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Primary breast aspergillosis mimicking breast malignancy – a rare case report

Jan Faryna¹, Izabela Łuczyszyn¹, Andrzej Kleszczewski²,
Jolanta Kleszczewska²

¹ Department of Pathology, Bielanski Hospital, Warsaw, Poland

² Centrum Medyczne Saska Kępa NZOZ, Warsaw, Poland

Correspondence: Jan Faryna, Department of Pathology, Bielanski Hospital, ul. Ceglowska 80, 01-809 Warsaw, Poland; tel.: +48 786 11 24 69, e-mail: janfaryna@poczta.fm

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Abstract

Aspergillus is a group of saprophytic fungi which is widely present in our environment. It can be a cause of opportunistic infections of different organs, especially the lungs. Fungal mastitis is a rare infection in healthy subjects. It is seen in breastfeeding females and immunodeficient patients. We herein report a rare presentation of aspergilloma in a 73-year-old female who presented with a palpable mass in the breast. She was under medical control due to plasmocytoma. In ultrasound examination the lesion was classified as BI-RADS 4b and subsequently biopsy (fine needle and core needle aspiration) was performed. Biopsy provided immediate results and excluded breast cancer. In this rare case report of breast aspergillosis, we emphasize the role of pathology in medical diagnosis.

Introduction

Fungal infections of the breast are very rare⁽¹⁾ except during lactation and in cases of immunodeficiency⁽²⁾ and are essentially not encountered in healthy subjects. Aspergillosis is an opportunistic infection which commonly involves the lungs. Extrapulmonary locations, such as the skin or breast, are rare⁽²⁻⁴⁾.

Case presentation

A 73-year-old female with plasmocytoma diagnosed 4 years earlier. She did not remember the names of medications, but she was still under medical control in a referential center.

The patient was under medical control due to plasmocytoma. The tumor of the breast occurred during the remission of plasmocytoma. She did not take any medications at that time.

Our patient was referred to the Clinic of Breast Disorders for the evaluation of a palpable mass in her left breast. The patient presented with ulceration and bloody, purulent

discharge. Relevant medications included Clindamycin and steroids. Mammography of both breasts revealed adipose tissue with non-suspicious calcifications. The right breast without evidence of infiltrations. The left breast with a peri-areolar nodule measuring approximately 30 mm in diameter (BI-RADS 0). Ultrasonographic examination was ordered.

Ultrasound examination revealed a lesion (28 × 16 mm), with partially indistinct margin, (Fig. 1) predominantly solid with some fluid collection, isoechoic with acoustic shadow and peripheral vessels (Fig. 2) in the upper outer quadrant of the left breast. On elastogramme, the lesion was predominantly hard compared to the surrounding tissue^(1,2) (Fig. 3). The milk ducts were not dilated. There were no abnormalities observed in the axillary lymph nodes. Finally, based on the BIRADS-lexicon features⁽⁵⁾, the lesion was classified as BI-RADS 4b and subsequently fine needle aspiration (FNA) as well as core needle biopsy (CNB) were performed.

The CNB material is sufficient to make a diagnosis. It is a basis for the diagnosis of neoplastic changes in the breast. FNA has the advantage that an initial diagnosis can be made within hours.

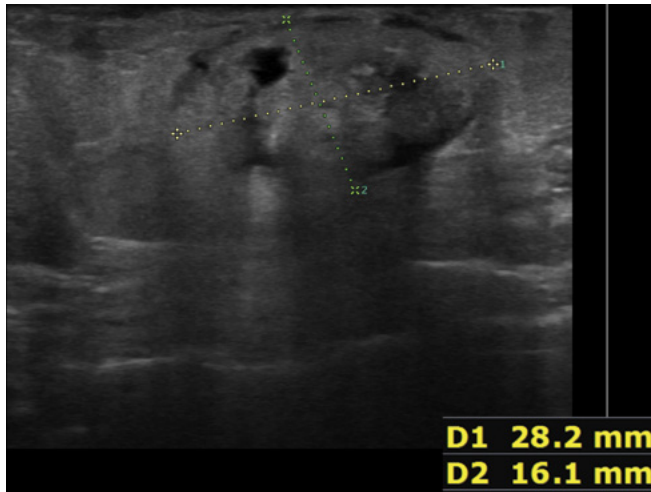


Fig. 1. Isoechoic, oval lesion with partially indistinct margin, parallel orientation

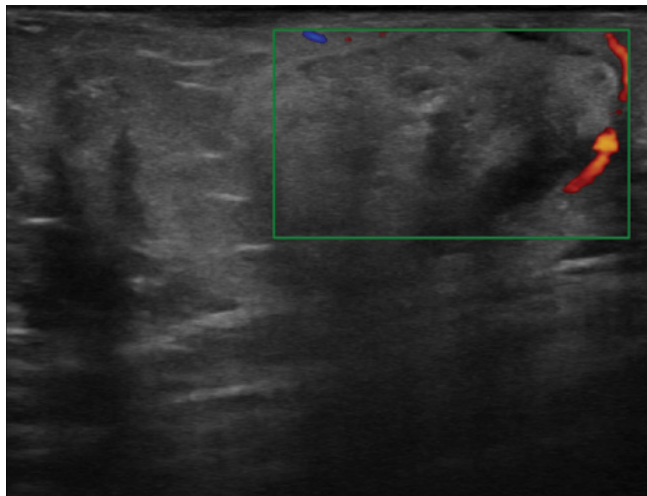


Fig. 2. Only peripheral flow is visible in CD examination

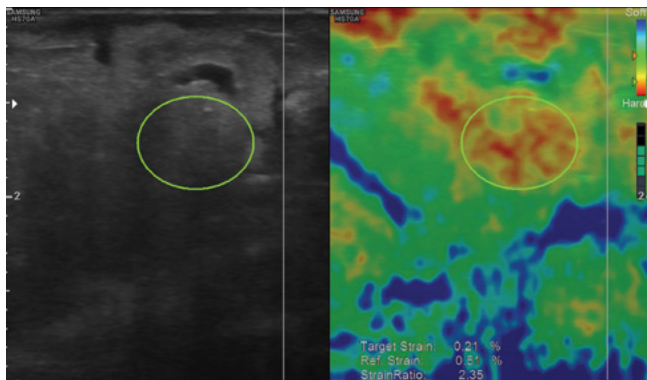


Fig. 3. The lesion is predominantly hard on elastogramme (SR = 2.35)

Fine needle aspiration samples were preserved in alcohol and CNB samples were stored in formaldehyde and stained with Hematoxylin and Eosin. The material from FNA revealed stromal elements, ductal epithelial cells, chronic and subacute infiltrates and fragments of mycelial filaments in the connective tissue (Fig. 4).

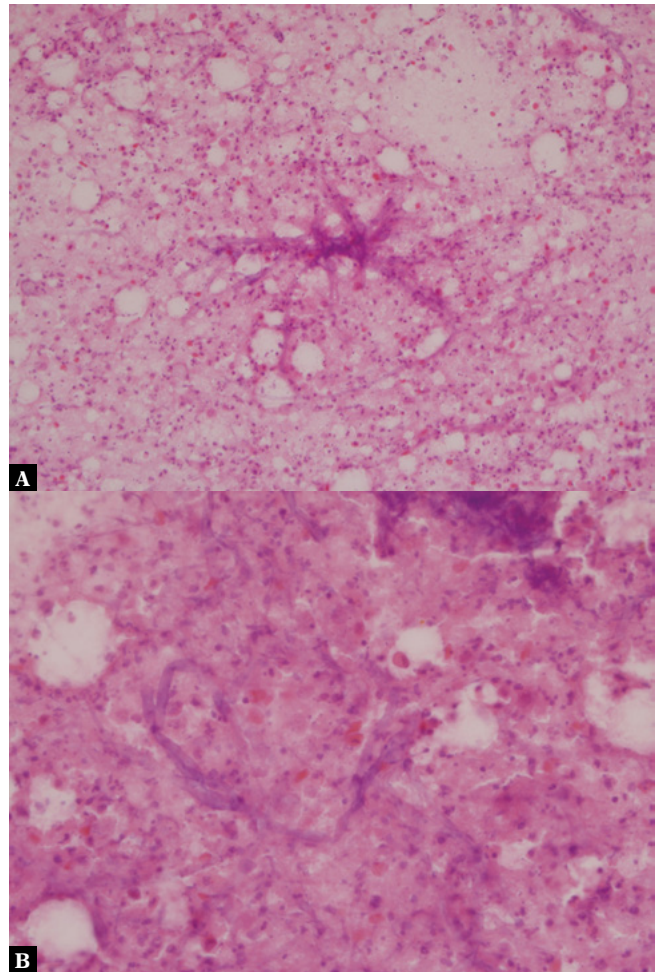


Fig. 4. Fine needle aspiration: In cytological smears stained with hematoxylin and eosin, the hyphae of *Aspergillus mycelium* (colored blue) are visible. In the background, amorphous protein masses, erythrocytes and quite numerous neutrophils (H&E, magnification (A) 200× and (B) 400×)

CNB slides revealed characteristic *Aspergillus* filaments (Fig. 5). The findings were confirmed by the mycology lab.

Comments

Aspergillosis is an opportunistic infection, which leads to hyphae growth and invasion of the blood vessels, followed by necrosis and hemorrhage. In the presented case, the ultrasonographic and mammographic manifestation was highly suggestive of malignancy. In the differential diagnosis of the isoechoic lesion, we initially considered normoechoic neoplastic lesion (such as lobular breast cancer), fat necrosis, and inflammation. Skin infiltration is commonly seen in advanced cases of breast cancer.

Biopsy findings allowed for the diagnosis.

My review of medical literature indicates that fungal mastitis is very rare and may suggest immunodeficiency^(2,6). In our

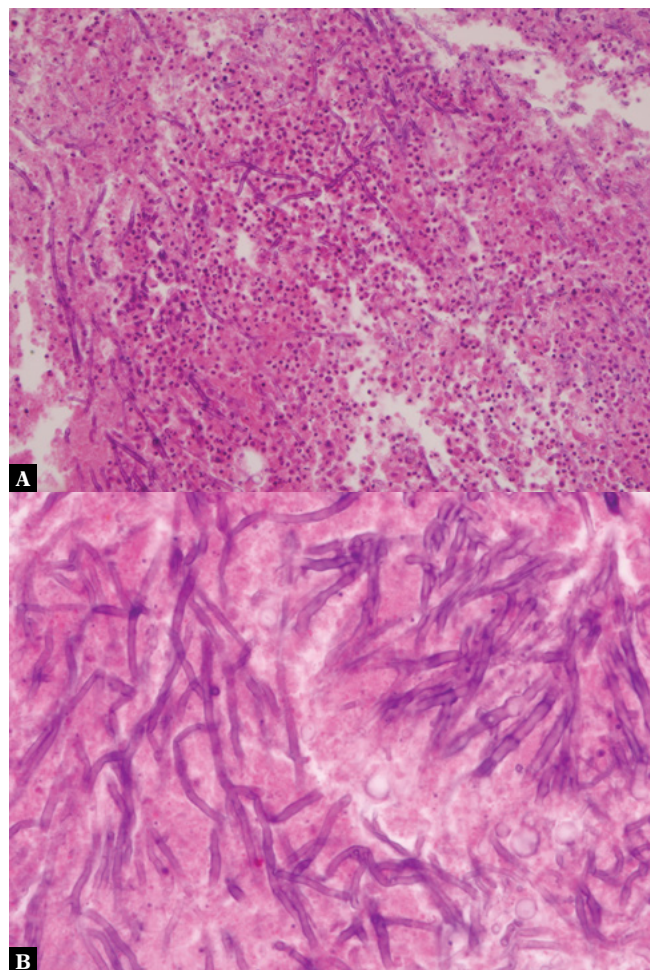


Fig. 5. Core needle biopsy: elements of inflammatory granulation tissue containing multiple hyphae of *Aspergillus mycelium* dominate (H&E, magnification 200× and 400×)

case the lesion was classified as BIRADS 4b and it was suspected to be a neoplasm. FNA and CNB revealed that it was *Aspergillus* infection rather than recurrence of extraskelatal plasmacytoma or primary carcinoma of the breast. There are literature reports describing such infections in patients with

silicone mammary implants and in immunodeficient subjects⁽⁷⁾. In our case, the inflammatory (not neoplastic) lesion in FNA was richer in mycelial filaments.

In a study published by Kloska *et al.*, the lesion presented differently in ultrasound examination and MMG⁽²⁾.

In ultrasound, the lesion had a thin distinct hypoechoic border, and a moderately hypoechoic center with irregular acoustic shadowing. On MMG, the lesion had no microcalcifications, and presented with lobulated and ill-defined margin.

In our case, the patient had previously immunosuppressive treatment due to plasmacytoma. There were inflammation and necrotic changes with bloody, purulent discharge in the skin over the tumor. The tumor was located in the breast, but the lesion which affected the skin did not recede after antibiotic therapy. In such situations, the diagnosis can be made based on biopsy.

FNA and CNB slides were diagnostic, but in case of inflammation FNA can be more helpful. Some authors recommend making parallel FNA and CNB to increase the sensitivity of preoperative diagnosis^(8,9).

For this reason, CNB is the gold standard in cases of moderate to high risk of malignancy in ultrasound and MMG examinations.

Conclusion

The clinical history of plasmacytoma should raise a suspicion of an opportunistic infection, which is common in immunocompromised patients. Breast biopsy allowed to make a diagnosis.

Conflict of interest

Authors do not report any financial or personal connections with other persons or organizations, which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

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