

## The atypical form of granulomatous lobular mastitis – diagnostic dilemmas. A case report

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Idiopathic granulomatous mastitis (IGM) is a chronic inflammatory condition that may cause diagnostic difficulties during clinical tests and radiological examinations in terms of differentiation from contagious diseases, such as tuberculosis (TB) and fungal infections, as well as cancer. This report presents the case of a 23-year-old woman with granulomatous mastitis, along with a discussion of the diagnostic dilemmas based on a clinical test, mammography, ultrasonography and histopathological examination. IGM produces varied and non-specific manifestations on mammography and ultrasonography. Therefore, histopathological examination is necessary to make an unambiguous diagnosis. The possibility of this condition must always be borne in mind to minimise the risk of an erroneous cancer diagnosis. There are no standard procedures in force for the treatment of IGM.

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**Key words:** granulomatous mastitis, breast cancer

### Introduction

IGM is a rare, benign and chronic inflammatory condition of the breasts, which affects women of childbearing age [1, 2]. The first description of the disease was presented in 1972 by Kessler et al. to define granulomatous mastitis with an unknown etiological agent [3]. In 1987, Going et al. recommended the term 'granulomatous lobular mastitis' (GLM) to differentiate the lesion from granulomatous periductal mastitis [4]. The lesion was described as granulomatous mastitis affecting the breast lobule and leading to its destruction. The granulomas were made up of histiocytes, Langhans giant cells, lymphocytes and plasmacytes. Granulomas do not undergo caseous necrosis.

Over time, the lesions may form confluent structures with fat tissue necrosis, abscess formation and fibrosis. Selective tests fail to reveal any microorganisms and the lesions contain no foreign bodies. Occasionally, it is possible to observe focal lesions related to lactation in women who have recently been pregnant. Differential diagnostics also encompass other granulomatous lesions. Differentially diagnosing with tuberculosis, sarcoidosis and cat-scratch disease (CSD) is most often performed on the basis of clinical and histopathological images [5,6]. This process must always take into account granulomatous mastitis, which accompanies infiltrating or *in situ* breast cancer [7, 8].

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## Case report

A 23-year-old female patient reported to the Oncological Surgery Outpatient Clinic due to a tumour in the left breast, which she had discovered about 1.5 months earlier. No other present or past diseases were reported during history taking. Three years earlier, she had given birth naturally to one child and breast-fed for six months. The patient reported no family history of cancers, and did not suffer from fever, lung diseases, dental problems, facial skin lesions, tonsillitis, gingivitis or breast injuries. Physical examination of the left breast, within the external quadrants, revealed a palpable tumour of 8 x 8 cm in diameter, which was hard and rough, poorly mobile, and produced no lesions on the skin above it. In the left axillary fossa, there were single enlarged and mobile lymph nodes. Clinically, the lesion aroused suspicion of a cancerous growth.

A blood test revealed mild leukocytosis (white blood cell [WBC] count: 10 100) and increased C-reactive protein concentration (176 mg/l, <10 mg/l). No abnormalities were shown in the patient's chest X-ray.

A breast X-ray revealed an area of irregular structure in the external quadrants on the left side, measuring 8 x 8 cm, with strong local vascularisation and local micro-calcifications (BIRADS-5). In the bottom and middle parts of the left axilla (armpit), there were four completely hypoechoic lymph nodes and one with a cortex thickened to 6 mm. These were U4-type nodes (Fig. 1).

Contrast-enhanced spectral mammography revealed a non-homogeneous, irregular infiltration measuring 11 x 6 cm in the left breast and abnormal lymph nodes of 10 mm in short-axis view in the left axillary fossa. The right breast showed no radiologically suspicious changes (BIRADS-5) (Fig. 2).

An ultrasound-guided core-needle biopsy (CNB) was performed. The histopathological examination of the specimen revealed severe, chronic active breast inflammation (mastitis). The connective tissue stroma showed the presence of tiny necrotic foci. The entire specimen contained numerous visible inflammatory granulomas made up of epithelioid cells, mainly multinucleate giant cells. No necrosis was found in any of the granulomas. Minor reactive lesions were observed within the

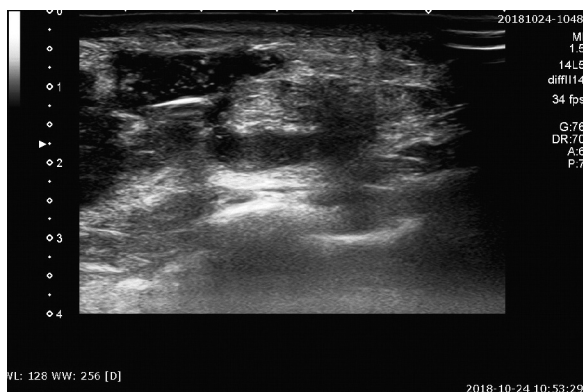


Figure 1. Ultrasonography of the left breast

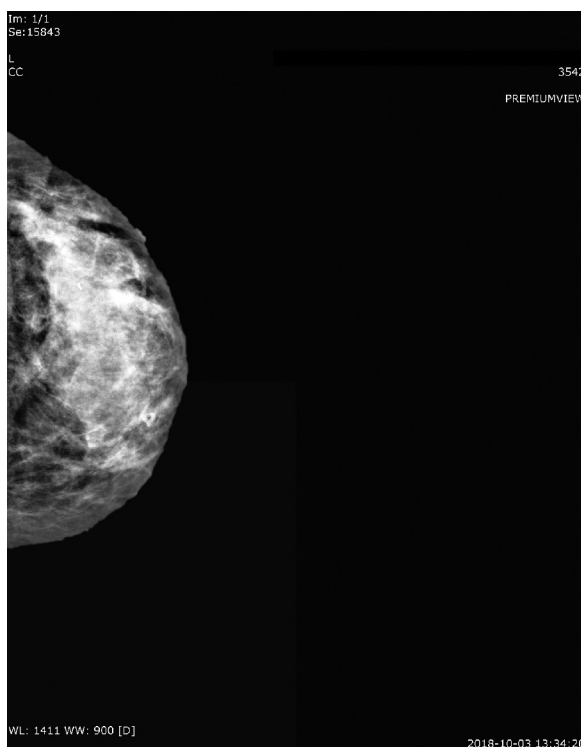


Figure 2. Spectral mammography of the left breast

ductal epithelium. A cytokeratin (CK) immunohistochemical study was performed to confirm the presence of potential cancer infiltration cells. However, the result of this study excluded the presence of cancer cells in the specimen (Fig. 3).

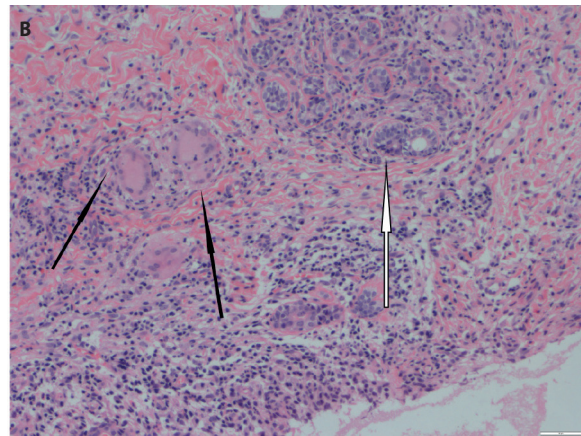
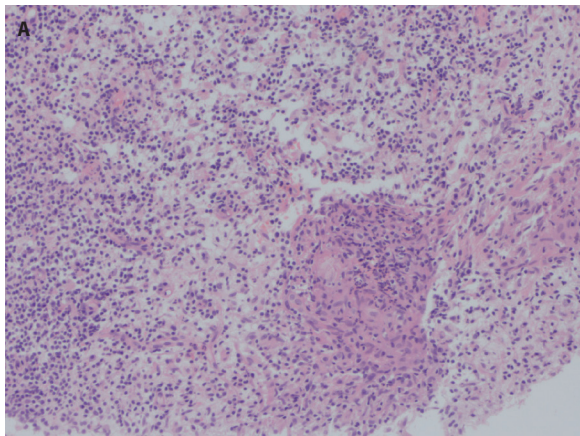
No cancer cells were found on fine-needle aspiration biopsy (FNAB) of the lymph nodes.

Seven days after CNB, numerous hard, erythematous and suppurative foci appeared over the tumour (Fig. 4).

Swabs were taken from the lesions, but the bacterial cultures from the skin and the purulent secretion for *Actinomyces* and *Nocardia* were negative.

Since the clinical picture might have suggested actinomycosis, a pathologist was asked to search for the characteristic "sulphuric granules". The specimen was therefore dissected and thoroughly examined again. Unfortunately, the histopathological examination of numerous samples stained with hematoxylin and eosin did not confirm the presence of "sulphuric granules" or filamentous bacteria. In order to confirm or finally exclude an *Actinomyces israeli* infection, the Gram staining technique was used, yet did not confirm the presence of Gram-positive bacteria. Fungal infection was also excluded based on an assessment of Grocott-stained specimen samples. Ziehl-Neelsen staining, which was performed on mycobacteria, yielded a negative result. The granulomas revealed no presence of the caseous necrosis typical of TB. Since an etiological factor was not found, the case in question was assumed to be granulomatous mastitis.

The patient was started on oral Amoxicillin at a dose of 1g twice a day, for the first month. Next, the therapy was reduced



**Figure 3.** Mixed lympho-granulocytic inflammatory infiltrate with non-necrotic granuloma (A). Non-necrotic granuloma with multinucleate giant cells (the black arrow) and a breast lobule (the white arrow), HE, magn. 100x (B)



**Figure 4.** The left breast 7 days after CNB

to 1g once a day. After six months of the therapy, the tumour was no longer palpable, the skin lesions had decreased and the filtration subsided. After the following three months, the skin lesions disappeared. The patient remains under observation.

## Discussion

Idiopathic granulomatous mastitis is a rare, chronic inflammatory condition of the breasts, primarily observed in women of childbearing age. Its precise etiology is not known. One hypothesis is that it is caused by autoimmune factors or associated with lactation [9, 10].

The dominant feature is most commonly a tumour, usually with a cohesive texture, which may be accompanied by pain, reddening and enlarged lymph nodes [10]. As the disease progresses, there are other manifestations such as pulled-in nipples, reddening, ulceration and fistulas, which may lead to erroneous diagnoses of infiltrating breast cancer [11, 12].

Imaging examinations of IGM, such as mammography and ultrasonography, are non-specific and may often be mistakenly interpreted as cancer. In the case at hand, the tumour lesion in the breast was classified as BIRADS-5 on both mammography X-ray and ultrasonography. Some authors suggest performing magnetic resonance imaging (MRI) in IGM diagnostics. Ho-

wever, studies have revealed that MRI provides no additional data helpful in differentiating between IGM and breast cancer.

Due to the ambiguous IGM assessments from clinical and imaging examinations, diagnosis should be based on a histopathological analysis following CNB or tumorectomy [4, 11, 12]. Besides infiltrating cancer, differential diagnostics should also take into consideration other chronic inflammatory breast conditions, such as plasma cell inflammation, histoplasmosis, tuberculosis and Wegener's granulomatosis [13].

The treatment of idiopathic granulomatous mastitis is diverse, and the therapeutic options include conservative treatment with an antibiotic, corticosteroid therapy or wide local excision (WLE). A study by Atak et al. revealed that the best treatment method for IGM patients involved surgical excision combined with the administration of steroids [14].

Similarly, in a study by Sheybani et al. conducted on twenty-two IGM patients, surgical treatment was the treatment of choice [15]. In a study by Mahmoulou et al., steroid therapy as a therapeutic method was found to be an effective treatment method for IGM as it reduced inflammation [16]. Our patient was started on antibiotic therapy for six months, resulting in withdrawal of the symptoms.

The condition produces varied and non-specific manifestations on mammography and ultrasonography. Histopathological examination is therefore necessary to make a diagnosis. However, the possibility of IGM must always be borne in mind to minimise the risk of an erroneous cancer diagnosis. There are no standard procedures in force for the treatment of IGM.

**Conflict of interest:** none declared

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