Letter to Editor

Fat Necrosis of the Breast Masquerading as Malignancy Diagnosed on Fine-Needle Aspiration Cytology

Sir,

Fine-needle aspiration (FNA) of the breast is an integral part of triple testing and has gained significant credibility in the diagnosis of breast diseases. Fat necrosis (FN) is a benign nonsuppurative inflammatory lesion that occurs within breast adipose tissue following accidental trauma or previous surgical biopsy.[1] It can masquerade as breast cancer clinically or radiologically and may pose a diagnostic challenge on cytology too.[2]

A 60-year-old-female patient presented with a right breast lump for 20 days. Mammography was reported as the Breast Imaging Reporting and Database System Category V, i.e., highly suspicious for malignancy. Local examination revealed a hard, nontender, well-defined mass of size 2 cm × 2 cm in the right subareolar region. The mass was superficial and had restricted mobility within the breast parenchyma. Thus, the clinicoradiological impression was malignancy. The nipple-areolar complex, overlying skin, and other breast were normal, and there was no axillary lymphadenopathy. Past history and family history were noncontributary. Routine laboratory tests were also within the normal range. FNA cytology (FNAC) was advised for confirmation. It was performed using 23G disposable needle and 10-ml syringe as a routine outpatient procedure. Smears were air-dried as well as wet fixed with absolute alcohol and stained with Giemsa and Papanicolaou, respectively.

The cytology smears were cellular and showed a polymorphous population of inflammatory cells against the background of granular dirty necrosis mixed with fat vacuoles [Figure 1a and b]. There were numerous foamy histiocytes with vacuolated cytoplasm, lymphocytes, polymorphs, and multinucleated giant cell [Figure 1c and d]. The histiocytic giant cells also showed cytoplasmic lipid vacuoles. Few traversing blood vessels with adherent inflammatory cells and poorly formed epithelioid cell granulomas were also noted. No atypical epithelial cells were present. The patient did not remember any history of trauma. In view of characteristic cytomorphology, the diagnosis of FN was offered and tissue diagnosis was recommended to rule out adjacent malignancy. Subsequently, the core-needle biopsy also confirmed the diagnosis with no evidence of malignancy [Figure 2]. The patient was advised to follow-up and the lesion regressed.

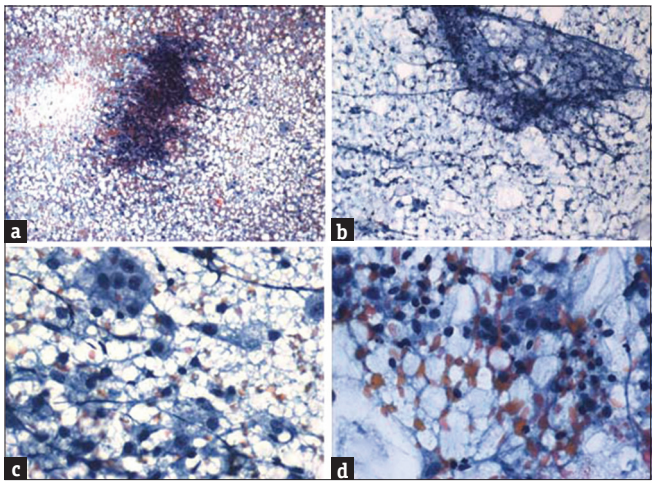

Figure 1: (a and b) Smear shows polymorphous population of inflammatory cells, nuclear debris, and dirty granular necrosis mixed with fat vacuoles (PAP, ×100). (c and d) Histiocytic multinucleated giant cells with cytoplasmic lipid vacuoles, foamy macrophages, lymphocytes, and polymorphs (PAP, ×400)

FN of the breast is a benign condition that commonly affects perimenopausal women.[1] It is described as one of the "gray zone lesions" of the breast because of its diagnostic pitfalls.[2] The incidence is estimated to be 0.6% in the breast, representing 2.75% of all benign lesions.[3] The main etiology is trauma to the breast or previous surgical biopsy.[4] It may be seen after surgery or radiation therapy also.[4] Clinical presentation can range from an incidental benign finding to a stony hard mass highly suggestive of cancer, as in the present case.[5] Aqel *et al*. have reported that 97% of patients with FN presented with a palpable abnormality which was usually periareolar and superficial in location.[5] A few cases can be associated with bruising, tenderness, inflammation, skin dimpling, nipple retraction, and lymphadenopathy, thus posing a challenge to clinicians.[5] On mammography, FN may show variable features depending on the pathological stage of the lesion. It ranges from typically benign-appearing lipid cyst, microcalcification, to an ill-defined spiculated mass simulating malignancy, a diagnostic dilemma for a radiologist.[6] The varied appearance on imaging studies is attributed to the number

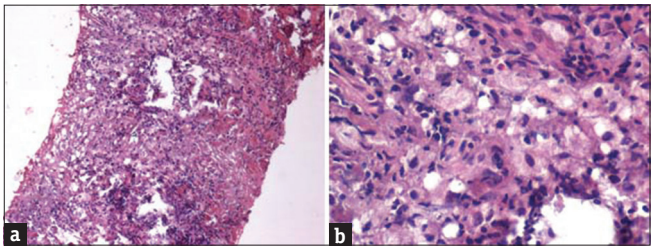

Figure 2: (a and b) Core-needle biopsy from breast mass shows scattered lymphocytes and foamy macrophages with no evidence of malignancy (H and E, ×100, ×400)

of histiocytes, hemorrhage, liquefied fat, fibrosis, and calcification.[6] The clinicoradiological suspicion of FN gets compounded if the patient is elderly, and history of a traumatic event cannot be obtained, as seen in our case.

With the advent of triple testing for breast malignancies, FNAC is a widely used technique for the initial diagnosis of mammary lesions. The cytological features of FN depend on the course of pathogenesis following trauma to breast adipose tissue. Smears are usually hypocellular and characteristically show histiocytes with vacuolated cytoplasm, multinucleated histiocytic giant cells, and numerous inflammatory cells against a dirty necrotic background.[7] The type of inflammatory cells depends on the timing of aspiration. Acute stage will show predominantly neutrophils, whereas lymphoplasmacytic infiltrate is seen in the chronic phase and capillary proliferation in organizing phase.[1,2] Usually, duct epithelial cells are absent. Rarely, few isolated epithelial cells may be seen, probably from the adjacent breast tissue, and may show reactive atypia. It can be misinterpreted as suspicious, especially with necrotic background, leading to an erroneous diagnosis of malignancy.[1] The important feature to differentiate FN from carcinoma is preponderance of inflammatory cells as compared to ductal cells and the typical background with foamy histiocytes and giant cells.[2] Other possible differential diagnoses include silicone granuloma and rare lipid-rich carcinoma.[7] The histiocytes seen in silicone granuloma contain vacuoles that are larger than those seen in FN and often have a signet ring appearance.[7] The tumor cells of lipid-rich carcinoma have abundant vacuolated cytoplasm but shows marked nuclear atypia, unlike FN.[7]

Thus, familiarity with the typical cytological features can alert the experienced cytopathologist toward the right diagnosis and avoid unnecessary surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Singh TH, Rathod GB. Diagnosis of fat necrosis on FNAC – A case report. IAIM 2015;2:236-9.
2. Mitra S, Dey P. Grey zone lesions of breast: Potential areas of error in cytology. J Cytol 2015;32:145-52.
3. Pullyblank AM, Davies JD, Basten J, Rayter Z. Fat necrosis of the female breast – Hadfield re-visited. Breast 2001;10:388-91.
4. Hogge JP, Robinson RE, Magnant CM, Zuurbier RA. The mammographic spectrum of fat necrosis of the breast. Radiographics 1995;15:1347-56.
5. Aqel NM, Howard A, Collier DS. Fat necrosis of the breast: A cytological and clinical study. Breast 2001;10:342-5.
6. Taboada JL, Stephens TW, Krishnamurthy S, Brandt KR, Whitman GJ. The many faces of fat necrosis in the breast. AJR Am J Roentgenol 2009;192:815-25.
7. Cibas ES, Ducatman BS. Breast. In: Cytology: Diagnostic Principles and Clinical Correlates. 3rd ed. Philadelphia, PA: Saunders Elsevier; 2009. p. 232-3.

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