

Breast Fat Necrosis as an Imitator of Cancer Recurrence – The Role of Imaging Modalities in Differential Diagnosis

Klaudia Kufel

Student Scientific Society of Physiology, Department of Physiology, Institute of Medical Sciences, University of Opole, Oleska 48, 45-052, Opole, Poland

Julia Kulińska

Student Scientific Society of Physiology, Department of Physiology, Institute of Medical Sciences, University of Opole, Oleska 48, 45-052, Opole, Poland

Daniel Czyż

Student Scientific Society of Physiology, Department of Physiology, Institute of Medical Sciences, University of Opole, Oleska 48, 45-052, Opole, Poland

Aleksander Dittmann

Student Scientific Society of Physiology, Department of Physiology, Institute of Medical Sciences, University of Opole, Oleska 48, 45-052, Opole, Poland

Bożena Widz-Tomala, MD

Tadeusz Koszarowski Cancer Center in Opole, 66a Katowicka, 45-061 Opole, Poland

Barbara Radecka MD, PhD

Tadeusz Koszarowski Cancer Center in Opole, 66a Katowicka, 45-061 Opole, Poland
Department of Oncology, Institute of Medical Sciences, University of Opole, Oleska 48, 45-052, Opole, Poland

Abstract

Fat necrosis of the breast is a consequence of an inflammatory process, which may be triggered by disturbances in microcirculation, local hypoxia, as well as mechanical trauma, previous surgical intervention or radiotherapy. These factors lead to adipocyte disintegration, lipid release and a granulomatous response induced by macrophages and multinucleated giant cells, resulting in fibrosis, calcifications and the formation of irregular scarring foci. Clinically and radiologically (US, MRI, mammography), such lesions may mimic a malignant neoplasm, creating diagnostic difficulties and leading to unnecessary escalation of treatment. The differential diagnosis is particularly challenging in patients with a positive oncological history, as even a small hypoechoic focus raises suspicion of local recurrence or tumour progression.

A 72-year-old female patient had previously undergone a quadrantectomy for a phyllodes tumour of the left breast. She remained under regular surveillance in a breast disease prevention clinic, and imaging studies showed no evidence of tumour recurrence. In 2025, during a routine follow-up, breast ultrasound of the left breast demonstrated at the 11 o'clock position a hypoechoic, heterogeneous nodule with calcifications, irregular in shape, partially poorly demarcated, measuring 21 × 6 × 10 mm, with a strain elastography FLR index of 3.7, BI-RADS 4b, which radiologically could correspond to a local recurrence. Control mammography did not reveal any microcalcifications or densities suspicious for malignancy, BI-RADS 0 (no correlation with ultrasound). A diagnostic vacuum-assisted biopsy was performed under ultrasound guidance.

Histopathological examination revealed fat necrosis, confirmed immunohistochemically (CD68+), without features of malignancy. The clinical and radiological picture in a patient with a history of a phyllodes tumour suggested local tumour recurrence. Only comprehensive imaging in combination with histopathological examination enabled the correct diagnosis. This case highlights the necessity of clinico-radiological-pathological correlation in the differential diagnosis of focal breast lesions, especially in patients with an oncological history.