



Case Report

Diagnosis of fat necrosis on FNAC - A case report

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Abstract

Fine needle aspiration (FNA) of the breast has gained significant credibility in the diagnosis of breast diseases especially malignancy. Fat necrosis of the breast is a phenomenon that occurs within breast adipose tissue following exposure to trauma. It can mimic breast cancer clinically or radiologically. FNA of fat necrosis is a useful tool in directing management and treatment of the patients and avoiding unnecessary surgeries although histopathological examination is the gold standard for the final diagnosis.

Key words

Fine needle aspiration (FNA), Fat necrosis, Breast cancer.

Introduction

Fine needle aspiration (FNA) of the breast has gained significant credibility in the diagnosis of breast diseases especially malignancy [1]. It is a widely used technique for the initial diagnosis of mammary lesions. Fat necrosis is a benign non-suppurative inflammatory process of adipose tissue which was initially described in the breast in 1920 [2, 3]. Fat necrosis of the breast is a phenomenon that occurs within breast adipose tissue following exposure to trauma. Even with a clear history of previous trauma, the possibility of a malignancy should not be overlooked, as

patients' attention may only be drawn to the lump by an episode of trauma. We have presented here a case where we were able to find and document the typical features of fat necrosis.

Case report

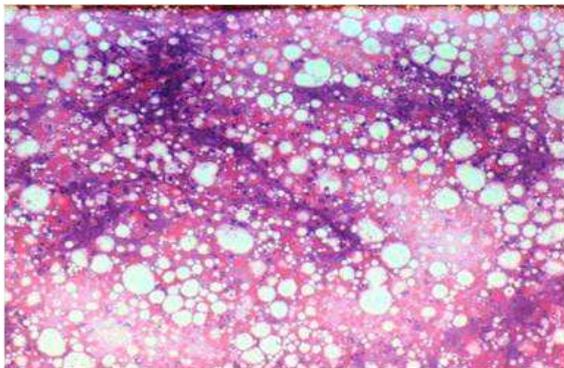
A 32 years old female patient was admitted with complains of gradually increasing painful mass in the right breast for the last 4 weeks. There was history of trauma. Local examination revealed firm tender lump in right breast measuring 4×3.5 cm. The nipple and overlying skin was normal



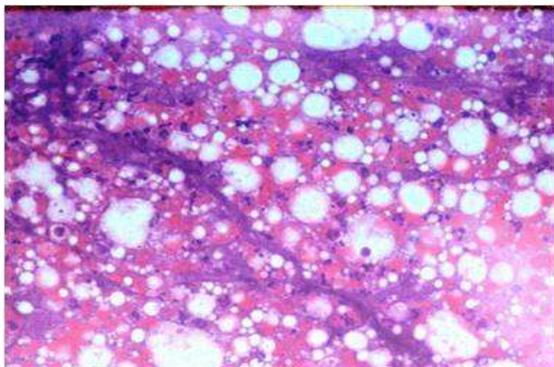
with no axillary lymphadenopathy. Routine laboratory tests were within normal ranges.

FNAC of the lump was done at cytology clinic using a 22-gauge needle attached to a 10 ml syringe [4-13]. The smears studied showed few scattered ductal epithelial cells, foamy histiocytes, lymphocytes, polymorphs, occasional histiocytic giant cell, few adipocytes on hemorrhagic background. (**Microphotograph - 1, 2, 3**) So the impression given was benign breast lesion suggestive of fat necrosis and close follow up was advised.

Microphotograph – 1: Hypocellularity with dirty background and fragments of adipose tissue (10X, H& E Stain).



Microphotograph – 2: Foamy cells, polymorphs, lymphocytes and necrotic debris. (20X, H & E Stain).

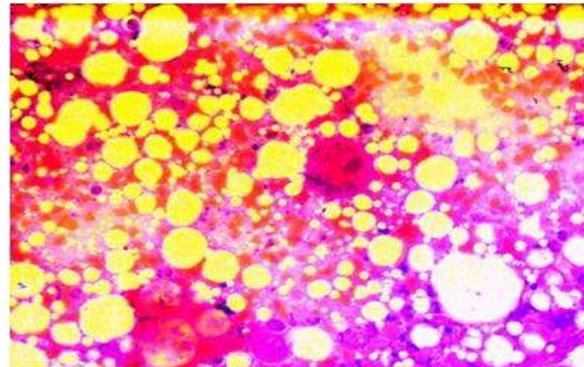


Discussion

Fat necrosis of the breast is a benign condition that most frequently affects peri-menopausal

women. It can mimic breast cancer clinically or radiologically. Hadfield described it as “an innocent lesion of the breast presenting itself most often in women between the fourth and fifth decades, frequently as a stonyhard tumor firmly fixed to the skin, often resembling an early cancer so closely that a wide resection of the breast has been performed” [14].

Microphotograph – 3: Giant cell in the necrotic debris (20X, H & E Stain).



The main etiology of fat necrosis is trauma. As a result of the trauma, the adipocytes undergo necrosis and a benign inflammatory process results from the saponification of fat by blood and tissue lipase [15]. The incidence of the disease is estimated to be 0.6% in the breast, representing 2.75% of all benign lesions [2, 3, 14, 16]. Clinical presentation of fat necrosis can range from an incidental benign finding to a lump highly suggestive of cancer [17, 18]. It can present as single or multiple smooth, round, firm nodules or irregular masses which may be associated with ecchymosis, erythema, inflammation, pain, skin retraction or thickening, nipple retraction and lymphadenopathy simulating carcinoma [17, 19, 20, 21]. The mammographic appearance of fat necrosis include normal appearance (9%), discrete round or oval radiolucent oil cyst with thin capsule (27%), thickening and deformity of skin and subcutaneous tissue (16%), focal mass (13%), and ill-defined spiculated mass (4%) [22]. Sonographically solid masses of fat necrosis



have well-circumscribed or ill-defined margins, and are often associated with distortion of the breast parenchyma [23]. It may appear as cystic or solid masses. Cystic lesions appear complex with mural nodules or with internal echogenic bands. Fat necrosis produces a wide spectrum of findings on MRI. Magnetic resonance images correlate well with the histology of fat necrosis. The abundant iron-containing siderophages cause a diffuse decrease in signal intensity on both T1- and T2- weighted images. A focal area of edema is seen as hyper intense zone on T2-weighted images.

On FNA, it is possible to sense a grainy texture through the penetrating needle. Greasy material will be collected and may bead up on air-dried slides. The typical cytological presentation includes histiocytes with foamy, vacuolated cytoplasm, multinucleated giant cells, blood pigment, and possibly foreign body granulomas. Neutrophils, lymphocytes and plasma cells can be seen in the background with acute inflammation predominating in the earlier stages. Chronic inflammation will predominate in the later stages and it, along with the formation of granulation tissue and fibrosis, can result in the creation of scar tissue which can mimic cancer. The few epithelial cells present may be considered atypical because of their prominent nucleoli, nuclear pleomorphism, hyperchromasia and mitotic figures [24].

The possible differential diagnosis will be malignant breast lesion, cryptococcosis of the breast and silicone granuloma. Certain ductal carcinomas have been known to coexist with fat necrosis but have a distinct population of malignant cells in conjunction with the typical histiocytes seen. The histiocytes seen in this lesion also contain vacuoles but they are not as large as those identified in the necrosis [25]. Core biopsy of breast lesions has been shown to be more sensitive than FNAC [26]. Parker, et al.

reported false negative rates of 1.2–1.5% with large core needle biopsy [27]. Hence surgical excision biopsy is indicated where there is still suspicion of malignancy.

Conclusion

In conclusion, there is a wide range of manifestations of fat necrosis clinically and radiologically. FNA of fat necrosis is a useful tool in directing management and treatment of the patients and avoiding unnecessary surgeries although histopathological examination is the gold standard for the final diagnosis.

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