Case report

Tuberculosis of the breast neoplastic-like about two report cases: A rare often unrecognized diagnosis

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ABSTRACT

Tuberculosis of the breast is a very rare infection; it occurs chiefly in women of childbearing potential, usually as an apparently primary infection and constitutes a diagnosis and therapeutic challenge. Administration of antituberculous agents is the mainstay of therapy. Surgery is required in some cases.

Through the literature data we recall the epidemiological, clinical, diagnostic and treatment of this pathology.

1. Introduction and importance

Mammary tuberculosis is a rare form of extrapulmonary tuberculosis even in endemic countries. This condition has recently gained renewed interest, which may be explained by the increasing prevalence of HIV infection, the emergence of mycobacterial strains resistant to standard treatments, and the immigration of populations from countries with high tuberculosis endemicity.

Mammary localization is very rare, representing less than 0.1% of all tuberculosis localizations. It was first described by Cooper in 1829 as a cold tumor [1].

This localization may be primary or secondary to a locoregional or disseminated tuberculosis. It often poses diagnostic difficulties, especially with breast cancer, both clinically and paraclinically [1,2].

Through two new cases of breast tuberculosis collected at the Mohamed 6 center of oncology-gynecology of the CHU Ibnou ROCHD in Casablanca and the data of the literature we will study the clinical, paraclinical and evolutionary aspects of this entity, and discuss the diagnostic difficulties encountered. The work has been reported with respect to the SCARE 2020 criteria [3].

2. Observation 1

Patient aged 28 years, second gesture second pare, without particular pathological history nor notion of tuberculosis contagion, who consulted in our formation for mass of the left breast appeared since 5 months increasing progressively in volume without other associated signs evolving in a context of apyrexia and conservation of the general state.

The examination found large asymmetrical breasts, with retraction of the left nipple and a poorly limited mass straddling the upper quadrants of the left breast, measuring 7 cm in long axis, mobile in relation to the superficial and deep plane, with redness and edema of the skin opposite and without nipple discharge (Fig. 1). Examination of the lymph nodes revealed a left axillary adenopathy of 3 cm long and mobile. The right breast was without abnormalities. The rest of the somatic examination was unremarkable.

Mammography showed a spiculated opacity straddling the upper quadrants of the left breast, predominantly external, poorly limited, with extension towards the nipple, associated with numerous dusty microcalcifications with integrity of the cutaneous and subcutaneous planes (Fig. 2).

The breast ultrasound shows the presence of several attenuating heterogeneous hypoechoic lesions in a poorly limited area at the level of the left upper quadrants, more important at the level of the upper-external quadrant with peripheral hypervascularization and edematous infiltration of the breast fat tissue, associated with extensive galactophoric dilatation in the same quadrants and in the retromammary area, with hyperechoic content of the galactophoric ducts and presence of two left axillary adenopathies measuring 19 mm and 27 mm in long
axis (Fig. 3). No suspicious lesions in the right breast. The examination was classified as BI-RADS 5 of the ACR classification.

A biopsy was performed, the histological study of which showed the presence of tuberculoid granulomatous inflammation with caseous necrosis (Fig. 4). The chest X-ray was normal. The extension study did not reveal any other tuberculous sites.

3. Observation 2

Patient aged 35 years, nulligravida nulliparous, with no notable pathological history or notion of tuberculosis infection. She was admitted to our department for the management of an inflammatory lesion of the right breast that had been evolving for 3 months with fever and asthenia. The examination showed ulcerative-bourgeoning lesions of the right breast in the lower quadrants and retraction of the nipple, with an inflammatory aspect and multiple fistulization points associated with a right axillary adenopathy of 3 cm in long axis (Fig. 5).

On mammography, the right breast showed a diffuse, heterogeneous, poorly limited opacity with skin thickening and nipple retraction without any microcalcifications (Fig. 6).

The patient was put on anti-tuberculosis polychemotherapy according to the protocol accepted by the Ministry of Health’s anti-tuberculosis program (category III): Rifampicin (R) + Isoniazid (I) + Pyrazinamide (P) + Ethambutole (E), for 2 months (six days on cept) then Rifampicin (R) + Isoniazid (I) for 4 months (six days on cept) with a good evolution over 6 months.

On breast ultrasound, poorly defined heterogeneous hypoechoic lesions with galactophoric ectasia and skin thickening were found, associated with right axillary adenopathies, the largest of which measured 3 cm in long axis (Fig. 7).

The patient underwent multiple surgical biopsies, the histological study of which showed epithelio-giganto-cellular granulomatous mastitis with caseous necrosis, confirming the diagnosis of breast tuberculosis. The search for another location was negative. The patient was put on a multidrug antituberculosis therapy according to the same therapeutic scheme for 6 months. The follow-up of the patient showed a good clinical evolution over a period of 8 months.

4. Clinical discussion

Breast tuberculosis is a very rare form of extrapulmonary tuberculosis, ranking last among visceral localizations [2,4]. Its frequency varies from 0.06% to 0.1% of all tuberculosis sites [5,6].

It represents 0.5 to 4.5% of all breast pathology and its frequency varies according to geographical region [5-7]. Asia has the largest number of published cases with 45.2% of cases, followed by Black Africa (27.4%), North Africa (17.2%), Europe (16.2%) and finally America (4%) [8].

Mammary tuberculosis is influenced by the physiological activity of the mammary gland, which explains its frequency in genitally active women (83–95% of cases) and its rarity before puberty and after menopause [8,9]. It is exceptional in men [6,10].

Its risk factors are multiparity, pregnancy and breastfeeding, which remain the most important factors because of the vascular richness of the gland during this period [11-13], and finally trauma to the breast and chronic mastitis [5].

Mammary tuberculosis is punctuated by the menstrual cycle with premenstrual cyclic flare-ups manifested by an increase in tumor volume and particularly a fistulous discharge that subsides at the end of menstruation [14].

There are 2 forms of mammary tuberculosis according to the mode of contamination:

Primary mammary tuberculosis (isolated involvement of the gland) where contamination is made by direct inoculation of the bacillus of Koch (BK) through the galactophoric ducts or through a cutaneous lesion. It is probably favored by breastfeeding and pregnancy. The prevalence of this form is probably overestimated because it is likely that other tuberculous foci, particularly pulmonary, go undetected [10,15].

Secondary mammary tuberculosis with multiple routes of infection: • In 80–90% of cases, it occurs via the retrograde lymphatic route from the axillary nodes [3,16]. • The hematogenous route is exceptional and occurs after a tuberculous miliary [10,17,18]. • The contiguous route is less frequent and is often secondary to a bone, joint or skin focus or to fistulization of an intercostal adenitis to the skin [8].

Mammary tuberculosis can have different clinical aspects reflecting the anatomical lesions [14,19-21]:

• The nodular form is a frequent anatomical-clinical variant that corresponds either to a circumscribed caseous lesion, hard, poorly limited and not very mobile, painless and slow evolving, with or without axillary adenopathies, mimicking a mammary adenocarcinoma, or to a painful inflammatory tumor mass surmounted by thickened skin simulating an inflammatory carcinoma. Histological examination reveals caseo-follicular and giganto-cellular granuloma within a circumscribed fibrous process with poorly defined contours.

Fig. 1. A mass straddling the upper quadrants of the left breast, poorly limited, measuring 7 cm in long axis, mobile in relation to the superficial and deep plane, with inflammatory signs opposite.
- The diffuse form is less frequent, it involves the whole breast which is painful and inflammatory adhering to the superficial and deep planes, with inflammatory axillary adenopathies and frequently presents a cutaneous fistulization. It may be accompanied by retraction and nipple discharge. Histologically, this form is characterized by the presence of tubercular follicles disseminated in a “rosary” pattern around the excretory ducts. Caseous necrosis is abundant and fibrosis is rare.

- The sclerotic form is rather the prerogative of the elderly with the presence of an indurated and painful mass rarely evolving towards suppuration. It represents a progressive mode of mammary tuberculosis.

- Obliterative mammary tuberculosis is a tuberculous galactophoritis which takes the form of a poorly limited peri-mammary nodule with early retraction of the nipple. The skin opposite thins and ulcerates, releasing a serous fluid. Two forms can be distinguished: one encysted, made of dilated ducts whose lumen is filled with caseous material, and the other vegetated made of intracanal vegetations with tubercular follicles.

Mammary tuberculosis is characterized by its clinical polymorphism. The duration of the disease varies from a few weeks to several years, which indicates its chronicity [11,12,20].

Involvement is often unilateral and occurs mainly in the upper external quadrant of the breast [10,12]. According to Wilson [15], bilaterality is observed in only 3% of cases. Finally, it may present as a chronic abscess that is resistant to antibiotic treatment [21,22].

Mammary discharge, rarely observed, is present especially in tuberculous mastitis with involvement of the milk ducts. It may be bloody or purulent.

Axillary adenopathies are found in 75% of cases [12,22]. They may also be located in the cervical or supra-clavicular region. They are often mobile, sometimes voluminous and may precede the breast lesion [12,21].

General signs of tuberculosis impregnation (asthenia, anorexia, weight loss and fever) are usually present, but may be absent or incomplete.

The TST is usually positive in endemic areas. This test is not very sensitive and may give false negatives, not excluding the diagnosis of tuberculosis [24].

Mammographic signs are not specific for TM. Thus, mammography is only an element of diagnostic orientation. It shows heterogeneous opacities of variable size and shape, poorly limited, with blurred or stellate contours, sometimes with calcifications or architectural disorganization, thickening and skin retraction, which tend to point to a malignant etiology [3,25].

On ultrasound, TM often appears as a hypoechoic, heterogeneous, well or poorly limited image with minimal posterior enhancement and some calcifications. These aspects pose a problem of differential diagnosis with breast cancers and old and remodeled adenofibromas [24,26–28].

The lesional aspects on breast MRI are not specific. However, MRI can be used to determine the local and regional extension of the disease.

The diagnosis of certainty is based on the detection of Mycobacterium tuberculosis (MTB) by direct examination or culture of the cytopsy or biopsy product or secretions from breast fistulas. However, the tubercle bacillus is found in only 25% of cases [25,29]. Moreover, culture requires a delay of four to six weeks. In our study, bacteriological examination was negative in both cases.

Isolation of the tubercle bacillus on Lowenstein culture medium is difficult. An improvement in diagnosis can be made by liquid culture techniques (Bactec) or by gene amplification (P.C.R) [30].

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Fig. 2. Spiculated opacity straddling the upper quadrants of the left breast, poorly limited, with extension towards the nipple, associated with numerous dusty microcalcifications.
Histological examination of a biopsy specimen is a crucial step in the diagnosis. In 95% of cases, it shows epithelial-giganto-cellular granulomas with central caseous necrosis, very suggestive of a tuberculous lesion [25,29]. In our two patients, histology was contributory.

The main differential diagnosis to be feared in breast tuberculosis is breast cancer. Forms associating breast cancer and breast tuberculosis have been described, hence the need for a thorough histological examination of the breast tissue [10].

Other pathologies to be discussed are benign mastopathies, in particular fibroadenoma and phyllodes tumor [19], pyogenic abscesses, granulomatous mastitis, sarcoidosis, chronic plasma cell mastitis [11,23].

The therapeutic management of mammary tuberculosis, according to the national tuberculosis control program, is usually based on a classical quadruple therapy (Category III) combining isoniazid, rifampicin, ethambutol and pyrazinamide (six days on cept) for two months, followed by isoniazid and rifampicin (six days on cept), for 4 months [30].

Surgical treatment is essentially a diagnostic tool by performing biopsies, excisions or lumpectomies, drainage of suppurated collections allowing a histological diagnosis [3,4,8]. In addition, in cases of resistance to anti-tuberculosis treatment or locally advanced disease, mastectomy may be proposed for therapeutic purposes [3,4,6,8,32].

Currently, some authors advocate percutaneous drainage of the abscess under tomographic or ultrasound control [32].

Once treatment has been initiated, the prognosis is excellent,
provided that other tuberculosis sites are managed appropriately. However, rigorous monitoring of treatment compliance is necessary to prevent recurrence and the development of resistance to anti-tuberculosis drugs [33].

Finally, the risk of contamination of the breast-fed child associated with drug toxicity deserves special monitoring and may lead to discussion of weaning.

5. Conclusion

Breast tuberculosis is a rare condition even in endemic countries. The clinical and radiological pictures are often variable and misleading and pose a real problem of diagnosis, in particular with breast cancer. In endemic countries, the diagnosis of tuberculous mastitis must be evoked in front of certain clinical presentations.

Imaging findings are often classified as ACR 4, requiring a biopsy to rule out cancer. Anatomopathological and sometimes bacteriological studies of the samples ensure the diagnosis. The evolution under antitubercular treatment sometimes associated with surgery is favorable.

Patient consent

Written informed consent for publication of their clinical details and/or clinical images was obtained from the patients.

Ethical approval

I declare on my honor that the ethical approval has been exempted by my establishment.

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Declaration of competing interest
The authors declare having no conflicts of interest for this article.

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