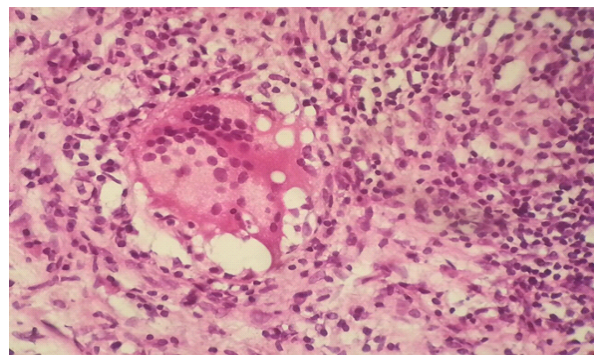
Sclerosing tuberculosis mastitis



**Picture 5** : low magnification showing granulomatous epithelial-giganto-cellular



**Picture 6** : middle magnification showing granulomatous epithelial-giganto-cellular



**Picture 7** : high magnification showing Langhans giant cell

#### Differential Diagnostics

A number of diagnoses must be excluded before we make the diagnosis of breast tuberculosis including breast cancer, which should be the first concern of all physicans because of its high frequency. It is

important to note that in the medical literature, forms associating cancer and mammary tuberculosis have been reported, hence the need for the histopathological study of the mammary tissue in order to eliminate an associated carcinoma.

Other pathologies to be excluded are mammary plasmocytosis, antibiotic-mediated pyogenic abscess, actinomycosis, mammary granulomatosis, sarcoma, Chronic mastitis with foreign body giant-cell response and mammary duct ectasia [13].

### Treatment

It is identical to that of the other extra-pulmonary tuberculosis sites according to the national tuberculosis control program. It consists of an intensive phase combining Isoniazid, Rifampicin and Pyrazinamide for 2 months, followed by a consolidation phase involving Isoniazid and Rifampicin for 4 months: 2RHZ / 4RH. Antituberculous chemotherapy is controlled and administered primarily as an outpatient treatment.

The indication of surgery is limited. It remains necessary for diagnosis (through biopsy) however as a therapeutic mean, it is recommended especially in second intention if there was a bad response to medical treatment. Surgery would involve the lump excision or the drainage of abscess, by resecting as much as possible the necrotic and infected tissues, or by a segmentectomy (quadrantectomy) or total mastectomy, if the breast is completely ravaged and riddled with fistulas.

### Prognosis

The life threat for the patient when mammary tuberculosis is isolated. Meaning, the vital prognosis depends on the other tuberculous localizations which must be systematically investigated with the utmost attention. These extra-mammary localizations might be progressive or quiescent [1].

### Conclusion

Breast tuberculosis is rare even in endemic countries. However, it deserves to be studied due to its extreme resemblances to breast cancer. It affects mainly young women during their genitally active periods. It is promoted by: multiparity, pregnancy, lactation and immunosuppression, especially HIV infection.

Radiological and clinical exam don't reveal any specific signs, hence the need for a bacteriological study and histologic examination to ensure and confirm the diagnosis.

The treatment is mainly medical. However, surgical treatment is useful in case of doubt or after the failure of medical treatment. The outcome under treatment is generally favorable.

Improving the prognosis of mammary tuberculosis involves an early diagnosis and physician insight.

We shall stress on the importance and the crucial need to promote the preventive means prevention in order to eradicate this disease.

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