

PRIMARY TUBERCULOSIS OF THE BREAST FROM MANKWENG HOSPITAL

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ABSTRACT

Object of study: To share our experience with a rare case of Primary Tuberculosis of Breast.

The problem to be solved: Tuberculosis of the breast is a rare type of extrapulmonary tuberculosis and usually affects young lactating multiparous women. It accounts for less than 0.1 % of all breast pathologies. Tuberculosis of the breast is often misdiagnosed. Therefore, a high index of suspicion is needed when evaluating cases of breast abscesses, fistulae, or mass.

Main scientific results: A case of a 27-year-old female with no known co-morbidities, HIV negative who presented to our Surgical Outpatient Department with a 1-year history of a painless left breast lump. No previous history of pulmonary tuberculosis was reported. Breasts ultrasonography indicated BIRADS (Breast Imaging-Reporting and Data System) V: lesion highly suspicious of malignancy. Histopathological analysis of the core biopsy showed features of a necrotizing granulomatous mastitis with adjacent fat necrosis. Ziehl-Neelsen stain was negative though histological results were worrisome of a mycobacterial infection. Patient responded well to antitubercular therapy as evidenced by lump regression, ulceration healed, peau d'orange currently resolved, and the overall size of the breast is going back to its normal state.

The area of practical use of research results: Family medicine physicians, Primary health care center, District level or regional level hospital.

An innovative technological product: a high index of suspicion tuberculosis is needed when evaluating cases of breast abscesses, fistulae, or mass. Awareness of this condition is important as it can clinically, and radiologically mimic breast carcinoma.

Scope of application of an innovative technological product: Family medicine physicians, Primary health care center.

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1. Introduction

1. 1. Object of study

Object of study was to share our experience with Primary Tuberculosis of Breast.

1. 2. Description of the problem

A case of a 27-year-old female with no known co-morbidities, HIV negative who presented to our Surgical Outpatient Department with a 1-year history of a painless left breast lump. No previous history of pulmonary tuberculosis was reported. Breasts ultrasonography indicated BIRADS (Breast imaging-reporting and data system) V: lesion highly suspicious of malignancy. Histopathological analysis of the core biopsy showed features of a necrotizing granulomatous mastitis with adjacent fat necrosis. Ziehl-Neelsen stain was negative though histological results were worrisome of a mycobacterial infection. Patient responded well to antitubercular therapy as evidenced by lump regression, ulceration healed, peau d'orange currently resolved, and the overall size of the breast is going back to its normal state.

Tuberculosis (TB) is caused by Mycobacterium tuberculosis and affects primarily the lungs [1]. It is the most widespread and persistent human infection in the world, and it can involve any organ and mimic other illnesses, hence it is called the great mimicker [2]. Tuberculosis of the breast is a rare type of extrapulmonary tuberculosis and usually affects young lactating multiparous women [1, 3]. It accounts for less than 0.1 % of all breast pathologies [2–4]. TB of the breast is

often misdiagnosed, under-reported and ill-treated [5]. Diagnosis of breast tuberculosis, therefore, remains a challenge for clinicians and requires a high degree of suspicion [6]. Clinical evaluation, radiological examination, histopathological and microbiological sampling are often necessary to confirm the diagnosis [3]. Tuberculosis is more common in developing countries, and its incidence increases among immunosuppressed individuals [3, 7, 8]. D Meerkotter et al. found Human immunodeficiency virus (HIV) to be the major risk factor of TB [8].

1. 3. Suggested way to solve the problem

A high index of suspicion of tuberculosis is needed when evaluating cases of breast abscesses, fistulae, or mass. Awareness of this condition is important as it can clinically, and radiologically mimic breast carcinoma.

Aim of research was to share our experience with a rare case of Primary Tuberculosis of Breast.

2. Materials and research methods: Case Report

This case report was conducted at the Mankweng Hospital, Limpopo province, South Africa, 2022.

A case of a 27-year-old female with no known co-morbidities, HIV negative who presented with a 1-year history of a painless left breast lump.

Informed consent.

A written informed consent was obtained from the patient to publish this case report and to attach images taken. Ethical approval was obtained from Pietersburg-Mankweng Research Ethics committee, reference number PMREC 30 June UL 2022/B.

3. Result

Case presentation: a case of a 27-year-old female with no known co-morbidities, HIV negative who presented to our Surgical Outpatient Department (SOPD) with a 1-year history of a painless left breast lump. She came because the breast had started oozing pus for 2 days' duration. She is a mother of two children with no history of contraceptive use and no family history of malignancies. No previous history of pulmonary tuberculosis was reported.

Clinical examination revealed a healthy-looking patient with Blood Pressure=105/70 mmHg, Pulse=80 bpm and $T=36.3$ °C. On local examination showed breasts asymmetry with the left breast bigger than the right one (**Fig. 1**). She had an ulceration of about 1×1 cm in the outer lower quadrant of the left breast (**Fig. 2**) oozing pus with surrounding skin thickening with peau d'orange and nipple retraction. She also had a 10×10 cm mass in the left breast occupying all four breast quadrants composed of solid and cystic component. It was attached to an overlying skin, was non tender and had no nipple discharge. She had no palpable axillary lymph nodes. Other systemic examination was unremarkable. Chest X-ray was Normal (**Fig. 3**) with no signs of active or previous tuberculous infection.

Breasts ultrasonography indicated BIRADS V: lesion highly suspicious of malignancy with ipsilateral axillary lymph nodes involvement, skin thickening was noted. Abdominal ultrasound was normal with no lymphadenopathy visualized. Liver appeared to be normal on ultrasound. Mammography noted breast masses in the retroareolar space having lobulated margins with skin thickening and nipple retraction. No chest wall involvement. No axillary lymph nodes visualized. Computerized Tomography (CT) Scan of the neck, chest and abdomen showed left breast mass with round ipsilateral lymph nodes and no central necrosis. No features of disseminated tuberculosis were noted (**Fig. 4, 5**).

When biopsy was taken, the breast started draining cheese-like pus of about 30mls from the puncture site and from the ulcer. Histopathological analysis of the core biopsy revealed features of a necrotizing granulomatous mastitis with adjacent fat necrosis. Ziehl-Neelsen stain was negative though histological results were worrisome of a mycobacterial infection. No ductal carcinoma or invasive malignancy was identified. Microscopic & culture sensitivity (MC+S) showed no bacterial growth.

Because of high clinical and radiological suspicion for malignancy, Core biopsy was repeated which still showed features of necrotizing granulomatous mastitis. Mycobacterial infection was still highly suspected. Immunohistochemistry showed: AE1/3: Highlights benign ductal epithelium, S100: Highlights myoepithelial cells, CD68: Positive cytoplasmic staining in histocytes.

TB culture result is negative. Patient was initiated on Anti-Tuberculosis therapy which consist of 2 months of intensive phase and 4 months of continuation phase. Drugs used in the intensive phase are Ethambutol, Pyrazinamide, Rifampicin and Isoniazid. The continuation phase consists of the use of 2 drugs which are Isoniazid and Rifampicin. Patient was reviewed on monthly basis at our SOPD. She responded well to antitubercular therapy as evidenced by lump regression, ulceration healed, peau d'orange currently resolved, and the overall size of the breast is going back to its normal state (**Fig. 6, 7**).



Fig. 1. Breasts asymmetry; left breast enlarged and peau d'orange mimic cancer



Fig. 2. Ulceration of left breast

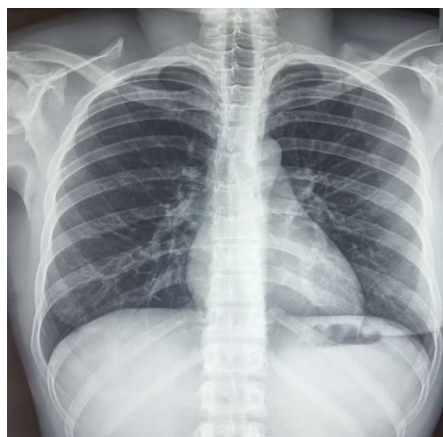


Fig. 3. Chest X-ray: normal with no signs of active or prior tuberculous infection



Fig. 4. CT scan chest coronal view: no features of disseminated tuberculosis in the lung



Fig. 5. CT scan sagittal view



Fig. 6. Breasts status after 2 months of initiating anti-TB treatment



Fig. 7. Breasts status after completion of anti-TB treatment

4. Discussion

Breast tuberculosis is a rare manifestation of an extra-pulmonary tuberculosis [1] which was first described in 1829 by Astley Cooper [3, 5, 9]. It commonly affects women of reproductive age, multiparous and lactating women [1, 3, 4, 9]. Males are rarely affected [2, 5, 8].

Clinically it can be difficult to differentiate it from breast cancer or breast abscess [1, 2, 8, 9]. Breast tuberculosis may be primary when no other focus of tuberculosis is detectable or secondary, when a source can be identified, mainly located pulmonary [1, 5, 6, 9]. Most authors have considered almost all cases of TB of the breast to be secondary, the rare cases of primary TB of the breast being caused by infection of the breast through abrasions or through the duct openings in the nipple [1, 3, 9]. Primary TB of the breast is extremely rare [3].

The routes of spreading to the breast are hematogenic, lymphatic, by direct extension from the thoracic wall or the axillary lymph nodes, or by inoculation through traumatized skin or ducts [1, 2, 5, 9, 10]. The commonest clinical presentation is usually a unilateral breast lump which may or may not be painful, most often located in the central or upper outer quadrant of the breast [1, 2] and the lump can mimic breast carcinoma with or without abscess formation [1, 9]. Axillary lymph nodes may or may not be involved [5]. Nipple and skin retractions, swellings, inflammatory changes, sinus formations, and axillary lymphadenopathies can also be observed but breast discharge is rarely seen [3, 11]. In a series of 30 patients reported by Tewari M et al, 22 patients presented with lump in the breast; 11 of these had tubercular ulcer, and 4 had multiple discharging sinuses in the overlying breast skin [2, 7].

The patients' general condition is usually good, and they do not have constitutional symptoms of tuberculosis [3]. The history of presenting symptoms in breast TB is usually less than a year but varies from few months to several years [5]. Recurrent inflammation and abscess of the breast that do not respond to surgical drainage and standard antibiotic therapy in young women should raise suspicion [1].

Tewani M et al. [7] classified TB of the breast into: nodulocaseous tubercular mastitis, disseminated/confluent tubercular mastitis and tubercular breast abscess. The nodulocaseous type presents as a slow-growing circumscribed mass that progressively involves the skin layers, sometimes leading to ulceration and fistulae, whereas disseminated/confluent tubercular mastitis is characterized by multiple foci throughout the breast that later caseate, leading to sinus formation.

The gold standard for the diagnosis of breast tuberculosis is detection of *M. tuberculosis* by Ziehl Neelsen staining or by culture, though culture may delay the diagnosis or reveal false negative results due to paucibacillary samples [1, 2, 5, 11]. Mantoux test may not provide definitive diagnosis but only confirms previous exposure to tubercle bacilli, mammography cannot distinguish breast tuberculosis from breast cancer and may be less informative in young women due to dense breast tissue and breast ultrasonography may reveal hypoechoic mass [1]. PCR is highly sensitive for the diagnosis of TB of the breast, and it is recommended in cases in which culture is negative or for differential diagnosis between other forms of granulomatous mastitis [1].

Histopathology of the lesion can contribute to diagnosis, in many cases, by identifying a chronic granulomatous inflammation with caseous necrosis and Langhans-type giant cells [9, 12]. Caseating granuloma is the histopathological hallmark of TB. It is not necessary to document the presence of acid-fast bacilli (AFB) before initiating anti-tubercular therapy [5]. Fine needle aspiration has been shown to be the most practical way of diagnosing TB of the breast, which, although unable to identify the presence of the etiologic agent, contributes towards diagnosis by detecting the presence of epithelioid cell granulomas and necrosis, leading to definitive diagnosis in up to 73 % of cases [5, 9, 11]. In tuberculosis-endemic countries, the finding of granuloma in fine needle aspiration warrants empirical treatment for tuberculosis even in the absence of positive AFB and without culture results [2].

Breast cancer is the main differential diagnosis to be considered, although other diseases of the breast, such as fat necrosis, plasma cell mastitis, peri-areolar abscess, actinomycosis and blastomycosis, should also be considered [13].

Anti-tuberculosis treatment is given to treat breast tuberculosis for 6 months' period. The six-month regimen comprises of a two-month intensive phase with four drugs used orally (ethambutol, pyrazinamide, rifampicin and isoniazid), followed by a continuation phase of four months with two drugs (isoniazid and rifampicin) [1, 4].

Surgery in breast tuberculosis is reserved for patient who need surgical excision to make the diagnosis, for drainage of abscess and excision of sinus tracts and residual lumps after poor response to anti-tuberculosis treatment [1, 3]. In refractory cases with destruction of the breast, simple mastectomy may be performed [2, 11].

Research limitations. Limitation is that this is rare case of primary TB of Breast and only one case we presented here.

Prospects for further research. Further studies are indicated to elucidate the clinical behavior of the TB breast

5. Conclusions

A high index of suspicion tuberculosis is needed when evaluating cases of breast abscesses, fistulae, or mass specially when presenting for long duration.

Our patient presented painless mass for one year and subsequently with oozing pus and it is often misdiagnosed particularly when not associated with pain.

Awareness of this condition is important as it can clinically, and radiologically mimic breast carcinoma.

As seen in our patient in Breasts imaging with ultrasonography revealed highly suspicious of malignancy.

Conflict of interest

The authors declare that there is no conflict of interest in relation to this paper, as well as the published research results, including the financial aspects of conducting the research, obtaining and using its results, as well as any non-financial personal relationships.

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Data availability

Manuscript has no associated data.

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