



MRI and pathology findings of a mass-like fat necrosis in the breast

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Abstract

Fat necrosis of the breast is a benign inflammatory process and, it has a wide range of findings on Magnetic Resonance Imaging (MRI), some of which are in the malignant spectrum. We present a case of a breast fat necrosis that mimicked malignancies on MRI because of the intense internal enhancement with a type 3 kinetic curve, its relatively large size, and axillary lymphadenopathy.

Keywords: breast, fat necrosis magnetic resonance imaging, biopsy

1. Introduction

Fat necrosis is a benign non-suppurative inflammation of the fat tissue. The most common cause is trauma, whether iatrogenic or non-iatrogenic. Other rarer causes are anticoagulant therapy, radiotherapy, duct ectasia and mastitis (1). Although patients are generally asymptomatic, symptomatic ones present with a breast lump, which can be accompanied by bruise, erythema, tenderness, skin and/or nipple retraction. Palpable abnormality is usually located superficial and periareolar (1-4). Fat necrosis has a wide range of radiologic findings depending on its stage. Both clinical and imaging findings can mimic malignancy. Typically, there are characteristic findings that can suggest fat necrosis but in some rare cases, it is not possible to distinguish fat necrosis from malignancy with clinical and imaging findings. Therefore, in these cases, biopsy is needed to rule out malignancy (3). We would like to report a fat necrosis case that was not possible to distinguish from malignancy on MRI and core biopsy was performed in order to diagnose.

2. Case Report

A 51-year-old woman consulted our hospital complaining of swelling, erythema and nipple discharge on right breast. She had a history of right breast trauma three days before her consultation. Physical examination revealed hyperemia and warmth at right breast. Upon ultrasound examination, increased echogenicity of the fat tissue on right breast and right axillary lymphadenopathy was found and MRI was suggested to evaluate if there's an underlying malignancy. A month later, MRI was performed. MRI revealed an intense heterogeneous enhancing, fat containing solid mass with type 3 enhancement curve (Fig. 1). It was accompanied by diffuse skin thickness, edema on right breast and lymphadenopathy on right axilla. We could not rule out malignancy and suggested biopsy. Two weeks later, an ultrasound guided core biopsy was done, and the result was fat tissue necrosis (Fig. 2). Three months later, the patient underwent a control ultrasound, and it was normal. Written informed consent has been obtained from the patient to publish this paper.

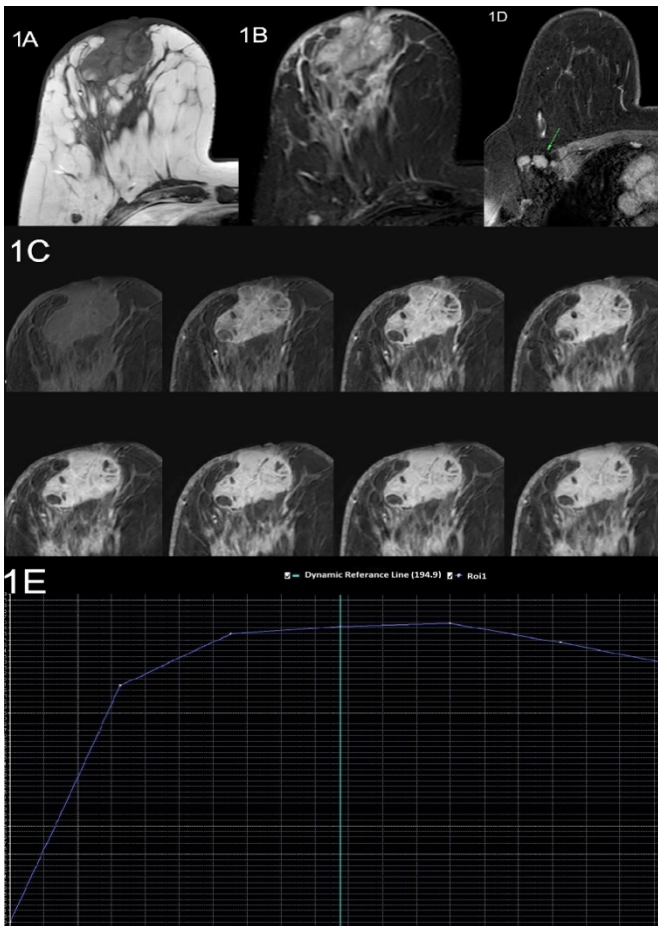


Fig. 1. MRI images; Axial T1-weighted unenhanced (1A), axial STIR (1B), axial T1-weighted fat-saturated contrast-enhanced dynamic images (1C) show approx. 6x4 cm sized heterogeneous enhancing fat containing mass accompanied by diffuse skin thickness, edema on right breast and right axillary lymphadenopathy (1D, green arrow). Kinetic curve of the mass (1E) shows type 3 enhancement curve. Mass extends to the skin and contrast enhancement of the skin adjacent to the mass is increased

3. Discussion

Fat necrosis has a diverse range of radiological findings, some of which are similar to malignancy. Most of the cases, it is easy to diagnose it with trauma history, benign findings that suggest fat necrosis; and a routine annual follow-up is sufficient.

Most of the breast fat necrosis cases in the literature are seen as typical oil cysts with enhancing rim on MRI. Meanwhile, this lesion had a relatively large size, consisting of mostly enhancing solid components and a small amount of fat. It was also accompanied by skin thickening, edema and axillary lymphadenopathy. When we suggested biopsy, we thought of fat-containing malignancies like liposarcoma in the differential diagnosis. Lee et al., (5) reported a similar looking fat necrosis of the upper extremity that mimics liposarcoma.

In the literature, hyperacute inflammatory phase findings are identified as edematous fat tissue, which appears hyperechoic on ultrasound (4). Meanwhile, various findings have been identified for the acute inflammatory phase, some of which are complex cystic lesions, solid lesions with various

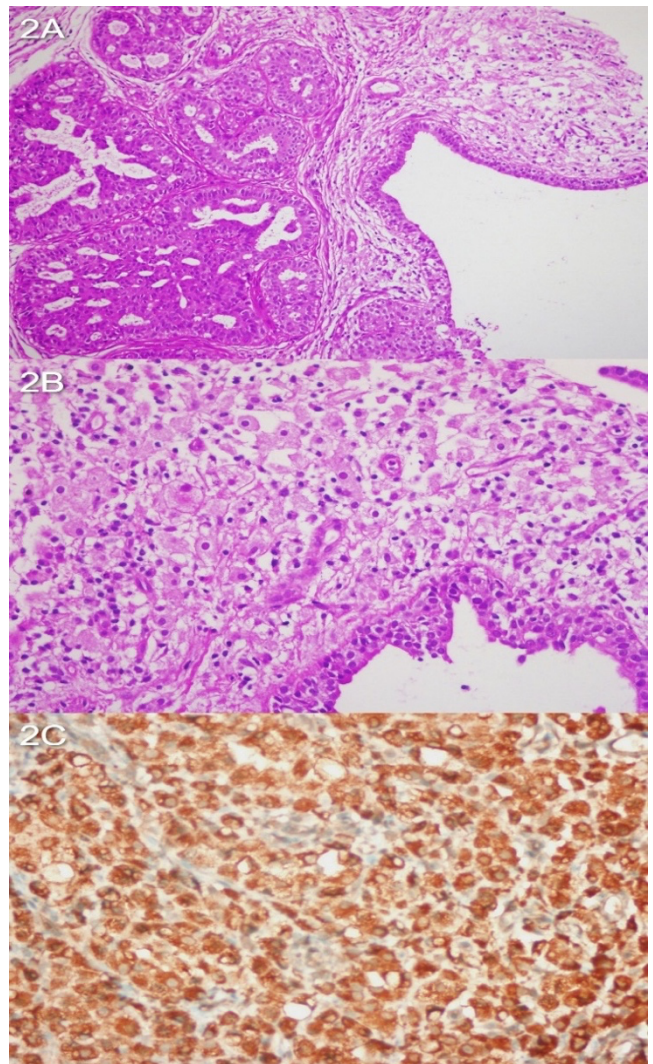


Fig. 2. Fat necrosis Groups of foamy histiocytes around ducts with usual epithelial hyperplasia. H-Ex200(2A), H-Ex400 (2B), CD68 x400 (2C)

margin and enhancement features depending on the amount of granulation tissue and severity of fibrosis (4, 6). While findings on ultrasound examination taken a few days after the onset of complaints were consistent with the hyperacute inflammatory phase as defined in the literature, a solid enhancing mass was observed in the MRI taken approximately one month later, and the findings were consistent with the acute inflammatory phase as defined in the literature.

Conflict of interest

None to declare.

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Authors' contributions

Concept: A.C., A.V.P., H.A., Design: A.C., A.V.P., Data Collection or Processing: A.C., A.V.P., Analysis or Interpretation: A.C., A.V.P., Y.S., Literature Search: A.C., A.V.P., Writing: A.C., A.V.P., Y.S.

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