

# **Primary Tuberculosis of the Breast: A Rare Cause of a Breast Lump**

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## **ABSTRACT:**

Primary tuberculosis (TB) of the breast is a very rare condition. We present a 50-year-old patient who presented with primary TB of the breast. The significance of the radiological findings, the importance of histological diagnosis and treatment, and the possibility of co-existence with breast cancer are discussed.

## **INTRODUCTION:**

Primary tuberculosis (TB) of the breast is a very uncommon condition. In western countries it accounts for approximately 0.1% to 0.52% of all TB cases. In countries where TB is endemic, such as the Indian subcontinent, the incidence of TB of the breast may be as high as 4.0% [1]. The incidence of isolated TB of the breast accounts for 0.025% to 0.1% of breast lesions in the western world[2]. Although rare, the coexistence of TB and cancer in the breast is important to consider [3].

## **CASE REPORT:**

A 50-year-old female patient presented to the surgery outpatient department at the Steve Biko Academic Hospital in Pretoria, South Africa, with a five-month history of a palpable lump in her left breast.

The patient did not have any positive TB contacts at the time of presentation. She was human immunodeficiency virus (HIV) negative and was not immunosuppressed from

any other cause. TB is endemic in South Africa and the high prevalence of TB contributes to an increased risk for contracting primary TB of the breast.

The patient did not have a family history of breast cancer. She had delivered two children who were breastfed until the age of two. The patient was post-menopausal and at the time of presentation was not receiving any hormone replacement therapy.

On clinical examination, a firm and mobile palpable mass in the upper outer quadrant of the left breast, was present. The overlying skin was thickened but no draining sinuses were present. The nipple was not retracted and no nipple discharge was seen. The patient had multiple lymph nodes palpable in both axillae.

Owing to the extremely high patient load and backlog at the hospital's mammography unit, the patient could not receive a mammogram at the time of presentation and it was decided to perform a tru-cut biopsy of the clinical palpable lump to aid in the making of a prompt diagnosis.

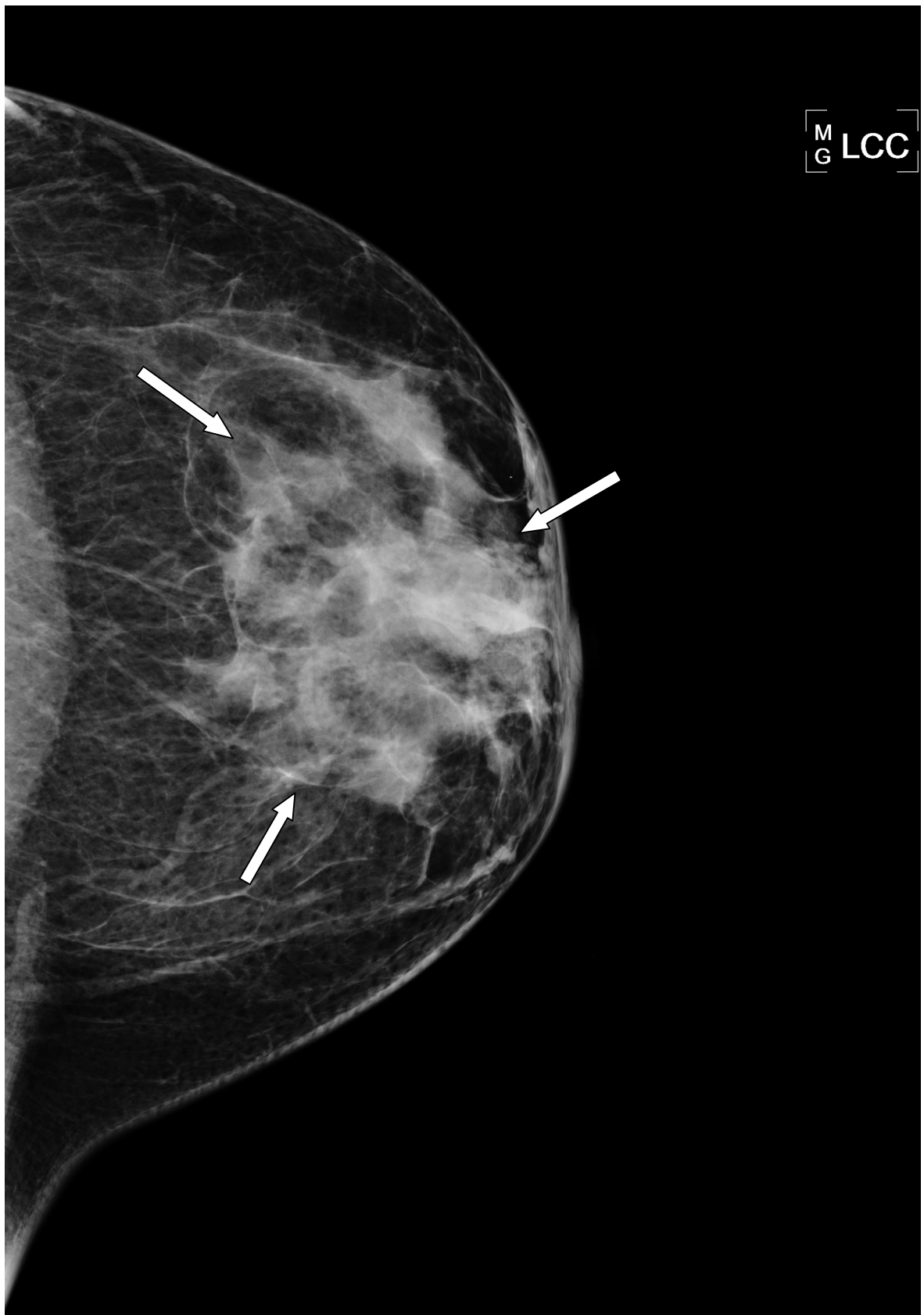
The chest radiograph (CXR) demonstrated no evidence of active or previous pulmonary TB. Mammography of the left breast demonstrated an area of irregular increased density and architectural distortion in the superior retro-areolar area, as well as thickening of the skin (Figures 1 and 2).

**Figure 1 and 2:** Medio-lateral-oblique (MLO) and cranio-caudal (CC) views of the left breast. The breast tissue is mainly involuted. There is a mass lesion in the superior segment of the left breast with architectural distortion (arrows) as well as thickening of the skin.

Figure 1

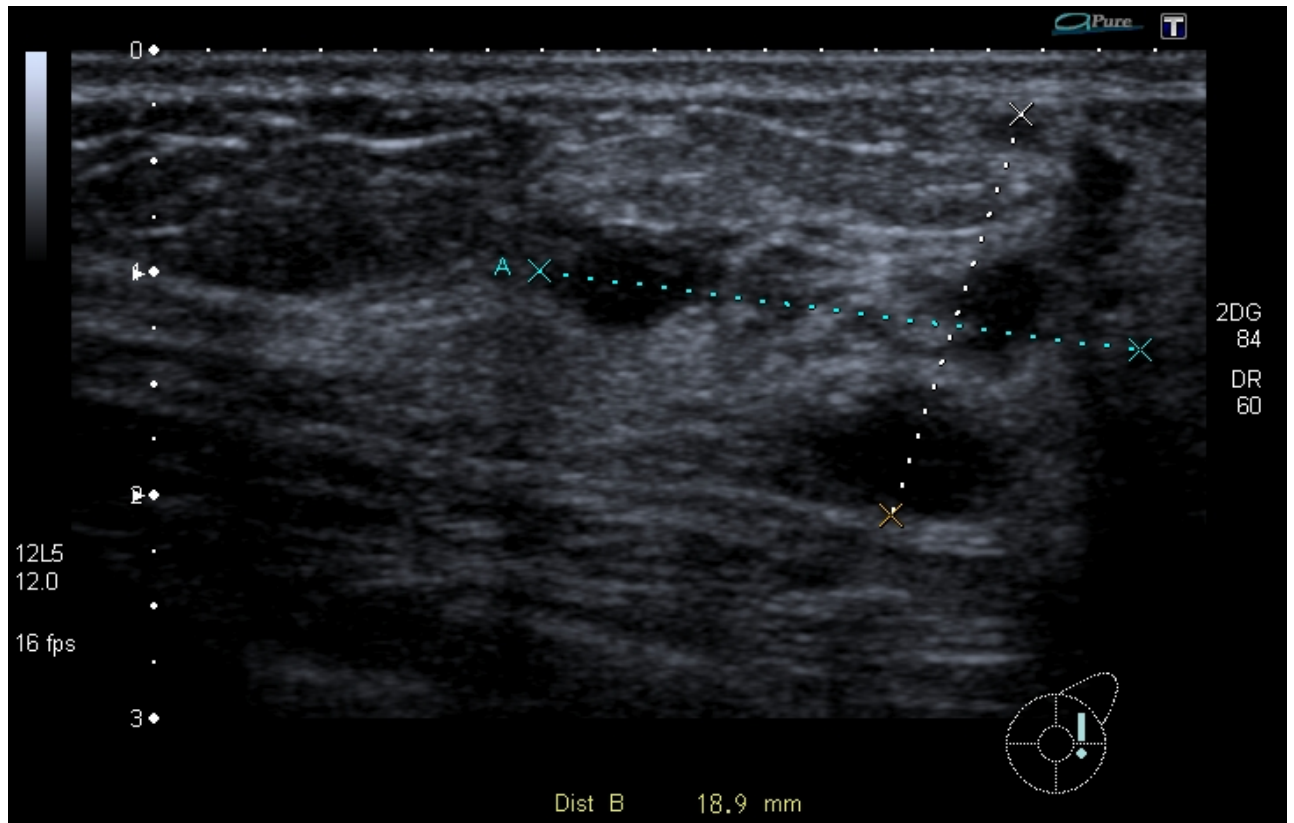


Figure 2





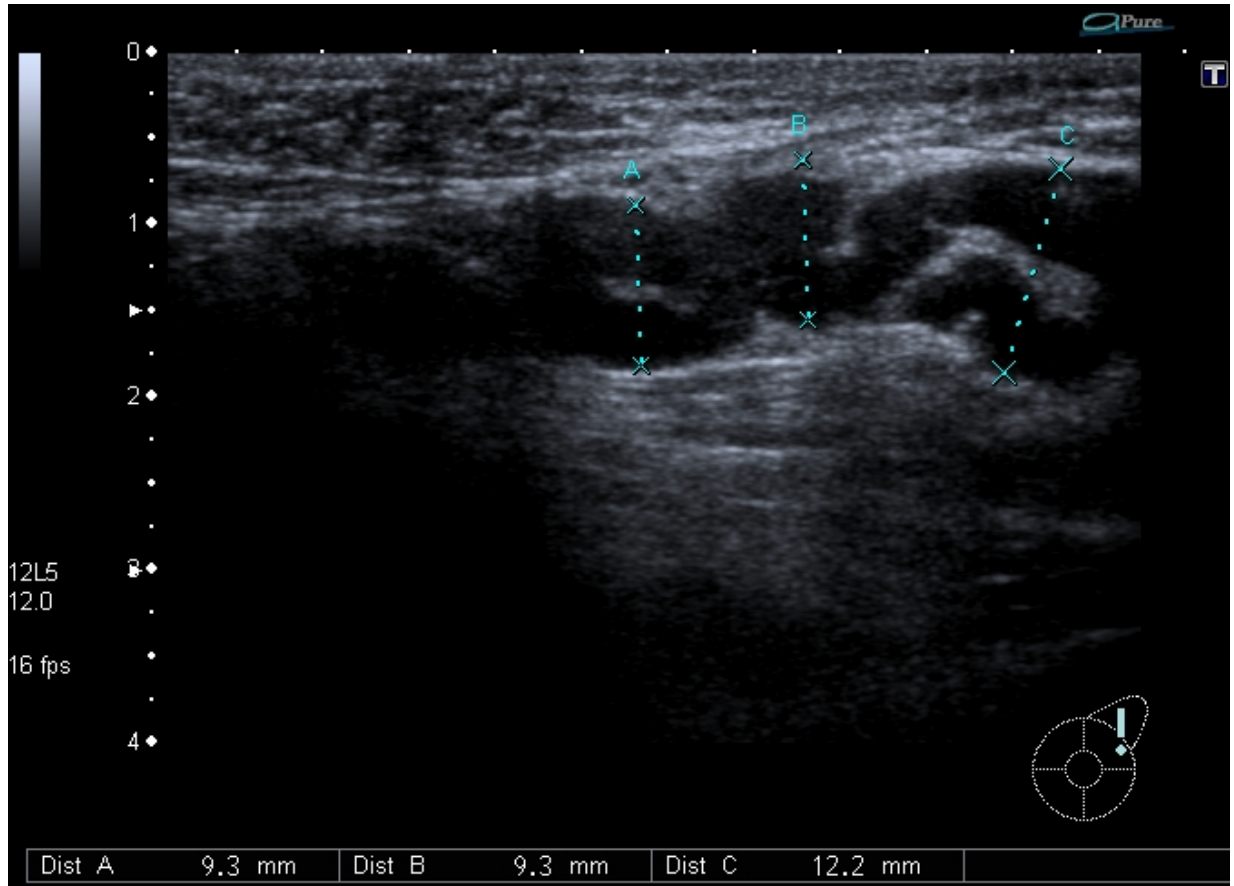
**Figure 3:** Ultrasound evaluation of the left breast demonstrating an inhomogeneous mass at the 2 o'clock position. The mass is poorly defined with solid and cystic areas and does not demonstrate posterior acoustic shadowing.



Ultrasound demonstrated an inhomogeneous mass superior to the areola at the 2 o'clock position. The mass measured 2.7 cm x 1.8 cm and demonstrated cavitation with debris (Figure 3). Matted lymph nodes were demonstrated in both axillae (Figure 4). No abnormalities were demonstrated in the right breast on ultrasound or on mammography.

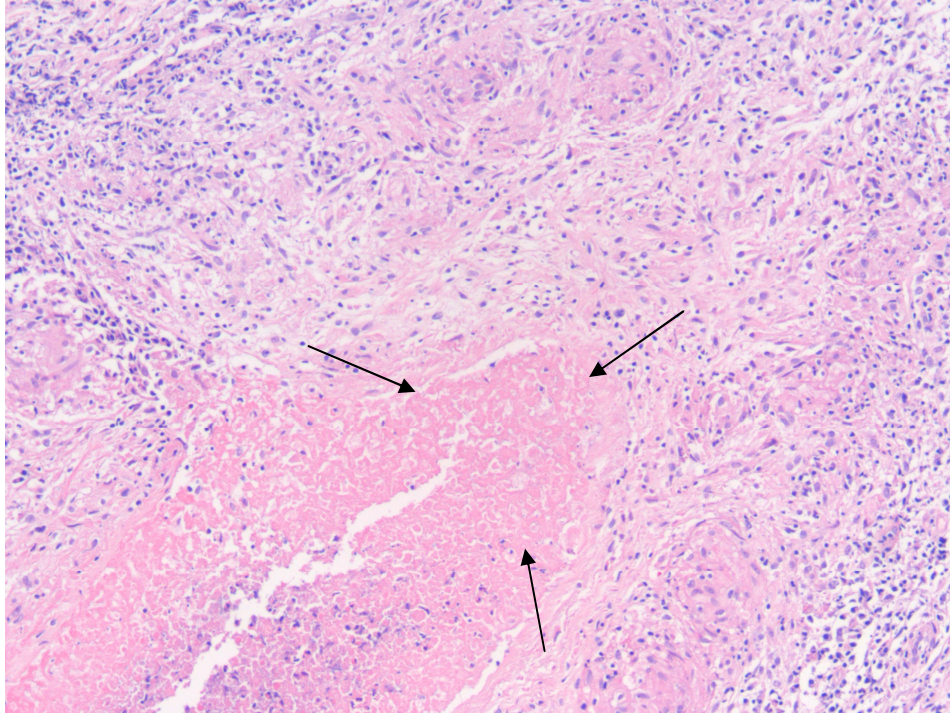
The histology results of the tru-cut biopsy revealed chronic granulomatous inflammation with areas of caseous necrosis (Figure 5). Occasional acid- and alcohol-fast bacilli were demonstrated, confirming mycobacterium infection (Figure 6).

**Figure 4:** Ultrasound study of the left axilla demonstrating multiple matted hypoechoic lymph nodes with central necrosis



Anti-TB treatment was initiated. The patient received Rifafour-275 (consisting of Isoniazid 75 mg, Rifampicin 150 mg, Pyrazinamide 400 mg, and Ethambutol 275 mg), four tablets daily for two months (intensive phase) and Rifinah-300 (consisting of Isoniazid 300 mg and Rifampicin 600 mg), two tablets daily for seven months thereafter (continuation phase). With the high rate of drug-resistant TB in South Africa, nine months of anti-TB therapy is the standard protocol followed at our institution.

**Figure 5 :** Photograph of a pathology slide (H&E x 10) from the tru-cut biopsy of the patient, demonstrating a granuloma with central caseous necrosis (arrows) and surrounding aggregates of epithelioid histiocytes



The patient was followed up at the surgery outpatient department after completion of treatment. Clinically the patient had responded well to the treatment. The previously palpable breast lump was not palpable at the follow-up physical examination. The patient is currently still awaiting a mammogram, in order that the radiographic response to treatment can be documented.

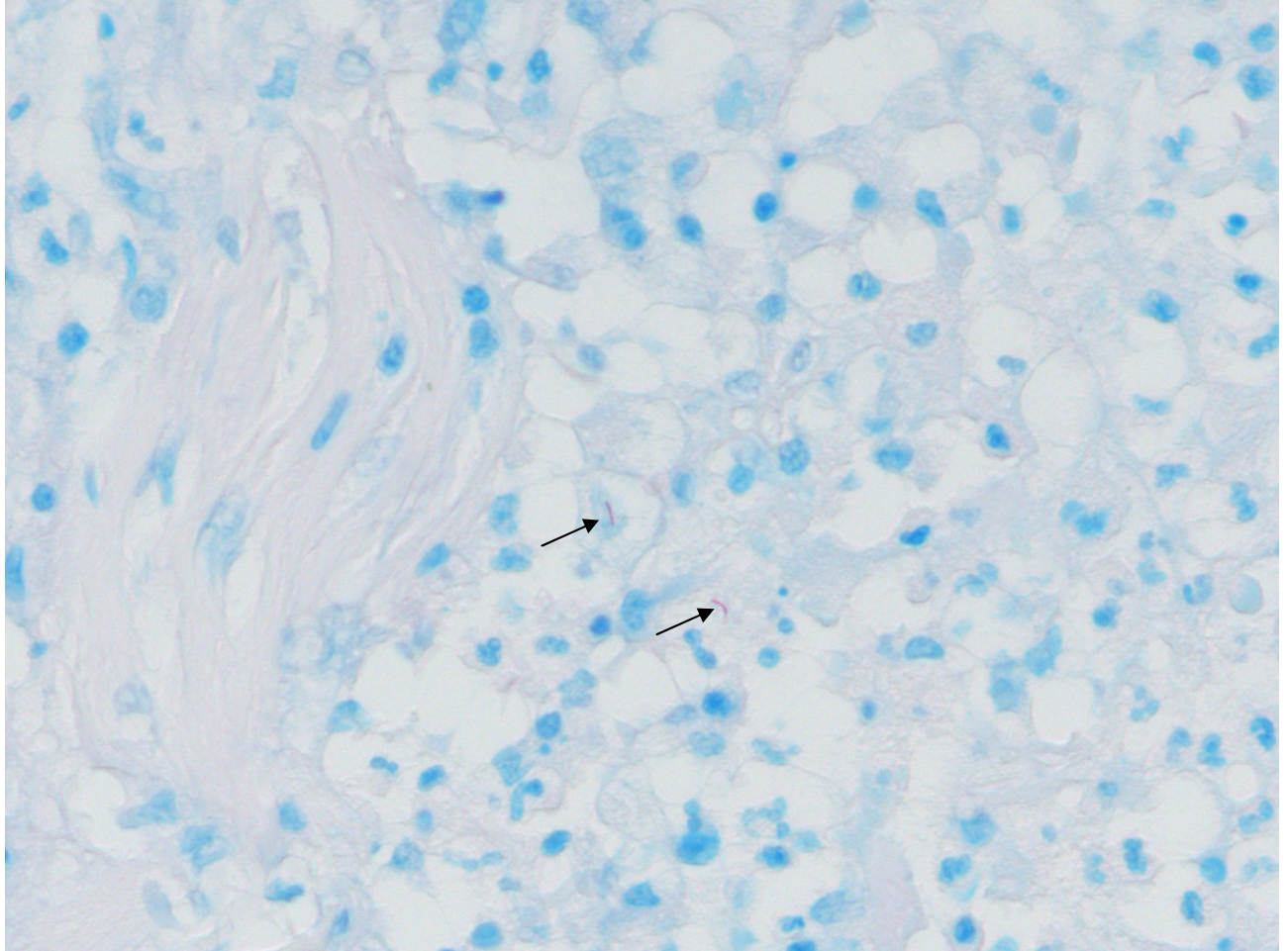
#### **DISCUSSION:**

Similar to skeletal muscles and the spleen, breast tissue is an unfavourable environment for the multiplication of TB bacilli. For this reason breast tissue can be considered as very resistant to TB and the entity described in this paper as rare [4].

TB of the breast can be classified as either primary or secondary. It is considered to be



**Figure 6 :** Photograph of a pathology slide (Ziehl Neelsen stain x 40) from the tru-cut biopsy of the patient, which demonstrates the presence of acid- and alcohol-fast bacilli (arrows)



primary if the lesion in the breast is the only manifestation of TB. The primary form may result from infection with TB bacilli through abrasions or through openings of the ducts in the nipple. When there is a focus of TB elsewhere in the body, TB of the breast is classified as secondary TB [5, 6].

The fact that primary TB of the breast is rare should always prompt the clinician to look for another primary focus of TB.

TB of the breast may present clinically with a breast mass or oedema secondary to enlarged axillary lymph nodes [7]. Skin ulceration or a sinus draining to the overlying skin is also not an uncommon finding [8]. McKeown and Wilkinson developed a pathologic classification of TB of the breast comprising five different groups [9]:

- (i) Nodular tubercular mastitis
- (ii) Disseminated or confluent tubercular mastitis
- (iii) Sclerosing tubercular mastitis
- (iv) Tuberculous mastitis obliterans
- (v) Acute miliary tubercular mastitis

The nodular type of breast TB is the most common. It initially presents as a well circumscribed painless mass. It is slow growing and progressive and may later involve the overlying skin. Skin ulceration and sinus formation may occur [10].

Sixteen of Dubey and Agarwal's 20 patients were found to have nodular tubercular mastitis and many other reports indicate that the nodular form is the commonest variety of TB of the breast [5, 11]. Only two patients out of the 20 had sclerosing tuberculous mastitis [11]. Nine of the 14 cases reported by Mukerjee et al had the nodulocaseous type (nodular type, according to McKeown and Wilkinson) and only three had sclerosing tubercular mastitis [12].

Bacteriological culture of breast tissue or Ziehl Neelsen staining remains the gold standard for diagnosing TB of the breast. TB bacilli are isolated in only 25% of cases and acid-fast bacilli are identified in 12% of cases. The presence of caseating granulomas in breast tissue is sufficient for making the diagnosis of TB of the breast [10].

It is very important to rule out other pathology such as sarcoidosis, fungal infections, ductal ectasia and, most importantly, coexisting malignancy. For this reason an excision biopsy is strongly recommended [10].

The co-existence of TB and carcinoma of the breast is very rare and the clinical and radiological presentations of these two conditions are very similar. There is, however, no proof that TB of the breast is carcinogenic [3].

Radiological imaging is not diagnostic for TB of the breast but it helps to define the extent of the lesion. The mammogram is of limited value in the diagnostic process, mainly because it is very difficult to distinguish breast cancer from breast TB on a mammogram [5, 6]. Nodular TB will present as an ill-defined density, similar to breast cancer. One distinguishing feature is that with TB the mammographic size and clinical size of the lesion usually correlate, unlike in the case of a carcinoma. The mammographic findings of sclerosing tubercular mastitis consist of a homogeneous dense mass, fibrous septa and retraction of the nipple [5].

Ultrasound can also be used to better characterise the lesion. In the nodular form, the lesions will present as ill-defined, hypoechoic mass lesions or complex cystic mass lesions. In the sclerosing form of breast TB there can be an increase in the echogenicity of the breast parenchyma without a definite mass lesion present [5].

A recent study on the mammographic and ultrasound findings of tuberculous mastitis reported the following findings [5]:

- Mass lesions mimicking breast carcinoma in 30%
- Smooth-bordered masses in 40%
- Axillary or intramammary lymphadenopathy in 40%
- Asymmetrical density and duct ectasia in 30%
- Skin thickening in 20%
- Nipple retraction in 20%
- Macrocalcification in 20%
- Skin sinus in 10%

Computed Tomography (CT) plays a limited role in diagnosing breast TB. It is useful, however, to evaluate chest wall involvement [5]. The findings on Magnetic Resonance Imaging (MRI) are very non-specific. Some reports state that MRI is only useful in evaluating the extra-mammary extent of the lesion [5].

Anti-TB treatment is the suggested therapy. It consists of six months' therapy, which includes two months of intensive-phase therapy and four months of continuation-phase therapy [2]. The success rate of medical therapy approaches 95% with this six-month regime [10]. Owing to the endemic nature of TB in South Africa, as well as the prevalence of drug-resistant TB, a nine-month regime is followed at our institution. This regime consists of two months of intensive-phase treatment and seven months of continuation phase.

## **CONCLUSION:**

Primary TB of the breast is a very rare condition. However, when a patient who presents with this condition resides in an area that is endemic for TB it is important to

consider TB part of the differential diagnosis of a patient presenting with a breast mass. Although radiological imaging is not diagnostic for TB of the breast, it plays a very important role in defining the extent of the lesion.

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