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Case Report

Fibroadenoma Developing Ductal Carcinoma *in situ* Component, Associated with Separate Invasive Ductal Carcinoma Lesion: A Rare Case Report

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Abstract

Among the fibroepithelial lesions of the breast, fibroadenoma is the most common entity. It is generally present as a mobile lump. Malignancy inside fibroadenoma is very rare, only 0.002% to 0.125% cases are reported which were turned to be malignant. In the present case, a 41-year-old female patient had a history of lumps for 4 years and was previously diagnosed with fibroadenoma. After 4 years of follow-up, it turned to be malignant with a separate tumor nodule outside the fibroepithelial lesion and ductal carcinoma *in situ* component within it. The unicity of the case is that fibroepithelial lesion shows features of fibroadenoma and phyllodes as well as ductal carcinoma *in situ*. Most of the axillary lymph nodes also show deposition of tumor cells within it.

Keywords: Fibroadenoma; Ductal carcinoma *in situ*; Malignancy

Introduction

Most of the breast lumps in younger aged females are diagnosed as fibroadenoma [1]. They represent about 68% of breast masses, and 70% presented as a single mass, and 10-25% as multiple masses [2]. Only 0.002% to 0.125% cases incidentally show malignant transformation on excision biopsy [3]. Malignant transformations are usually carcinoma *in situ*, only <15% are invasive breast cancer [4]. In the present case having a long history of fibroadenoma that progressed during follow-up to ductal carcinoma *in situ* (DCIS), invasive ductal carcinoma (IDC), and lymph node metastasis.

Case Presentation

A 41 years old female presented in OPD for regular follow-up. She had a history of a breast lump for 4 years which is previously diagnosed as fibroadenoma on ultrasonography and also only a single lump was described. At the time of OPD visit complaining of multiple left breast lump. Repeat USG was performed and two lesions with separate tumor lumps were described given as lesions in the left lower inner quadrant measuring 2.2x1.8 cm which was diagnosed as BIRADS VI lesion and the lump of size 5x4 cm in the left upper inner quadrant was diagnosed as fibroadenoma. A core needle biopsy was performed as it was suspicious for malignant neoplasm. Separate tumor nodule which had no connection with fibroadenoma diagnosed as Infiltrating Ductal Carcinoma (IDC), not otherwise specified (Figure A).

Modified Radical Mastectomy (MRM) was performed and received histopathology lab. Grossly surprisingly show three lesions: one was well-circumscribed, the second was attached to a well-circumscribed lesion and show infiltrating borders, the third tumor was separate from the other two described lesions and show infiltrating borders (Figure B).

Samples were taken from all three lesions as well as axillary lymph nodes were dissected. A lesion which is attached to the well-circumscribed lesion and separate lesion both were on microscopy show features of infiltrating ductal carcinoma, nos with high-grade ductal carcinoma *in situ* component (DCIS) and sclerosing adenosis (Figure C). Well circumscribed lesions on microscopy show biphasic tumours having epithelial and stromal components. Stromal components show hypocellularity which is comprised of collagen and bland spindle-shaped stromal cells with ovoid or elongated nuclei. Focal myxoid changes were also noted in the stroma. Epithelial component comprised of ductal epithelial cells showing benign as well as atypical proliferation. Some ductal epithelial cells show a marked increase in size, distinct cell border, high N:C ratio, round to oval nuclei with single eosinophilic prominent nucleoli representing DCIS

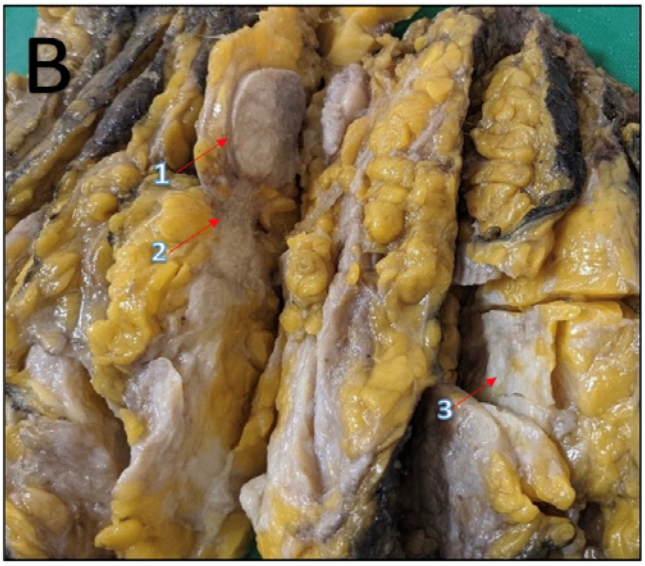

Figure A: 1) Well circumscribed lesion; 2) Attached tumor nodule having speculated margin; 3) Separate tumor nodule having speculated margin.

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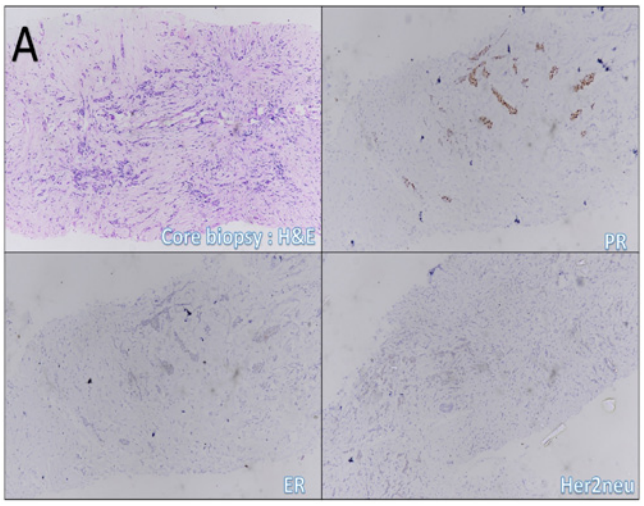

Figure B: Core biopsy show infiltrating tumor, H&E stain, 10x. Immunohistochemistry show PR: Positive; ER: Negative; Her2neu: Negative, 10x.

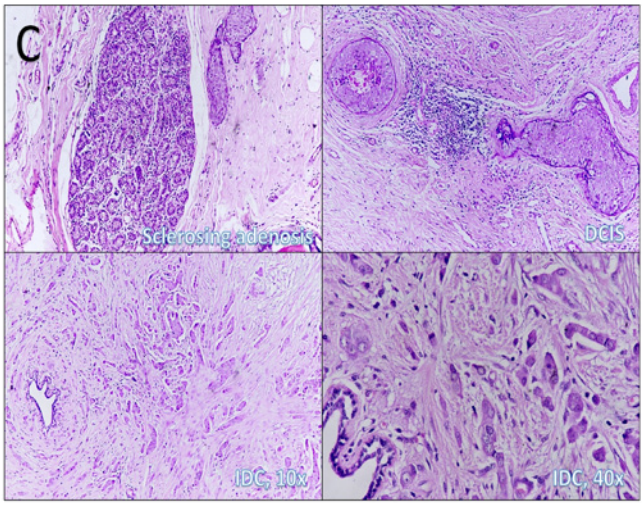

Figure C: Lesion which is attached to a well-circumscribed lesion and separate lesion both were on microscopy show features of infiltrating ductal carcinoma, NOS with high-grade ductal carcinoma *in situ* component (DCIS), and sclerosing adenosis.

component. However, no stromal infiltration identify in the sections examined representing the largest upper inner quadrant lesion (Figure D). The diagnosis was given as Invasive ductal carcinoma of no special type (ductal, not otherwise specified); grade 2, pT2N2aM0 (Anatomic stage group- Stage III A; Prognostic stage group- Stage III A, AJCC 8th ed, 2017).

Discussion

Incidence of fibroadenoma is about 2.2%, however they represent approximately 68% of all breast masses. Majority of case it present as solitary lesion but may present as multiple lumps in 10-25% of these patients [2]. Carcinoma developing from fibroadenoma is very rare and only a countable number of cases were reported in the literatures.

Studies suggest that complex fibroadenomas are having an

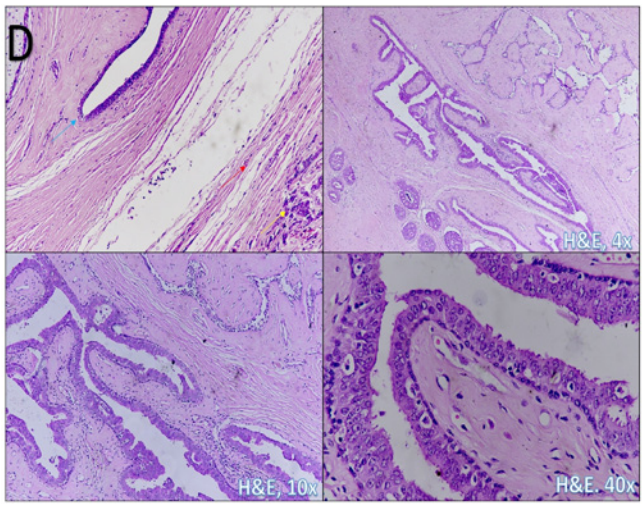

Figure D: Epithelial component comprised of ductal epithelial cells showing benign as well as atypical proliferation (blue arrow). Fibrous capsule (red arrow). Attached IDC component (yellow arrow). Some ductal epithelial cells show marked increased in size, distinct cell borders, high N: C ratio, round to oval nuclei with single eosinophilic prominent nucleoli representing DCIS component.

increased risk of malignancy as compared to normal [5]. Nassar et al., suggested that Complex FA does not confer increased risk of breast cancer [6]. The reported mean age in various case series is 42.5 years, which is about 20 years later than the peak age of occurrence of fibroadenoma [7]. In the present case, 41 year old female had fibroadenoma with DCIS along with separate tumour nodule. Fibroadenoma with DCIS is a common finding in malignant transformation of such lesions [7-9]. However, fibroadenoma involved by IDC or IDC developed in fibroadenoma are always debatable in such cases. In the present case, we also found the same. In the present case precursor lesions like sclerosing adenosis and high-grade cribriform DCIS were seen on microscopy both are precursors lesion of high-grade IDC .Yu-ting et al. [9] describe the same findings in their case report as described in the present case even cribriform DCIS component and multiple lymph-node metastases were also seen.

In the present case, IHC was performed that show basal-like immunophenotyping which was suggestive of bad prognosis itself proved by multiple lymph-node involvements. Sunder L et al. [10] did a follow-up study of 85 fibroadenoma diagnosed cases for 10 years, found that no studied cases were transformed to malignancy till follow-up. But also found that 2 cases were transformed into benign phyllodes tumours. In the present case, we also found some phyllodes-like features. The biological behaviour of breast cancer associated with fibroadenoma is not different from the unrelated group [3].

With dynamic MRI, benign fibroadenoma and DCIS/IDC can be differentiated according to differences in vascularity [8]. Unfortunately present case MRI was not performed. Behaviour-wise carcinoma associated with fibroadenoma had aggressive behaviour and a tendency to rapid spread was seen. So proper examination is recommended in suspected cases.

Conclusion

Fibroadenoma is the most common benign entity of the breast. Malignant transformation is rare but easily missed in USG and core needle biopsy. MRI and lumpectomy followed by MRM stabilize definitive diagnosis. The onus of diagnosis is reserved only on histopathological examination.

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