



Case Report

Leprosy—an unusual cause of a suspicious nodule on mammography

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ABSTRACT

A routine mammogram identified changes thought to be due to a lymph node, which was confirmed on biopsy. The lymph node was infiltrated with macrophages and showed fragmented acid-fast bacilli. The patient had been treated for leprosy some years before and was still taking thalidomide for erythema nodosum leprosum. Leprosy-associated lymphadenopathy may be identified on routine breast screening.

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Case report

A 48-year-old woman was recalled following mammographic screening for a new well-defined rounded density in the upper outer quadrant of the left breast (Figure 1). The abnormality in the left breast was graded M3 (indeterminate but probably benign findings). She had been assessed 8 years previously for microcalcification in the right breast, which was biopsied and shown to be benign.

A breast examination performed was unremarkable. Ultrasound showed a 5 × 5 × 2 mm hypochoic nodule (Figure 2), corresponding to the mammographic density, which was thought to represent a lymph node. The left axilla was also scanned, which showed reactive-looking lymph nodes.

An ultrasound-guided core biopsy was taken, which showed fatty breast tissue and parts of a lymph node. The lymph node had preserved architecture, but showed infiltration by macrophages with abundant clear or lightly eosinophilic cytoplasm with large cytoplasmic vacuoles (Figure 3a, b). There were no neutrophils present. In the cytoplasm and vacuoles were numerous fragmented bacilli consistent with previous treatment. The fragmented bacilli were diffusely positive on a modified Ziehl–Neelsen (ZN) stain

(Wade–Fite stain) (Figure 3c; bacterial index 5; more than 100 bacilli per oil immersion field). The ZN stain was negative. A modified ZN stain is necessary to make the diagnosis, as the bacterial cell wall of *Mycobacterium leprae* is less resistant to the solvent used in a conventional ZN stain (Cassidy and Chapman, 2019). The addition of peanut oil to the xylene protects the lipid coat, resulting in retention of the stain. The findings were in keeping with treated lepromatous leprosy (LL), although it takes many years for the remnants of dead *M. leprae* to be cleared from affected tissues following successful antimicrobial therapy (Ganapati et al., 1997).

The patient had been diagnosed with lepromatous leprosy 6 years previously and had been treated with 24 monthly doses of rifampicin, ofloxacin, and minocycline. The course of the disease had been complicated by severe chronic erythema nodosum leprosum (ENL) requiring thalidomide. ENL is a multisystem, immune-mediated inflammatory response to *M. leprae* antigen and is characterized by painful skin nodules, fever, and other organ involvement including lymphadenopathy (Polycarpou et al., 2017; Walker et al., 2015). The high bacterial load characteristic of lepromatous leprosy is a risk factor for ENL, which is frequently chronic (Pocaterra et al., 2006). Lymphadenopathy has been reported to occur in 14.7% of individuals (Walker et al., 2015).

Intramammary lymph nodes (IMLN) are one of the most common benign findings at screening mammography. IMLN are seen in about 5% of mammographic studies (Meyer et al., 1993). IMLN with typical features identified on mammography are considered a benign finding, but those with a small or absent hilum, thickened

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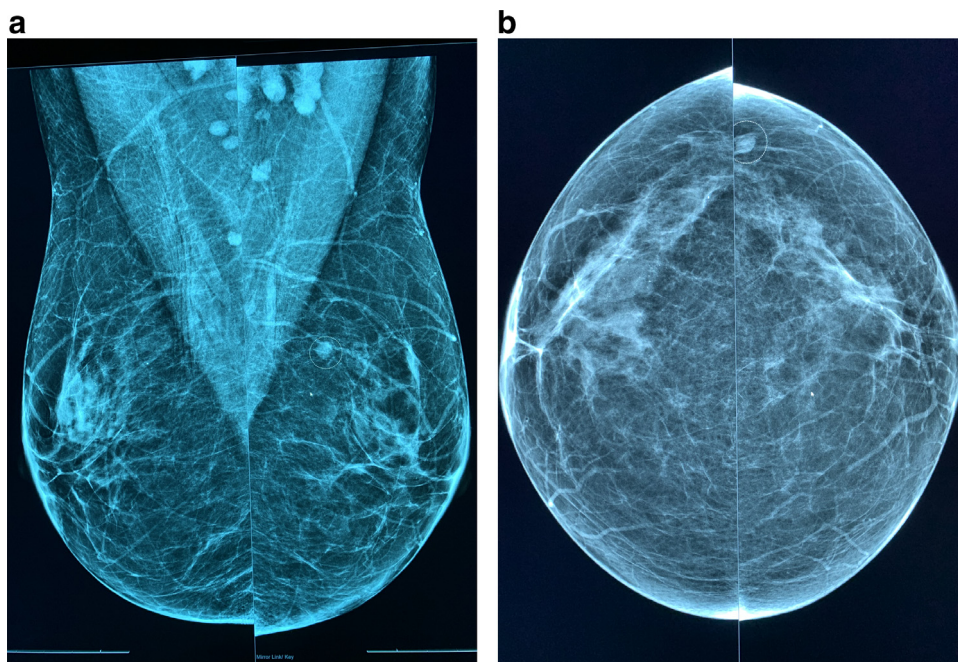


Figure 1. Bilateral mammograms showing a well-defined rounded density (circled) in the upper outer quadrant of the left breast. Previously assessed microcalcification is noted in the right breast.

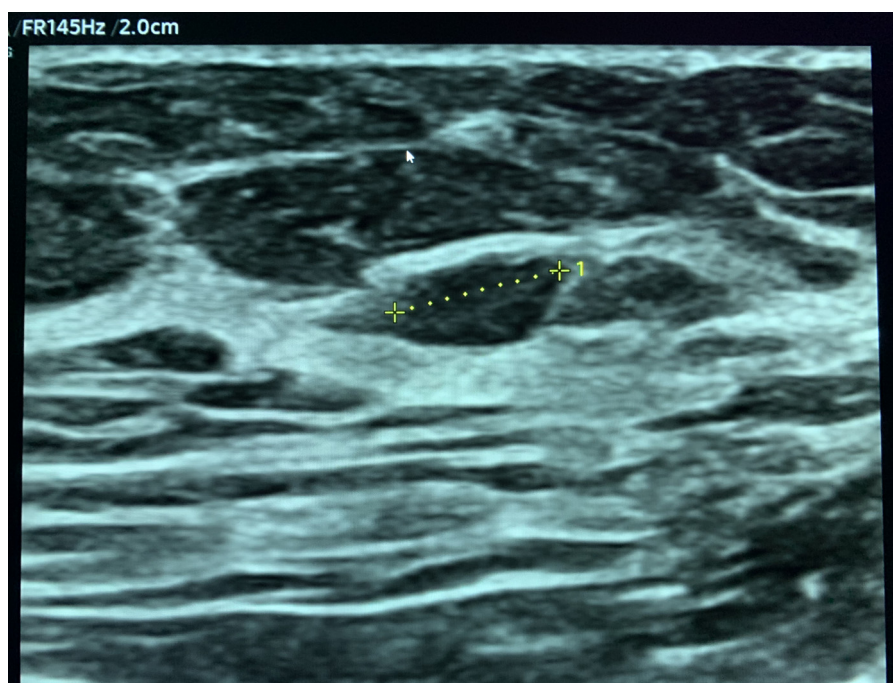


Figure 2. Ultrasound images showing a well-defined hypoechoic nodule corresponding to the mammographic abnormality, which was suspicious for a lymph node.

cortex, or ill-defined margins warrant a biopsy to exclude neoplasia (Bitencourt et al., 2019).

Leprosy has been reported to cause a granulomatous mastitis (Pandhi et al., 2012). There are no reports of suspicious mammographic changes associated with leprosy (Murray et al., 1984). However, it is well recognized in sarcoidosis, another granulomatous disease. Following close liaison between the breast, radiology, histopathology and infectious diseases services, the patient was re-

assured that the changes identified were benign and needed no further intervention.

Early detection of breast cancer in low and middle-income countries has been identified as a priority by the Global Breast Cancer Initiative (Anderson et al., 2021). Improved access to breast screening services in settings where leprosy is endemic means that incidental findings associated with the disease such as those reported here will need to be recognized.

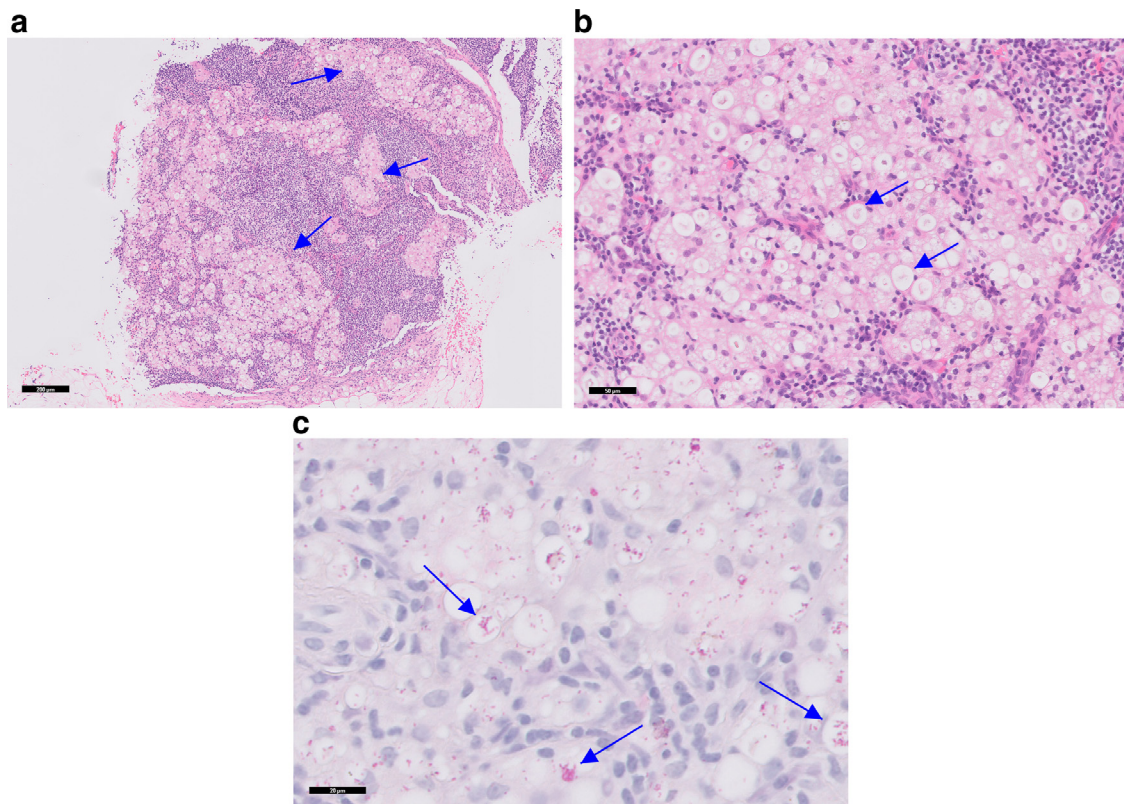


Figure 3. (a) A lymph node containing clusters of histiocytes (arrows) (haematoxylin and eosin). (b) A higher power view of the histiocytes, many of which have a vacuolated cytoplasm (arrows) (haematoxylin and eosin). (c) Numerous fragmented bacilli are present within the cytoplasm of the histiocytes, in places forming clumps ('globi', arrows) (modified Ziehl–Neelsen stain (Wade–Fite)).

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