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Case Report

Spontaneous Infarction of Fibroadenoma of the Breast in a Young Girl Mimicking Carcinoma

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ABSTRACT

Spontaneous infarction is an uncommon complication of fibroadenoma of the breast. Although infarction following fine needle aspiration (FNA) has been reported in the literature, infarction encountering on first time aspiration is very rare. Lack of knowledge of this entity may lead to an erroneous diagnosis of inflammatory lesion like mastitis and carcinoma on cytology smears.We report the cytological and histological findings in partial spontaneous infarction of fibroadenoma in an 18-year-old female and literature reviewed. In young patients with breast lumps, if the aspirated material is necrotic, the probable diagnosis of spontaneous infarction should always be kept in mind. Viable fibroadenomatous tissue should be searched for in the FNA smears.

Keywords: Fibroadenoma, Infarction, Carcinoma, Cytology

Introduction

Fibroadenoma is one of the most common diagnoses in the fine needle aspiration biopsy studies of the breast lesions. Very few cases of spontaneous infarction in fibroadenoma have been reported (1-3). Most of the cytological reports concerning this problem focus on infarction after fine needle aspiration but not before. It can be partial, subtotal, or even total.

On fine needle aspiration (FNA), infarcted fibroadenoma has to be differentiated from mastitis, duct ectasia, mammary tuberculosis, and even carcinoma. Clinically, these cases may be mistaken for inflammatory lesions due to pain and tenderness or for malignancy due to hardness, fixation, and enlarged axillary lymph nodes (1). Fibroadenoma spontaneously infarcts in about 0.5-1.5% of the cases and these cases primarily present as painful breast masses in young women who are either pregnant or lactating (4).

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We are reporting a rare case of spontaneous infracted fibroadenoma where infarction was encountered on first time aspiration in an unmarried girl. Our case was clinically diagnosed as fibroadenoma, although the presence of axillary lymph node enlargement aroused some suspicion to the surgeons. Cytologically the lesion was diagnosed as carcinoma because of the presence of necrotic material and scattered ghost epithelial cells. Subsequent histopathological examination revealed the diagnosis of spontaneous infarction in fibroadenoma.

Case report

An 18-year-old unmarried girl presented with eight-month history of a lump in her left breast. The lump slowly increased in size with associated pain. There was no history of trauma. On examination, the lump measured (5 × 3.5 × 2) cm. It was firm, slightly tender and was present in the upper outer quadrant of the left breast. A clinical diagnosis of fibroadenoma was made and FNA was advised. However mammography was not done. Smears showed poorly preserved, mildly pleomorphic single cells having ill-defined nuclei with necrotic material, polymorphs, macrophages, and RBCs in the background (Fig.1). Cytological diagnosis of carcinoma with extensive necrosis was made. Excision biopsy was done based on the cytology report. Gross examination of the specimen labeled as breast tissue measured 8 × 4.5 × 3 cm with overlying piece of skin. Cut section showed a well-defined mass measuring (4 × 3 × 2) cm, firm, and grayish white with dark brown areas. Surrounding fibro fatty tissue and skin were grossly unremarkable. Left axillary lymph node dissected measured 1.5 × 1× 1 cm. Microscopic examination of the sections taken from the peripheral grey white area of the breast mass showed features of a classic fibroadenoma of the intracanalicular type whereas sections taken from the central brownish area showed extensive necrosis (Fig. 2). Ghost architecture of the epithelial fronds with focal glandular outlines, extravasated red cells, karyorrhectic debris, macrophages and mixed inflammatory cells are seen in these sections (Fig. 3). Reticulin stain showed preserved reticulin network. Sections from the left axillary lymph node revealed reactive changes.

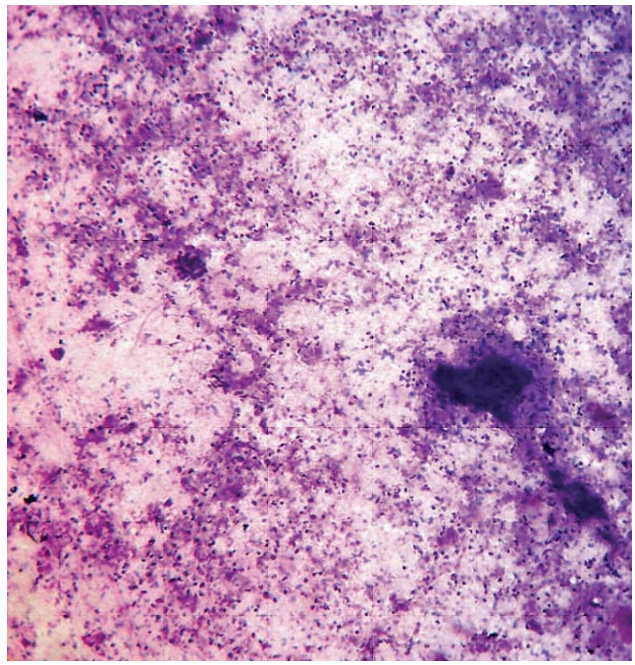

Fig. 1: FNA smears showing necrotic debris and ghost epithelial cells. (Giemsa stain, ×100).

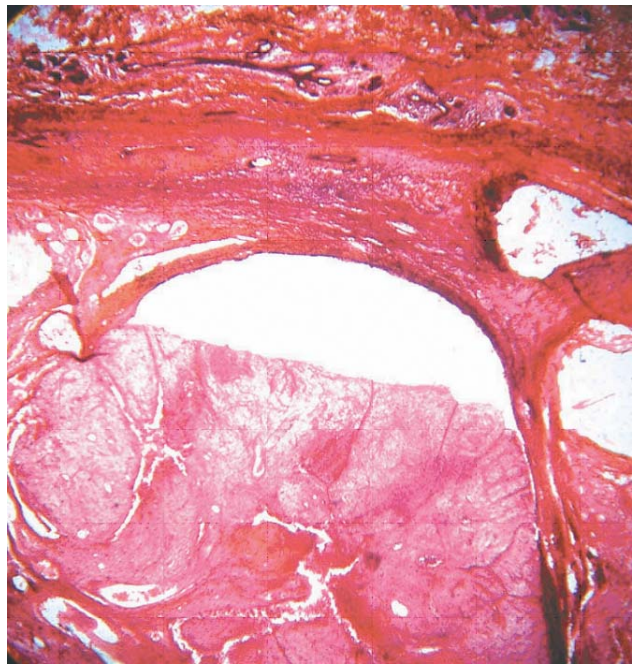

Fig. 2: Sections showing extensive necrosis and a viable peripheral rim with features of fibroadenoma. (H&E stain, ×100)

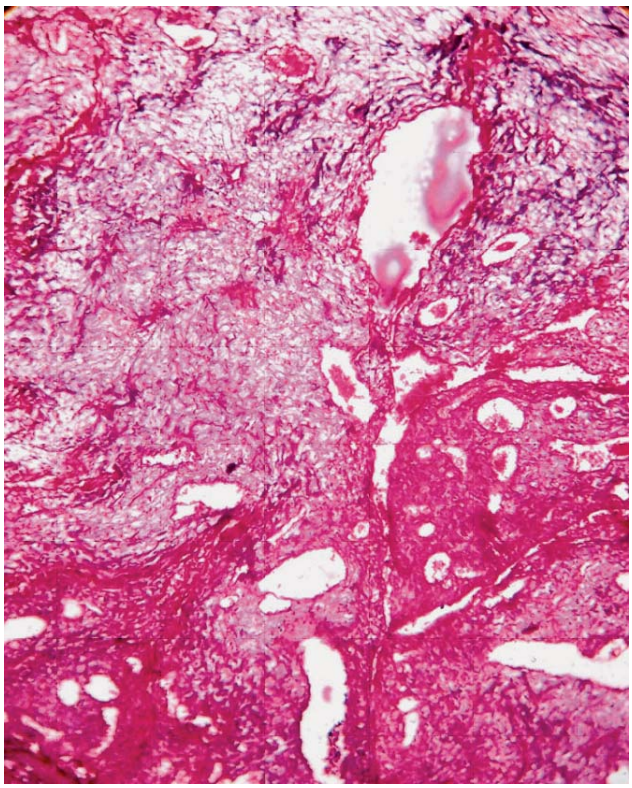

Fig. 3: Sections showing ghost architecture of epithelial fronds, extravasated red blood cells and karyorrhectic debris. (H&E stain, ×100)

A histological diagnosis of fibroadenoma undergoing partial infarction with follicular hyperplasia of axillary lymph node was made.

Discussion

Spontaneous infarction of fibroadenoma is quite rare; occurring in approximately five of 1000 fibroadenomas (5). Infarction of a fibroadenoma was first described by Delarue and Redon (1949). In three of their six patients, the clinical suspicion of carcinoma was sufficiently great to have led to a mastectomy without prior biopsy: a fourth patient had a partial mastectomy (6).

Fibroadenomas are common benign lesions of the breast constituting about 20% of all benign breast lumps (7). Spontaneous infarction in physiologically hyperplastic breast tissue associated with pregnancy and lactation has been widely reported. Infarction of fibroadenoma is an uncommon complication that may occur during pregnancy and lactation (2, 3). The pathogenesis in these conditions has been attributed to be due to the reactive vascular insufficiency resulting from the increased metabolic demand of the breast tissue (8, 9). Some authors have proposed thrombo-occlusive vascular changes in the feeding vessels as the cause of infarction (2, 3). Both these mechanisms cannot explain the spontaneous infarction of fibroadenoma in young patients where there is no increase in the metabolic demand or no demonstrable thrombo-occlusive vascular changes. Mechanical factors like trauma or torsion have been speculated as possible cause in such cases (10. Mc Cutcheon and Lipa reported a case of extensive haemorrhagic infarction in a fibroadeoma following fine needle aspiration (FNA), suggesting that infarction was probably secondary to the trauma of aspiration (10). Our case had no history of previous aspiration and was an unmarried adolescent girl similar to a report by Fowler CL (11). Recognition of FNA induced changes that can mimic infiltrating carcinoma is important for the surgical pathologist to avoid misdiagnosis. Identifying infarction as one of the complications of breast FNA is also important. Clinically infarction may lead to an increased in size, fixation of the mass to adjacent soft tissues with peripheral reactive changes and axillary lymphadenopathy (8). The clinical findings will increase the suspicion of malignancy. The presence of necrotic ductular and glandular outlines, which may bear a superficial resemblance to adenocarcinoma, may also create confusion. Preservation of the architecture and the presence of benign viable tissues, most often at the periphery of the tumour is usually sufficient evidence of the benign nature of the neoplasm (12). However, the presence of partial or complete necrosis with evidence of recent hemorrhage obscure the nature of pathology and apparent infiltration of fat may mimic carcinoma (2, 3). As the reticulin network is usually preserved in infarcted fibroadenoma, reticulin stain is useful as an additional feature that helps in the diagnosis. Sections taken from the periphery of the mass usually reveal viable fibroadenomatous tissue (10).

The presence of poorly preserved single cells and abundant necrotic material in our aspiration smears led to an erroneous diagnosis of carcinoma. The few sheets of preserved epithelial cells and stromal components of fibroadenoma present, which should have suggested the correct diagnosis, were overlooked as in the case of Deshpande *et al.* (1). We should be aware of the

worrisome cytologic alterations following tissue infarction and to avoid misinterpretation of atypical cells and necrosis as indicators of malignancy (13). The diagnosis of carcinoma should never be made in the absence of viable malignant cells. Differentiation of infarcted fibroadenoma from granulomatous mastitis is essential in countries like India due to high prevalence of tuberculous mastitis. Absence of epithelioid histiocytes, multinucleated giant cells and plasma cells and negative Ziehl Neelson stain will be helpful in differentiating the two conditions (1).

In young patients presenting with breast lumps, if the aspirated material is necrotic, the probable diagnosis of spontaneous infarction should always be kept in mind. Viable fibroadenomatous tissue should be searched for in the FNA smears.

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