

# Primary tuberculosis of the breast

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## ABSTRACT

Primary tuberculosis of the breast is a rare disease. Mammographic, sonographic, and computed tomographic features of a case of primary tuberculosis in the breast are presented. Differential diagnosis with other benign and malign diseases of the breast can be difficult with imaging methods. In endemic areas, tuberculosis should be considered in the differential diagnosis of breast tumors.

*Key words:* • tuberculosis • breast • mammography

**T**uberculosis of the breast is seen quite rarely. It is mainly classified as primary and secondary forms. Primary form is rarer (1). In the literature, radiological features of breast tuberculosis were presented in only a few reports (1-6). The aim of this report was to emphasize the diagnostic difficulty of a rare case of primary tuberculosis of the breast by presenting mammography, ultrasonography, color Doppler ultrasonography (CDUS), and computed tomography (CT) findings.

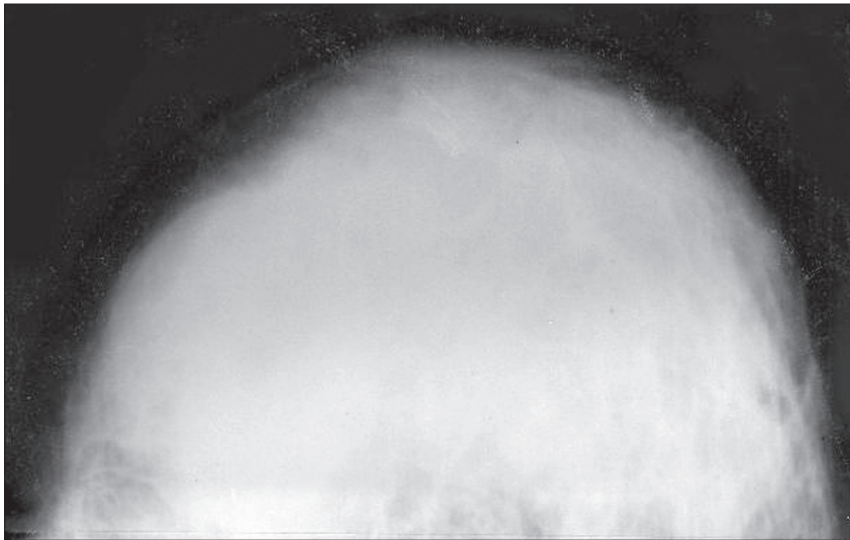
## Case report

A 33-year-old woman with complaints of swelling, breast lump, and erythema of the skin in her right breast, which appeared 15 days earlier, was admitted to the hospital. Her medical history was unremarkable. On physical examination, an 8-10 cm, firm and mobile mass, which caused erythema and edema of the skin in the upper outer quadrant of the right breast was observed. Nipple retraction and nipple discharge were not seen. Laboratory findings were within normal limits, except leukocytosis. Mammography, which was performed in another clinical setting, revealed a diffuse dense appearance due to edema (Figure 1). Abscess and inflammatory carcinoma were considered in the differential diagnosis, and antibiotic treatment was started for infection. One week later the patient was admitted to our department for thoracic CT examination to investigate probable primary or secondary focus. The thoracic CT examination did not reveal any pathology in the lung parenchyma and mediastinum. A lobulated mass with poorly defined margins measuring 10x9.5x5 cm that showed heterogeneous enhancement after intravenous injection of contrast media was observed within the right breast tissue. There was skin thickening and obliteration of subcutaneous fat tissue adjacent to the mass (Figure 2). Following the puncture, 200 ml of pus was aspirated. An incisional biopsy was performed due to the initial diagnosis of abscess and inflammatory carcinoma and breast tuberculosis was then diagnosed.

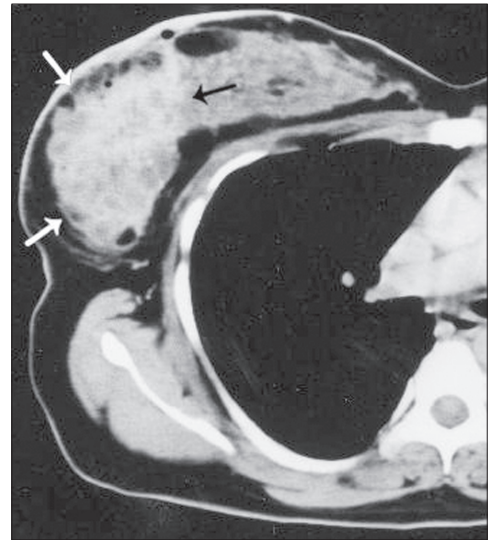
At the follow-up examination following 4 months of anti-tuberculosis treatment, it was learned that intermittent pus leakage was seen through the incision line until recently. In the follow-up thoracic CT examination, the lung parenchyma and mediastinum were unremarkable. However, it was observed that the size of the lesion dramatically decreased although the number of lesions increased. Ultrasonography examination revealed multifocal, irregularly bordered, heterogeneous hypoechoic masses that were connected to each other and fistula that extended to the incision line on the skin. Some of them showed posterior acoustic enhancement (Figure 3). Blood flow was not observed within the lesions, while increased circumferential vascularization was seen in the color Doppler US, which was performed to evaluate lesion vascularization (Figure 4). In spectral evaluation, a low resistance monophasic flow pattern was observed.

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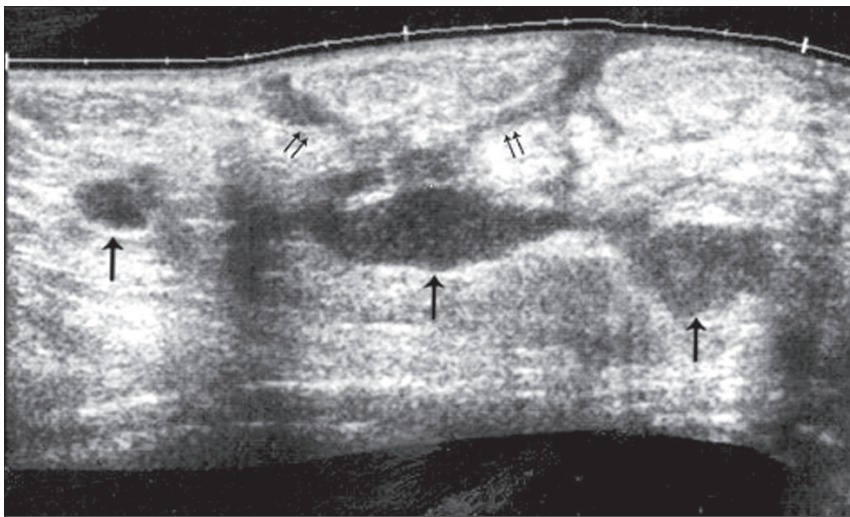
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**Figure 1.** Mammogram shows edema pattern and prominently diffuse, dense appearance of the right breast.



**Figure 2.** On transverse thoracic CT image, lobulated mass with poorly defined margins measuring 10x9.5x5 cm shows heterogeneous enhancement after intravenous injection of contrast media (arrows). There is skin thickening and obliteration of subcutaneous fat tissue adjacent to the mass.



**Figure 3.** Fourth month follow-up ultrasonography shows multifocal, irregularly bordered, heterogeneous hypoechoic masses that are connected to each other (arrows) and fistula that extends to the incision line on the skin (double arrows). Some of the lesions show posterior acoustic enhancement.

## Discussion

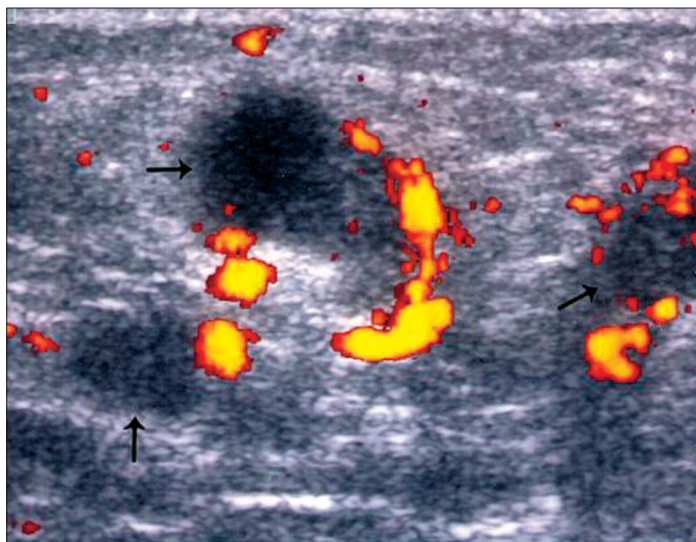
Breast tuberculosis is a rare disease. Although, its incidence ranges between 0.1%-0.52%, it increases in endemic regions (7). It is mainly classified as primary and secondary forms. Primary form is quite rare (1). In primary tuberculosis of the breast, the only location of the disease is the breast. Infection spreads by hematogenous or direct extension. Direct extension occurs by contact of infected material with irritated skin or breast ducts during the lactation period (1, 8). Secondary form is seen more frequently and a prior history of tuberculosis exists in these cases. The main routes of spread

are hematogenous, retrograde spread from axillary lymph nodes, or direct extension from the lung, pleura, mediastinum, costa, sternum, and articular lesions (1, 2, 5). In our case, breast tuberculosis was considered to be the primary form because another tuberculosis infection focus was not detected by physical examination or radiological examinations, and there was no prior history.

In mammography, three different patterns are recognized. The first one is nodular pattern; which is indicated by well-circumscribed, painless, slow growing lesions. In the advanced period it can cause retraction and sinus

formation by involving the skin. Next is disseminated pattern in which focal lesions are connected to each other in addition to skin thickening and sinus formation. The third is sclerosing pattern, which is seen mostly in older women as slow growing, dense fibrous tissue. Generally, there is no microcalcification or nipple retraction (2, 6, 8, 9). According to radiological findings, nodular pattern can be mistaken for fibroadenoma or carcinoma, disseminated pattern for inflammatory carcinoma, and sclerosing pattern for scirrhous carcinoma. In our case, mammography findings were consistent with disseminated pattern. Since pus was detected following aspiration, abscess and inflammatory carcinoma was originally considered in the differential diagnosis..

Lesions due to tuberculosis have no specific ultrasonographic findings. In ultrasonography, they are observed as heterogeneous, hypoechoic, irregular bordered masses with internal echoes, or sometimes as thick-walled cystic lesions that show internal septa and posterior acoustic enhancement. In some cases, fistulas and thickening of Cooper ligaments and subcutaneous tissue were reported (1, 5). Furthermore, the relation between the lesion and the chest wall might be evaluated. In follow-up ultrasonography examination



**Figure 4.** Fourth month follow-up color Doppler ultrasonography demonstrates increased circumferential vascularization of the lesions (*arrows*).

of our case, irregular bordered, heterogeneous hypoechoic, focal lesions that were connected to each other and fistula that extended to the skin were observed. Some of the lesions showed posterior acoustic enhancement. Determination of more than one lesion that were connected to each other and fistula formation is consistent with disseminated type of mammography pattern. Color Doppler US findings of breast tuberculosis are not mentioned in the literature. Increased circumferential vascularization in avascular centered lesions might be interpreted as a sign of continuity of the infective process.

CT is useful in differentiation of primary and secondary breast tuberculosis. It is especially helpful in the evaluation of the relation of deep located lesions with the chest wall and pleura, and to detect parenchymal lesions of the lung (1, 2, 6). In CT examination of our case, it was observed that the lesion had no relation with the chest wall and a primary focus was not observed within lung parenchyma.

In conclusion, while mammographic findings (disseminated pattern) may not be adequate, other radiological methods like ultrasonography, color Doppler US, and CT provide useful information in the diagnosis of breast tu-

berculosis. Precise diagnosis, however, must be based on histopathological examination. In the differential diagnosis of tumoral lesions of the breast, tuberculosis should be considered particularly in regions where it is endemic.

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