Case Report

Sarcoidosis Presenting as Spiculated Breast Masses

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A 67-year-old woman sought medical treatment of cardiomyopathy, which had been diagnosed 2 years earlier; the causative factor was sarcoidosis. A screening mammogram revealed multiple spiculated masses in both breasts. A review of previous films obtained elsewhere showed that these masses had been increasing in prominence during the past 3 years. The patient had no visible axillary nodal abnormalities. Sarcoidosis was considered a diagnostic possibility, and a large-core needle biopsy was done with stereotactic guidance. The histological diagnosis was nonnecrotizing granulomatous inflammation, consistent with sarcoidosis.

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Sarcoidosis is a multisystemic disease of unknown cause. The histological clue to the diagnosis of sarcoidosis is the noncaseating granuloma. The most frequent abnormal findings on imaging studies involve the chest, including the mediastinal lymph nodes and lungs. Other organs that may be involved include the skin, eyes, central nervous system, musculoskeletal system, and abdominal viscera.[1-3]

Sarcoidosis is sometimes included in the mammographic differential diagnosis of a spiculated breast mass, but there is only 1 report of sarcoidosis being shown mammographically as a spiculated mass.[4] To our knowledge, our case report describes the first incidence of multiple spiculated masses in both breasts verified to be sarcoidosis. Additionally, it is the first report of the diagnosis being made by large-core needle biopsy. Some reports have described the diagnosis being suggested by fine-needle aspiration biopsy.[5,6]

REPORT OF A CASE

A 67-year-old woman came to our institution primarily because of cardiac problems. She had a 10-year history of sarcoidosis, with the diagnosis having been histologically established elsewhere after biopsy of leg ulcers. Cardiomyopathy had been diagnosed 2 years earlier, and the cause of the problem was thought to be sarcoidosis. Breast cancer had been diagnosed in a maternal aunt premenopausally. The patient's mother died of ovarian cancer at the age of 64 years. A review of the patient's mammograms obtained elsewhere, performed within a month before she came to our institution, showed areas of increased density in both breasts that had not been present on mammograms obtained 3 years earlier. A mammogram obtained at our institution showed multiple noncalcified spiculated nodules bilaterally (Figure 1) but no visible axillary nodal abnormalities. Sarcoidosis was a possible explanation for the mammographic appearance even though we found no substantiation for this in the literature. Our patient was a poor surgical risk; she was taking warfarin because of myocardial disease caused by sarcoidosis, and she had peripheral vascular problems. Because we did not want to discontinue warfarin therapy, we performed a large-core needle biopsy; the patient was informed of the risk of bleeding, including the need for extended local compression time and careful observation. Five 14-gauge cores were removed from one of the more prominent nodules, and the histological diagnosis was nonnecrotizing granulomatous inflammation, consistent with sarcoidosis (Figure 2). No complications occurred. Special stains for fungi and acid-fast bacilli were negative. The patient has not returned for a follow-up mammogram since the biopsy, but recent verbal follow-up revealed that she has had no further breast problems or biopsies.

DISCUSSION

Multiple reports have discussed sarcoidosis involving the breast.[4-22] Sarcoidosis is not a commonly made histological diagnosis. Most patients have disease elsewhere in their bodies besides the breasts; a few cases have been reported in which the primary presentation was in the breast.[22] Use of imaging studies of the breast in patients with sarcoidosis is rare. Some patients with sarcoidosis have been described as having prominent axillary tail and axillary lymph nodes but no other visible breast lesion.[23,24] In 1 patient with sarcoidosis, ultrasonography of the breast showed an indeterminate mass, and magnetic resonance imaging showed changes that could not be distinguished from carcinoma.[8]

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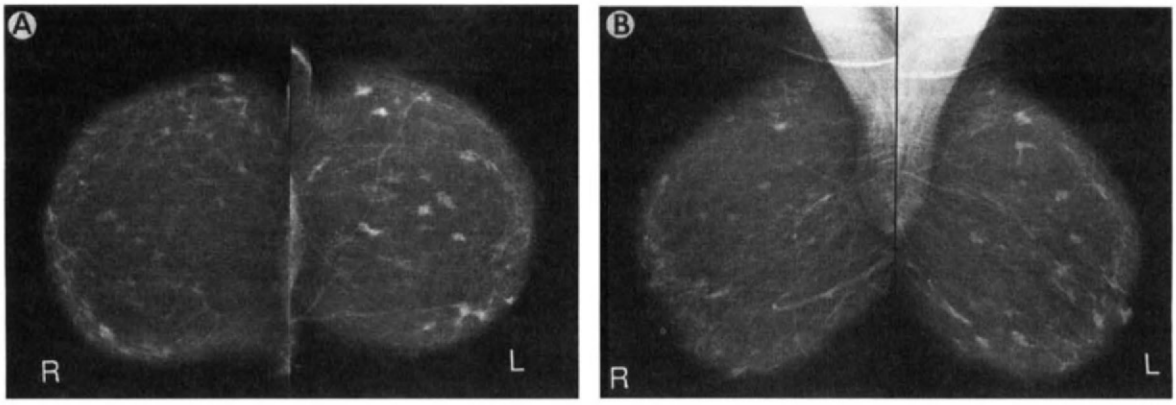

Figure 1. Mammograms. Craniocaudal (A) and mediolateral oblique (B) views revealing multiple spiculated lesions in both breasts.

This patient had an irregular palpable mass in the lower area of the breast that had appeared suddenly, and sarcoidosis was diagnosed based on an excisional biopsy. The first use of magnetic resonance imaging in a patient with mammary sarcoidosis was reported by Krause et al.[9] The patient had a palpable mass, and neither mammography nor ultrasonography was helpful. Magnetic resonance imaging revealed the lesion, and the appearance suggested carcinoma, although the final diagnosis was mammary sarcoidosis.

Use of needle biopsies to evaluate patients with mammary sarcoidosis has been infrequent. Two reports have described fine-needle aspiration biopsy being used for malignant-appearing masses.[5,6] One of these was diagnosed as a granulomatous lesion. The other biopsy specimen showed lymphocytes, reticulocytes, histiocytic cells, and multinucleated giant cells. Excision of that nodule confirmed the diagnosis of Boeck sarcoidosis. In our literature search, we found no evidence of a diagnosis being established by large-core needle biopsy.

The validity of diagnosing mammary sarcoidosis after biopsy of only one of multiple spiculated breast masses can be questioned. In our experience, we have never seen a multiplicity of cancers presenting with an appearance like that seen on our patient's mammogram. Multicentric cancers are not rare, but, to our knowledge, a multiplicity of spiculated lesions has not been noted previously. With the patient's known history of sarcoidosis, we thought sarcoidosis was a likely cause for the breast lesions, even though we found no such images recorded in the literature. A clear-cut diagnosis of sarcoidosis from one of the lesions satisfied the diagnostic impression in this case.

In addition to multiple isolated cases of mammary sarcoidosis, there are reports of a sarcoidlike reaction associated with cancer, including breast cancer. In their 4 study patients, Voravud et al[10] reported breast cancer and associated sarcoidosis elsewhere in the body. One patient had axillary lymph nodes involved with noncaseating granulomas, but no sarcoidosis was found in the breast of any of the women in their study. Hunsaker et al[11] described 10 patients with known malignancies and either concurrent or subsequent development of noncaseating granulomas, but none of their cases involved the breast. We have seen 1 patient with invasive lobular carcinoma and associated sarcoidosis in the same area. The patient had no typical spiculated-appearing mass but had an area of parenchymal asymmetry that had been present for at least 4 years. A new mass developed in the region of the asymmetry and was presumed to be carcinoma. The appearance was not the same as in our current case. Breast cancer associated with sarcoidlike reactions, mainly circumferential but also in the center of the cancers, has been reported.[12] Mammary sarcoidosis has been found incidentally in a mastectomy specimen containing medullary carcinoma and in 2 subsequent biopsy specimens of the contralateral benign breast.[13] Sarcoid granulomas have been found incidentally in the mammary lobule adjacent to an excised fibroadenoma in a patient who also had evidence of sarcoidosis systemically.[14]

Banik et al[14] discussed the importance of granulomatous mastitis as an entity separate from sarcoidosis. We agree that mammary sarcoidosis should be distinguished from so-called idiopathic granulomatous mastitis, which usually appears in the postpartum period. Histological examination typically demonstrates relatively poorly defined granulomas associated with extensive chronic inflammation and, occasionally, abscess formation. Granulomatous mastitis frequently responds to corticosteroids.[25] The nature of the process is unclear, but there are indications that autoimmunity, hypersensitivity, or vasculitis may have a role. Other causes of granulomatous inflammation of the breast include infectious processes, vasculitides, and foreign body reac-

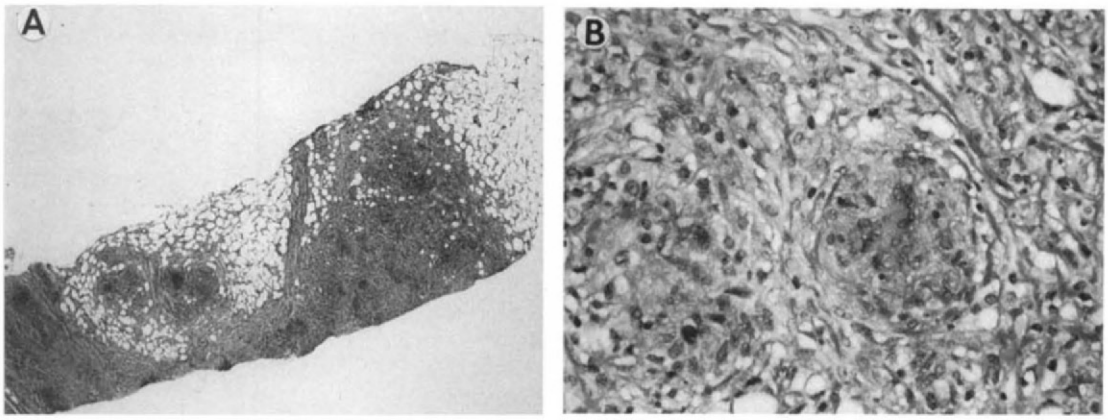

Figure 2. A, Low-magnification photomicrograph of stereotactic core biopsy specimen. Connective tissue septa contain a patchy inflammatory infiltrate that includes multiple well-formed nonnecrotizing granulomas (hematoxylin-eosin). B, Higher magnification photomicrograph showing well-formed nonnecrotizing granulomas typical of those seen in sarcoidosis (hematoxylin-eosin).

tion (ie, paraffin and silicone). These conditions are generally easily distinguished histologically from sarcoidosis.

In conclusion, sarcoidosis of the breast is rare, particularly as a mammographic lesion. We have verified that it can present as multiple mammographic lesions that mimic breast cancer. Sarcoidosis should be included in the differential diagnosis of spiculated breast masses. A histological diagnosis of mammary sarcoidosis is possible with large-core needle biopsy.

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