Breast sarcoidosis
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Section: Breast imaging
Area of Interest: Breast
Procedure: Biopsy
Procedure: Diagnostic procedure
Imaging Technique: Ultrasound
Imaging Technique: Mammography
Special Focus: Pathology Neoplasia Case Type: Clinical Cases
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Patient: 62 years, female

Clinical History:
A 62-year-old female patient, asymptomatic, underwent mammography screening for the sixth round. Clinical breast examination was normal. Her past clinical history included pulmonary sarcoidosis and hypertension. Bilateral two-view mammography was performed.

Imaging Findings:
The patient was recalled for assessment as she had developed multiple nodular lesions diffusely distributed in the right breast since her previous mammograms, all of them with rounded shape and partial ill-defined margins (Fig. 1). There was no spiculated lesion. The background mammographic pattern predominantly shows scattered fibroglandular densities throughout both breasts.
A targeted breast ultrasound examination of the right breast was then performed and revealed multiple mixed (hyper-/isoechoic) round nodules, with undefined margins, with no posterior acoustic phenomena, less than 1 cm maximum diameter (Fig. 2). These nodules correlated with the mammographic findings.
The mammographic and ultrasound results were classified BI-RADS 4, and percutaneous ultrasound-guided needle core biopsy 14G was performed for histologic analysis (Fig. 3).
Histology revealed granulomatous chronic inflammation consistent with sarcoid.

Discussion:
Sarcoidosis is a granulomatous disease of unknown aetiology [1]. It is a systemic disease and can affect multiple organs. Sarcoidosis involves the thorax in more than 90% of cases, whereas breast involvement is rare, occurring in less than 1% of sarcoidosis patients [1, 2] and the most cases of breast sarcoid occur in patients who already have a known sarcoid diagnosis elsewhere in the body. Breast sarcoidosis often mimics carcinomas at clinical and imaging examination. [1]
Breast sarcoidosis most often presents mammographically as an irregular and/or spiculated mass and the most common finding on ultrasound is an irregular hypoechoic mass [3]. However, in our case, all nodules appeared with rounded shape and well-defined margins on mammograms and with mixed echogenicity. Other findings may include enlarged axillary or intramammary lymph nodes [4], but again in our case there was no abnormal lymphadenopathy present.
Although hyperechoic nodules in the breast are frequently benign, including haematoma, abscess, fat necrosis and benign neoplasms (hamartoma, haemangioma, etc.) as possible diagnoses for a hyperechoic nodule, malignant
entities, as invasive or in situ ductal carcinoma, invasive lobular carcinoma, angiosarcoma or lymphoma, have to be considered as well [5]. The MRI appearance described in literature make it also difficult to distinguish sarcoïd from carcinoma. While some authors have reported breast sarcoïd lesion with rapid enhancement and wash-out phenomenon [6], like in carcinoma, others reported irregular mass with gradually increasing signal intensity in the dynamic study [7]. So, carcinoma must always be excluded by core biopsy.

The treatment of breast sarcoïdosis in our patient was focused on the systemic manifestations of the disease and did not involve a mastectomy.

Corticosteroids were used for treatment with regression of the breast lesions, confirmed in the seventh round of mammography screening (Fig. 4).

**Differential Diagnosis List:** Breast sarcoïdosis, Malignancy, Granulomatous mastitis, Diabetic mastopathy, Fungal or mycobacterial infections such as tuberculosis

**Final Diagnosis:** Breast sarcoïdosis

**References:**


Figure 1

Description: Percutaneous ultrasound-guided needle core biopsy 14G

Origin: Marques, JC; Liga Portuguesa contra o Cancro, Lisboa, Portugal
Description: MLO view right breast Origin: José Carlos Marques, Liga Portuguesa contra o Cancro, Lisboa, PT
Description: MLO view left breast Origin: José Carlos Marques, Liga Portuguesa Contra o Cancro, Lisboa, PT
Description: CC view right breast  

Origin: José Carlos Marques, Liga Portuguesa Contra o Cancro, Lisboa, PT
Description: CC view left breast Origin: José Carlos Marques, Liga Portuguesa contra o Cancro, Lisboa, PT
Description: Targeted breast ultrasound examination of the right breast

Origin: José Carlos Marques; Liga Portuguesa contra o Cancro, Lisboa, PT
Description: Two view mammography from the right breast after treatment - MLO view

Origin: José Carlos Marques; Liga Portuguesa contra o Cancro, Lisboa, PT.
Description: Two view mammography from the right breast after treatment - CC view

Origin: José Carlos Marques; Liga Portuguesa contra o Cancro, Lisboa, PT.