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Synchronous Complex Fibroadenoma and Tubular Adenoma of the Breast in an Adolescent Female: A Rare Case Report

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Abstract: ***Fibroadenoma is the most common benign tumor seen in adolescent and young women. However, complex histological changes like adenosis, cyst formation may present a problem in interpretation in this age. These kind of fibroadenomas are called as complex fibroadenomas. True adenomas of the breast are rare and are cellular epithelial lesions which may be confused with carcinoma. Simultaneous occurrence of complex fibroadenoma and tubular adenoma in the same breast of an adolescent women is a rare phenomenon which is of academic interest.***

Keywords: complex fibroadenoma, tubular adenoma, myoepithelial cells

1. Introduction

Fibroadenoma (adenofibroma) is a benign tumor composed of both epithelial and stromal elements in the breast. It is the most common tumor in women younger than 30 years[1,2]. The benign nature of this lesion was recognized in 1840 by Cooper who referred to the lesion as chronic mammary tumor[3]. Although fibroadenomas are not considered to have malignant potential, the epithelial element appears to be at risk for neoplasia just as epithelial element elsewhere in the breast[1,2]. However cancer in a newly discovered fibroadenoma in the breast of young women is extremely rare. In 20% of the cases there are multiple lesions in the same breast or bilaterally. Morphologic variations in a fibroadenoma are plentiful of which sclerosing adenosis occurs in less than 10% of cases[1]. Fibroadenoma with either cyst larger than 3mm, sclerosing adenosis, calcification or papillary apocrine change are referred to as complex fibroadenoma[4]. The risk of invasive breast cancer increases in women with complex fibroadenoma hence reporting such foci in a fibroadenoma is of clinical importance.

Tubular adenoma is a rare benign true epithelial neoplasm and is considered as a variant of pericanalicular fibroadenoma with florid adenosis[5]. Tubular adenomas are found in young women of reproductive age. A case of tubular adenomas is rarely reported in juvenile females. Malignancy is not a feature of tubular adenoma[6,7]. Synchronous occurrence of complex fibroadenoma with tubularadenomainthe same breast in an adolescent female is rare, hence we are reporting this case.

2. Case Report

A 14year old female presented to surgery OPD with chief complaint of lumps in left breast which she first noticed 2 months ago. Clinical examination revealed three well defined breast lumps. The lumps were mobile, non tender and firm to feel with no overlying skin/nipple changes. No axillary lump was felt. There was no similar family history. Clinical diagnosis of fibroadenoma was made. Bilateral breast ultrasonography performed revealed well defined hypoechoeic soft tissue mass at 12'0 clock measuring 3.5x2cms (BI-RADS 3), 3'0clock measuring 2.5x2cms (BI-RADS 3) and 7'0 clock measuring 2x2cms position (BI-RADS 2).

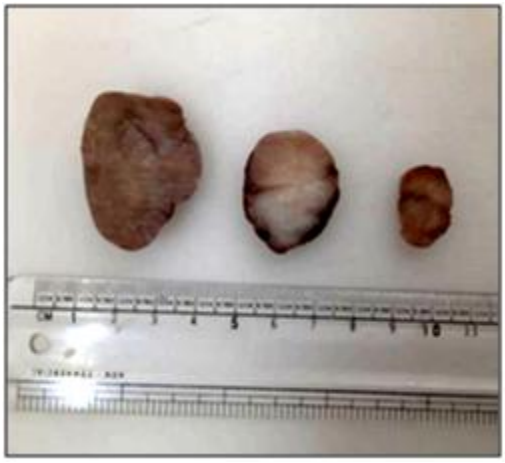
FNAC of the largest lump performed revealed high cellularity with sheets and clusters of ductal epithelial cells with myoepithelial cells against a background of single bare bipolar nuclei and fragments of fibromyxoid stroma. Thus a diagnosis of benign breast lesion- fibroadenoma was made. Subsequently the patient underwent lumpectomy and the tissue was sent for histopathological examination.

Gross examination of the tissue showed three sharply demarcated firm masses measuring 4x2.5x2cms, 2.5x2x1cms and 2.5x1.5x1.5cms. Cut surface showed solid greyish white whorl like pattern with slit like spaces which was similar in all three masses.

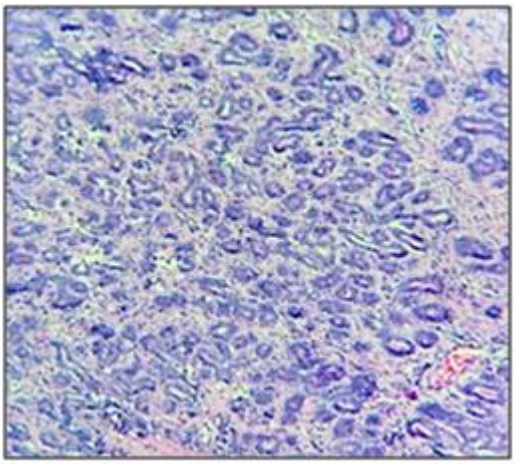
Microscopy of two larger lumps studied revealed varying amounts of glandular and connective tissue element with intracanalicular and pericanalicular pattern of arrangement. At places, cyst formation, apocrine metaplasia and adenosis was seen. The histology was consistent with complex fibroadenoma.

Sections from smaller lump revealed well circumscribed proliferation of closely packed tubular structures of uniform size lined by inner epithelial and outer myoepithelial cells. The epithelial cells were seen to have eosinophilic cytoplasm and visible nucleoli. Nuclear pleomorphism was absent. There was scanty intervening stroma and the overall finding was characteristic of tubular adenoma.

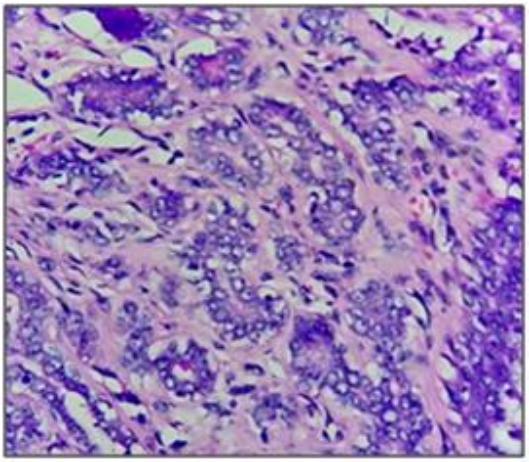
This patient has been followed up for 6 months and had no complaints. She had been advised regular breast examination to rule out recurrence or malignant transformation.



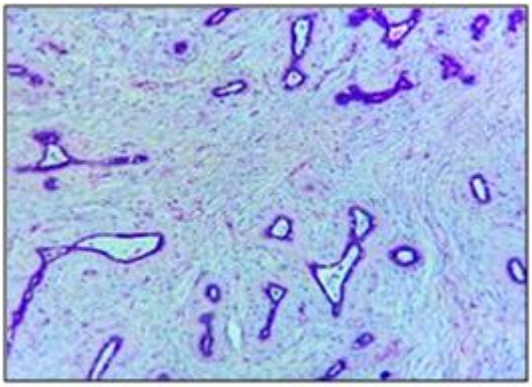
Gross photograph showing well circumscribed nature of the lesion. Cut surface is homogenous, creamish in colour



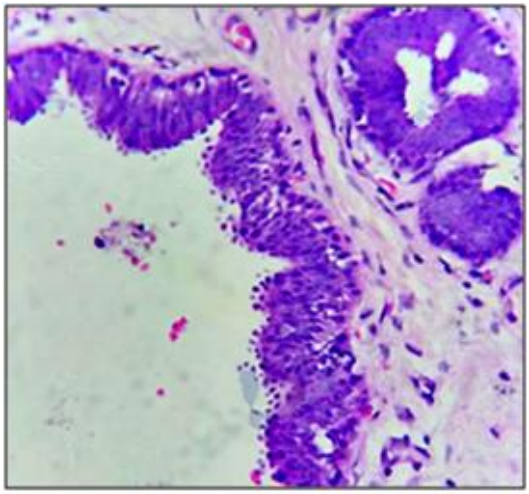
Photomicrograph 1 showing closely packed tubules with scanty intervening stroma in tubular adenoma (10x)



Photomicrograph 2 showing tubules lined by two cell layers, inner epithelial cells and outer myoepithelial cells (40x).



Photomicrograph 3 showing fibroadenoma in the same breast showing mixed intracanalicular and pericanalicular pattern (10X).



Photomicrograph 4 showing apocrine change in complex fibroadenoma (40x).

3. Discussion

Fibroadenoma is the most common benign breast lesion. It occurs in 25% of asymptomatic women. The peak incidence is between the ages of 15-35 years. Complex fibroadenomas have been reported in the mean age group of 34.5years by Kuijper et al as compared to 28.5 years for patients with non complex fibroadenoma[1]. Our patient is only 14 years old with sclerosing adenosis, apocrine metaplasia and cystic changes in the fibroadenoma. Unlike women with single fibroadenoma, most of the patients with multiple fibroadenomas have strong family history. Our patient did not have any family history of breast lump.
Fibroadenoma is also thought to represent a group of hyperplastic breast lobules called aberration of normal development and involution[7,8].

A direct association has been noted between oral contraceptive use and risk of fibroadenoma. Our patient is a adolescent girl with no history of use of any hormonal therapy. In 20% of the cases fibroadenomas are unilateral. Fibroadenomas develop from special stroma of lobules. It has been postulated that the tumor may arise from BCL 2 positive mesenchymal cells[9].

Macroscopically the lesion is well

circumscribed firm mass which appears lobulated and bulging on cut surface.

If the tumor assumes size more than 10cms in an adolescent female it is called a giant fibroadenoma[7,10]. Microscopically it consists of proliferation of epithelial and mesenchymal elements. Approximately 50% of fibroadenomas contain other epithelial proliferative changes of the breast such as sclerosing adenosis, adenosis, apocrine change, cyst formation, adenomatous transformation, lobular and ductal epithelial hyperplasia. Stromal changes like myxoid change with rare heterologous elements like smooth muscle, fat, cartilage and osteoid differentiation may be seen[10].
Complex fibroadenoma term is applied if any of the following are present cyst >3mm diameter, sclerosing adenosis, epithelial calcifications, papillary apocrine change[1,2,4]. Our case had cystic change and foci of slerosing adenosis , hence was reported as complex fibroadenoma.

Dupont et al in their retrospective cohort study of 1835 women with fibroadenoma emphasized upon the significance of complex fibroadenoma. They found that the risk of invasive breast cancer was 3.1 times higher than in women of general population as compared to relative risk of 1.89 in fibroadenomas not associated with complex features. They also pointed out that the risk of breast carcinoma in patients with complex fibroadenoma remains elevated forever after the diagnosis[11,12].
Nassar et al concluded that complex fibroadenoma does not confer increased risk of invasive breast carcinoma and can be recognized only as a histological feature like that of other proliferative diseases. The management of complex fibroadenoma should be based on other histological findings of hyperplasia with or without atypia[13].

Breast adenomas are common, but tubular adenoma are uncommon benign breast lesions occurring in an adolescent female. According to Hertel et al[14] classification, breast adenomas were classified into true adenoma, nipple adenoma and fibroadenoma (refer to table 1). Tubular adenoma is considered a variant of pericanalicular fibroadenoma with florid adenosis. LeGal accepted Geschichter's theory that many true adenomas of the breast arise in preexisting fibroadenomas, and thus included adenomatous transformations of fibroadenoma in tubular adenomas[14].
These lesions are uncommon and occur during the reproductive age. They present as solitary well circumscribed firm masses which resembles fibroadenoma radiographically. Hsitopathologically they are differentiated from fibroadenoma containing tightly packed tubular structures of regular size and shape with sparse stroma[7,10]. The ultrastructural features observed in these adenomas are in sharp contrast to the distinctive abnormalities seen at the epithelial stromal junction in fibroadenomas[14].

Table 1: Proposed Classification of Breast Adenomas (Hertel et al)[14]
1) True Adenomas
   a) Tubular adenoma
   b) Combined tubular and fibroadenoma
   c) Lactating adenoma
   d) Sweat gland tumors: eccrine acrospiroma: eccrine spiradenoma.
- Nipple Adenoma
- Fibroadenoma

Tubular adenoma is a completely benign tumor and is not associated with risk of breast cancer development. There are number of histological differential diagnosis of tubular adenoma, either malignant or benign breast tumors[15]. Tubular carcinoma presents as a proliferation of well differentiated tubules lined by single layer of cells. They can be easily mistaken for tubular adenoma as it is not easy to see myoepithelial cells on histopathological examination. In tubular carcinomas tubules have open lumina with haphazard distribution of tubules. IHC assists in ruling out the diagnosis of tubular carcinoma if myoepithelial cell markers are positive[15,16]. In our case, the tubules were visibly lined by two cell layers hence IHC was not done. Fibroadenomas with focal adenomatous change can be mistaken for tubular adenoma but the later has scanty intervening stroma. Our case had a pure tubular adenoma synchronous with two complex fibroadenomas in the same breast

4. Conclusion

1) Synchronous occurrence of complex FAs with tubular adenoma in an adolescent female is an exceptional phenomenon making our case a unique one.
2) Pre operative diagnosis is difficult because in most cases the clinical findings and imaging features resemble fibroadenoma .
3) The histologic findings of this case confirmed to us that, Tubular adenoma and complex fibroadenoma are closely related to fibroadneoma and simple excision should be the line of treatment.
4) Long term follow up is essential to check the progress of these patients.

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