Cent. Eur. J. Med. • 6(5) • 2011 • 537-540
DOI: 10.2478/s11536-011-0068-3

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Central European Journal of **Medicine**

Diaforodiagnostic dilemma of a breast tumor in a patient with known history of chest sarcoidosis: a diagnostic approach

Case Report

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Received 29 March 2010; Accepted 24 May 2011

Abstract: Breast sarcoidosis is extremely rare , substantially less frequent than other extrapulmonary manifestations of sarcoidosis. It can mimic a benign or malignant tumor of the breast. We describe the case of a patient with a history of pulmonary sarcoidosis referred to our hospital for a screening mammography. Mammographic findings raised the suspicion for a breast mass. An additional breast ultrasound and fine -needle aspiration biopsy were performed. Finally, patient underwent a excisional biopsy of the left breast and the histopathological report revealed sarcoidosis.

Keywords: *Breast imaging • Breast sarcoidosis • Malignancy • Mammography • Pathology specimen*

1. Introduction

We present a case of breast sarcoidosis in a female patient with a known history of pulmonary sarcoidosis. Breast sarcoidosis is an extremely rare entity, substantially less frequent than other extrapulmonary manifestation of sarcoidosis. It can mimic benign or malignant tumour of the breast.

2. Case Report

A 59-year-old woman was referred to our hospital for a screening mammography.

The patient reported a history of pulmonary sarcoidosis. She had no family history of breast cancer or breast disease.

Her physical examination revealed a fixed mass at the upper outer region of the left breast and palpable bilateral axillary lymph nodes.

Mammography confirmed the presence of bilateral enlarged axillary lymph nodes and demonstrated an asymmetric, spiculated, slightly hyperintense area in the upper outer quadrant of the left breast, which appeared larger compared to the last previous examination. Microcalcifications were absent. Because of these suspicious findings, the lesion was classified as BI-RADS M4. (Figure 1a, b).

Subsequent ultrasound examination revealed an hypoechoic lobulated mass with irregular sharp margins and indistinct border localized in the upper external quadrant of the left breast, 1,52 by 0,65 cm. Color Doppler ultrasound imaging showed the hypoechoic lesion to have a hyper-vascular flow and to be surrounded by echogenic normal fatty tissue. According to all the ultrasound findings, the lesion was classified as BI-RADS US5. (Figure 2).

Fine-needle aspiration was performed and the cytologic examination was non diagnostic.

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Figure 1a. Mediolateral oblique and cranio-caudal views on the last previous mammogram revealed a slightly increased density in the upper outer quadrant of the left breast (arrows), with no skin thickening or axillary lymph nodes present .The mass was missed in diagnosis.

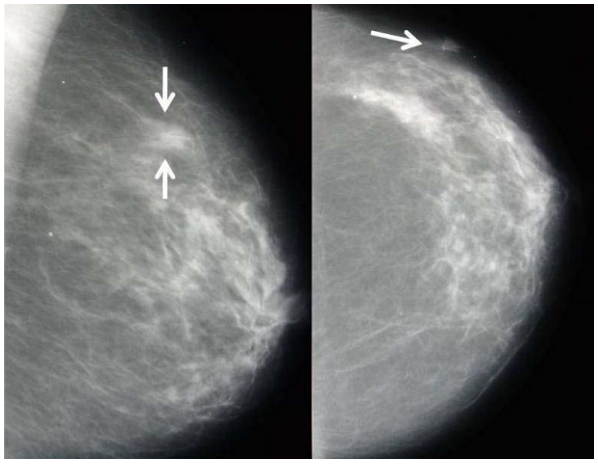


Figure 1b. The aforementioned area appears larger (arrows) compared to the previous mammography suggesting an infiltrative process, probably an infiltrating carcinoma. Multiple , enlarged axillary lymph nodes are present (open arrows).

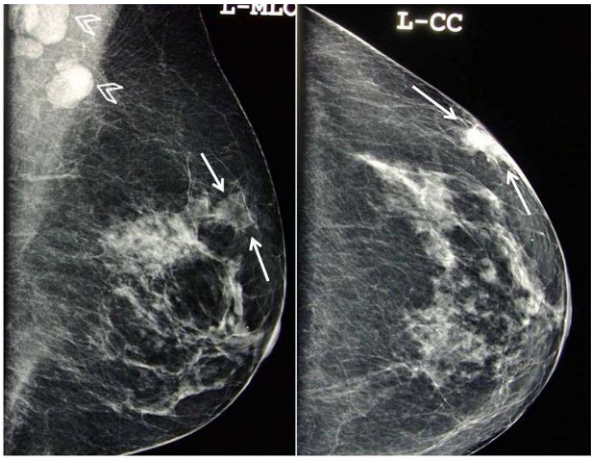
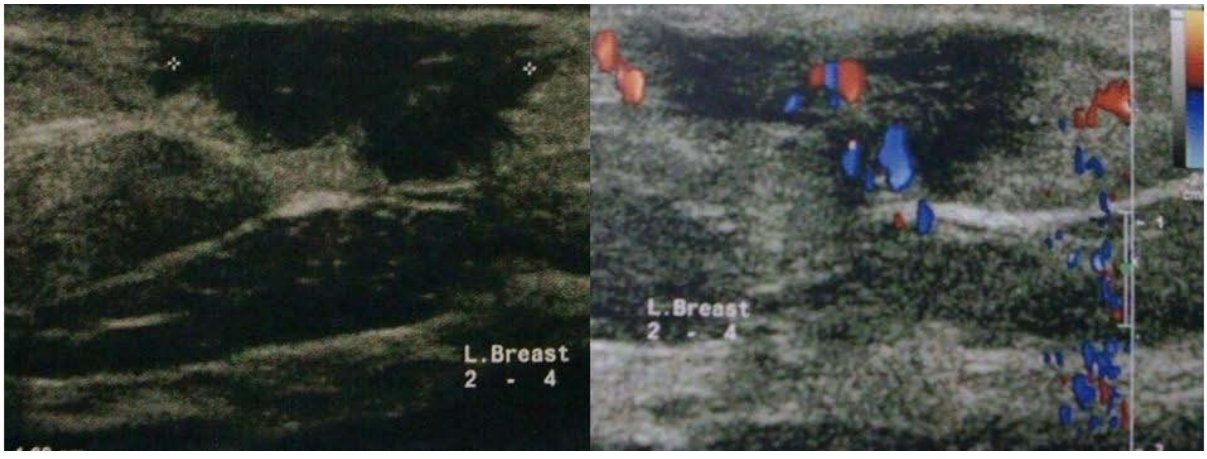


Figure 2. Ultrasound examination shows the presence of a solid, hypoechoic, lobulated mass in the upper external quadrant of the left breast, with internal flow on colour Doppler image.



The patient eventually underwent excisional biopsy of the left breast, as well as excision of the axillary nodes to rule out malignancy. Preoperative chest radiographs demonstrated lymphadenopathy in the mediastinum due to sarcoidosis (Figure 3).

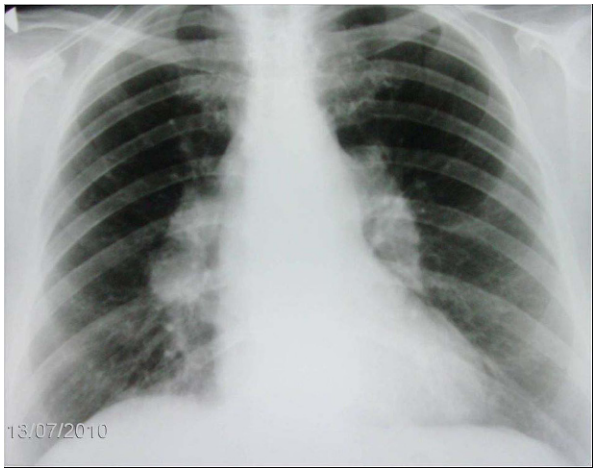
Histological examination of the specimen revealed a white-grey, solid lesion with irregular borders, 11.5 by 7.5 x 2 cm.

Microscopically, the lesion was comprised of numerous confluent granulomas of varying size, occasionally with central fibrinoid necrosis; it was located in the cutis and the subcutaneous adipose tissue and focally in the breast parenchyma. The granulomas consisted of epitheliod cells, Langhans and foreign body giant cells and various numbers of lymphocytes. Many Schaumann bodies and sparse asteroid bodies were found in the cytoplasm of the giant cells. Mild fibrocystic changes were also observed. Axillary lymph nodes with lesions similar to the breast mass were found. The final pathological diagnosis was granulomatous inflammation with partial morphologic features consistent with sarcoidosis and mild fibrocystic changes (Figure 4a, b).

3. Discussion

Sarcoidosis is a multisystemic granulomatous disease of unknown aetiology which most commonly affects the lung but extrapulmonary invasion is seen in 40% of the cases [1]. Despite this high percentage of extrapulmonary effects, involvement of the breast by sarcoidosis is extremely rare. It accounts for less than 1% of cases, and usually occurs in the setting

Figure 3. Chest radiograph demonstrates bilateral hilar lymphadenopathy typical for sarcoidosis.



of pre-existing systemic involvement. Breast disease can rarely be the initial manifestation of sarcoidosis. It affects mostly young and middle-aged women [2]. Sarcoidosis is usually included in the differential diagnosis of breast masses on the basis of a past history of sarcoidosis. There has been much speculation about the relationship between sarcoidosis and cancer, but this association still remains indistinct [3]. Nevertheless, further investigation is necessary to exclude breast cancer.

Sarcoidosis manifests clinically as firm-to-hard, mobile, non-tender breast mass without evidence of skin or nipple change. In some cases, including ours, it can occur as a fixed tender lesion, resembling carcinoma. Thus, it is difficult to distinguish this entity from malignancy [4]. The granulomatous inflammatory process may infiltrate both breast parenchyma and lymph nodes.The characteristic lesion is a discrete, compact, non- caseating epithelioid granuloma, which consists of multinucleated Langhans giant cells forming Schaumann bodies [2,5]. Sarcoid – like granulomatous reactions associated with cancer, certain specific infections such as tuberculosis, fungal infections, vasculitis, Wegener granulomatosis, reaction to a foreign body, such as injected paraffin or silicone, lymphoma and granulomatous mastitis should also be considered in the differential diagnosis (Table 1) [6,7].

Mammographic findings are not uniform. They may vary from well circumscribed ,round masses that in some cases reflect intramammary lymph node involvement to irregular or ill defined, often spiculated masses that mimic carcinoma. It may exist as a single mass or as multiple lesions. Calcifications are usually absent [2,8]. In addition, lesions may be mammographically occult [9]. Ultrasound does not support an unequivocal diagnosis. Sonographic findings can include a hypoechoic mass or cluster of masses, with irregular contours or spiculated margins, inhomogeneous internal echoes, and posterior acoustic enhancement, the appearance of which may suggest carcinoma [4]. The appearance on magnetic resonance imaging (MRI) has been described as both benign and indicative of malignancy. Inhomogeneous tumours with irregular contours or main mass lesions with satellite nodules may be present. Contrast enhancement depends on the inflammatory activity and the degree of fibrosis. Rapid contrast enhancement and early “washout” phenomenon have been described in most cases .Gradual enhancement of the mass has been seen as well [5,8]. Accordingly clinical and radiologic findings are usually inconclusive. Fine- needle

Figure 4. A) Breast lesion consisting of confluent non-caseating granulomas, H-E X 200. B) Lymph node with granulomas and a Schaumann body in the cytoplasm of a giant cell H-E X 200.

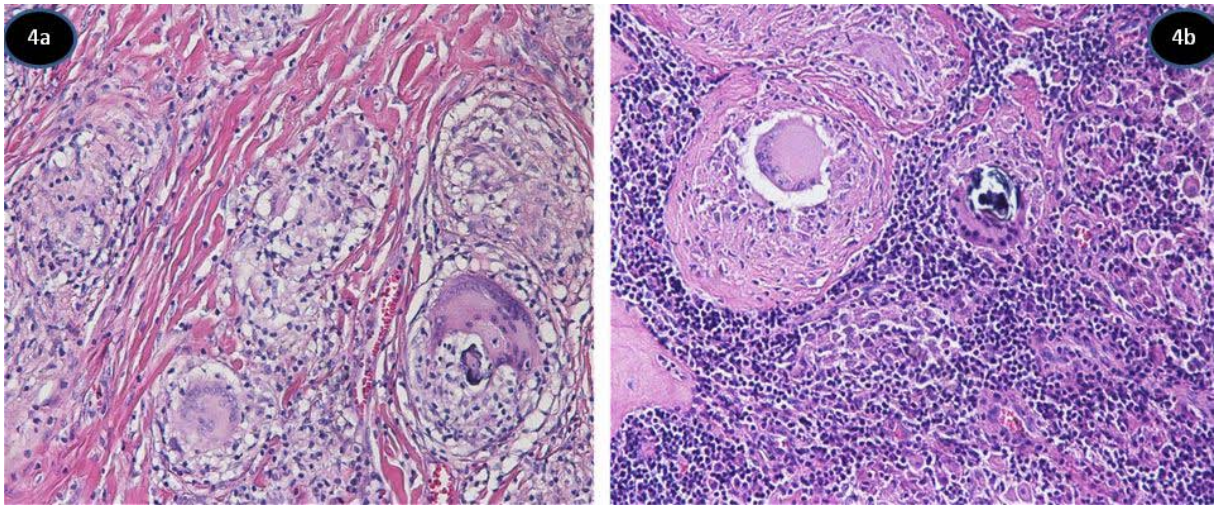


Table 1. Differential diagnosis of sarcoidosis from other pathological entities.

Diagnosis	Differentiating Features
Cancer	Malignant cells infiltration, Absence of Schaumann Bodies
Tuberculosis	Positive tuberculin test
	Presence of caseating granulomas
Fungal Infection	Appropriate special stain for fungi
Wegener granulomas	Vasculitis, Absence of Scaumann bodies, Microabscess.
Reaction to foreign bodies such as silicone implants	Microabscess, Fat necrosis, Chronic inflammation
Granulomatous mastitis	Panlobulitis, Microabscess, Ductal damage and inflammation

aspiration biopsy is recommended. The final diagnosis of mammary sarcoidosis is established by large core or excisional biopsy [9].

4. Conclusion

Despite the rarity of breast sarcoidosis, it should be considered in the differential diagnosis of a breast mass under investigation for malignancy, especially in patients with a past history of sarcoidosis.

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