

Radiology Case Reports

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Necrotizing granulomatous inflammation in an ipsilateral axillary lymph node in a patient with invasive ductal carcinoma of the breast

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A patient presented with flu-like symptoms and a warm, tender area in the left axilla after working with an ancient piece of Cyprus wood. Antibiotics prescribed failed to improve symptoms. Followup physical examination and subsequent ultrasound found suspicious left-breast mass and an enlarged lymph node in the left axilla. Biopsy and lumpectomy of the left-breast mass revealed invasive ductal carcinoma. Biopsy and excision of the enlarged lymph node in the left axilla revealed necrotizing granulomatous inflammation without evidence of metastatic breast carcinoma. To our knowledge, this is the first case report to show the coexistence of breast cancer with necrotizing granulomatous inflammation in the ipsilateral axillary lymph node, likely due to exposure to ancient wood.

Case report

A 65-year-old female woodworker presented initially with flu-like symptoms after working with a 2,000-year-old piece of Cyprus wood. She subsequently noticed a tender and warm area in the left axilla. Antibiotics prescribed by her primary physician failed to improve the symptoms. On followup physical examination, the physician palpated a 1-cm mass in the 6 o'clock area of her left breast. Further evaluation with mammography and ultrasound was performed. Although the mammogram was negative with dense parenchyma, ultrasound demonstrated a suspicious mass in the area of the palpable abnormality at 6 o'clock in the left breast (Figs. 1A and 1B) and an enlarged, abnormal-

appearing lymph node in the left axilla (Figs. 2A and 2B). Subsequent core biopsy of both lesions showed invasive ductal carcinoma in the 6 o'clock position of the left breast, and a reactive lymph node with necrotizing granulomatous inflammation in the left axilla.

The patient underwent ultrasound-guided needle localization of the left breast mass and surgical excision, sentinel lymph-node biopsy, and excision of the enlarged left-axillary lymph node. Lumpectomy demonstrated invasive ductal carcinoma (Fig. 3) with negative sentinel lymph node. Pathological evaluation of the enlarged left axillary lymph node demonstrated necrotizing granulomatous inflammation (Fig. 4), with no evidence of metastatic disease. Results of organism stains including acid-fast bacilli and fungi, as well as serological and antigen screens for the usual endemic fungi, syphilis, and Bartonella titers, were all negative. Chest x-ray, medical history, physical examination, and lab tests showed no evidence of sarcoidosis. The patient consulted a pulmonary specialist, who determined that the enlarged left axillary lymph node was likely due to exposure to an infectious agent in the wood akin to sporotrichosis and unrelated to her left breast cancer. Although granulomas can develop in the vicinity of a cancer due to an exuberant host response to primary tumor, these granulomas are usually noncaseating, in contrast to our case.

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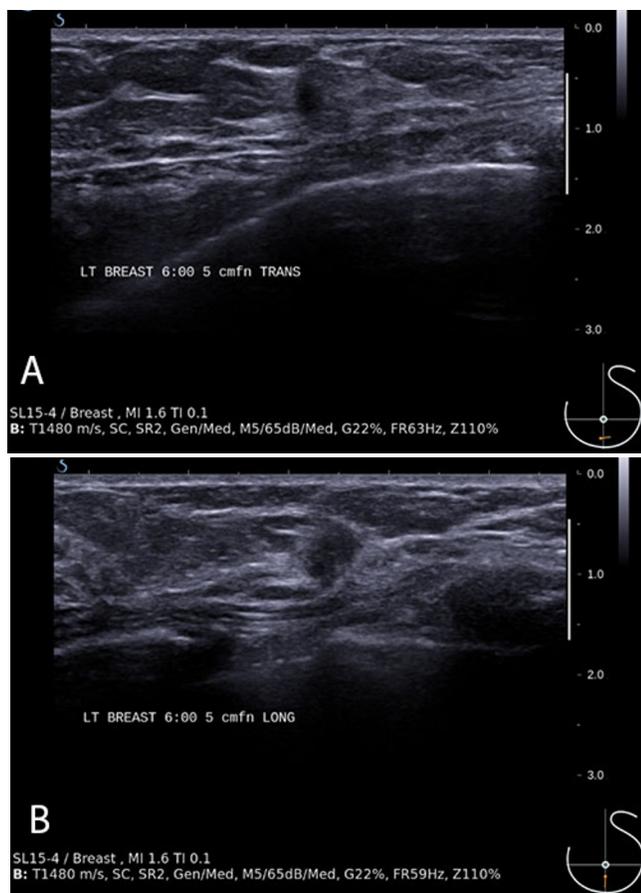


Figure 1. 65-year-old female with granulomatous inflammation and invasive ductal breast carcinoma. Before ultrasound-guided needle localization for lumpectomy, targeted left-breast ultrasound focusing on 6 o'clock was performed (A: transverse view; B: longitudinal view). It demonstrated an irregular hypoechoic mass, taller than wide, with ill-defined margins at 6 o'clock, 5 cm from the nipple, measuring 8x4x6 mm. This finding was consistent with biopsy-proven invasive ductal carcinoma done in an outside facility.

Discussion

Axillary lymphadenopathy can be caused by infection, inflammation such as sarcoidosis, malignancy, connective-tissue disease (for example, rheumatoid arthritis and systemic lupus erythematosus), and antigens (vaccination or medications). Infectious etiologies include bacteria, viruses, or fungi such as *Sporothrix schenckii*. Malignant etiologies include lymphoma, leukemia, breast cancer, and other cancers that metastasize to the axillary lymph nodes.

Metastasis is the most common cause of enlarged axillary lymph nodes in ipsilateral breast cancer. Although breast cancer can in rare cases cause a granulomatous response in an axillary lymph node (1), it is generally noncaseating. In such cases, tumor cells may be detected in the center of the granuloma. Although the etiology of this phenomenon is

unknown with certainty, an immunological response to tumor cells has been suggested (1). The coexistence of breast cancer with systemic granulomatous diseases is uncommon, with tuberculosis being the most commonly reported (2-8). Tuberculous granulomas have been described

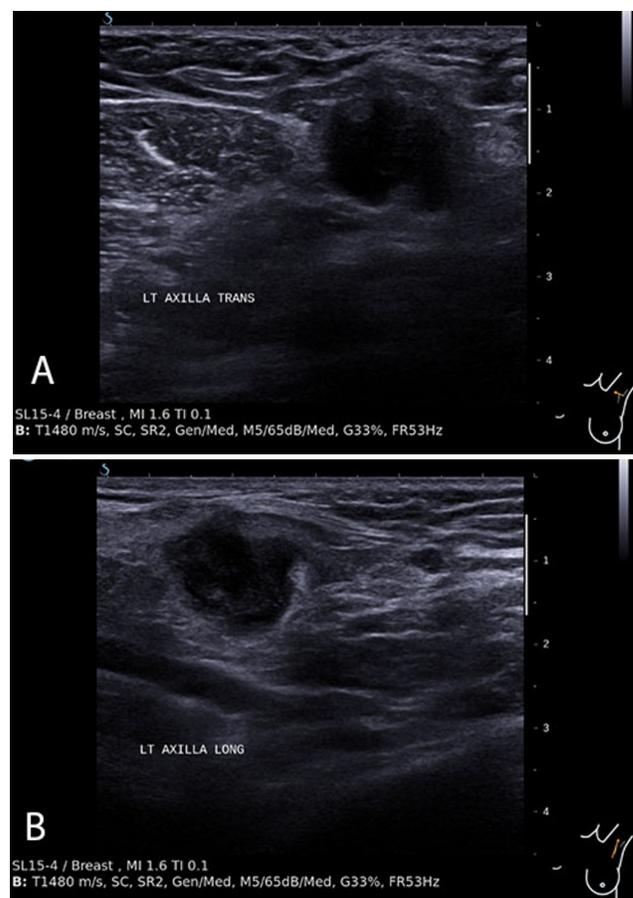


Figure 2. 65-year-old female with granulomatous inflammation and invasive ductal breast carcinoma. Left axillary ultrasound demonstrated an enlarged, slightly irregular lymph node in the left axilla with asymmetric and marked thickening of the cortex and a small residual fatty hilum. The lymph node measured 1.3 x 1.7 x 1.8 cm (A: transverse view; B: longitudinal view). The ultrasound findings correlated with the biopsied lymph node, which revealed a reactive lymph node with a necrotizing granuloma.

in patients with breast cancer in the same breast (2), same axilla (3-5), or in the ipsilateral axilla with breast cancer (6-8).

In our breast cancer case, it appears that the ipsilateral, axillary, necrotizing, granulomatous inflammation was due to exposure to an infectious agent akin to sporotrichosis within an ancient piece of Cyprus wood. Sporotrichosis is a mycotic infection caused by the dimorphic fungus *Sporothrix schenckii* that resides in twigs, soils, bushes, or moss. It is often seen in gardeners who present with a pain-

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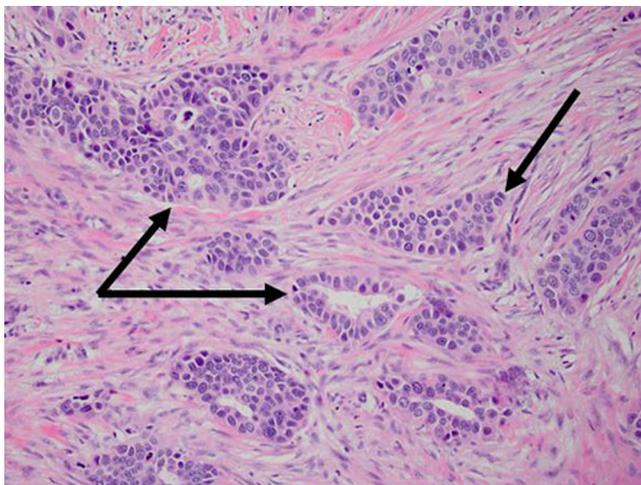


Figure 3. 65-year-old female with granulomatous inflammation and invasive ductal breast carcinoma. Microscopic examination of the lumpectomy (Hematoxylin and eosin stain, 200X magnification) revealed infiltrating tubules and solid nests of neoplastic cells, diagnostic of grade II invasive ductal carcinoma.

ful lump in the axilla. To our knowledge, this is the first case report to show the coexistence of breast cancer with necrotizing granulomatous inflammation in the ipsilateral axillary lymph node, likely due to exposure to ancient wood.

Both metastatic tumor and infectious granulomatous disease can involve an entire lymph node, resulting in loss of the fatty nodal hilum on imaging. Alternatively, both presentations can also be manifested by asymmetric thickening of the lymph node cortex. Thus, there are no definitively distinguishable imaging findings between metastatic lymph node and granulomatous disease of the lymph node. In our case, the enlarged lymph node demonstrated asymmetric thickening of the cortex with a small residual fatty hilum and could not be distinguished from metastatic involvement by ultrasound imaging.

In summary, granulomatous disease of axilla should be considered in the differential diagnosis of axillary lymphadenopathy, in addition to metastatic disease, if the patient has a history of possible exposure to causative organisms. However, in the setting of ipsilateral breast cancer or suspicious mass, biopsy of the abnormal lymph node should be performed for diagnosis.

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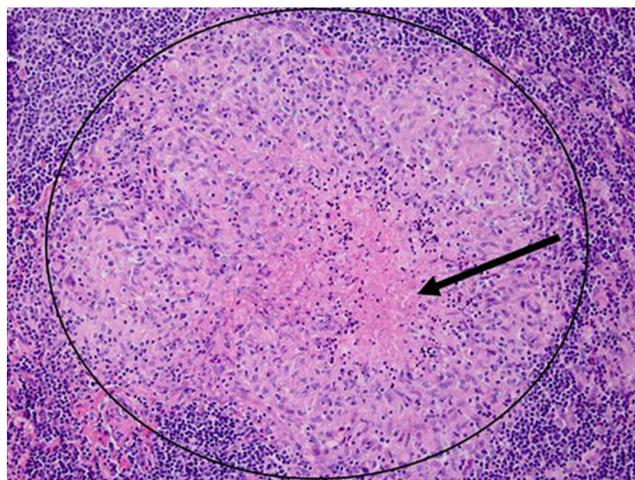


Figure 4. 65-year-old female with granulomatous inflammation and invasive ductal breast carcinoma. Microscopic examination of the left axillary lymph node (Hematoxylin and eosin stain, 200X magnification) showed a coalescent aggregate of epithelioid histiocytes (within black circle) with a central region of necrosis (black arrow), diagnostic of necrotizing granulomatous inflammation.

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