International Journal of Advances in Medicine
Swarnagowri BN et al. Int J Adv Med. 2014 May;1(1):58-60
http://www.ijmedicine.com
pISSN 2349-3925 | eISSN 2349-3933
DOI: 10.5455/2349-3933.ijam20140515

Case Report

Juvenile fibroadenoma: a cytology case report

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Received: 20 April 2014
Accepted: 27 April 2014

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ABSTRACT

Fibroadenomas are benign breast tumors. These tumors are commonly seen in the age group of 20-30 years. They are very rare in children. Here we are presenting a case of fibroadenoma of the breast in a 10 year old girl. These juvenile fibroadenomas constitute 4% of the fibroadenomas of the breast and comprise 0.5% of the breast tumors, in paediatric age group.

Keywords: Juvenile, Fibroadenoma, Breast

INTRODUCTION

Discovery of breast masses in children and adolescents often causes tremendous parental and physician concern because of the high prevalence of breast cancer in the adult population. A breast mass in a young boy or girl may arise from normal and abnormal breast development. Other causes of masses include infection, trauma, and cyst formation. After the onset of puberty, most cases of breast enlargement arise from benign fibroadenoma in girls and gynecomastia in boys. Fibroadenoma is a common benign breast lesion found in the age group of 18-30 years, which may be due to hormonal dependency during child bearing period.[1] Fibroadenomas are benign tumors made up of both glandular breast tissue and stromal tissue.

Juvenile or giant fibroadenoma is a variant that presents during puberty as a unilateral breast mass greater than 5 to 8 cm, which rapidly enlarges over a course of a few weeks or months. It is attributed to over reaction of the breast tissue to normal gonadal hormone levels. Most fibroadenomas are small, measuring between 1 and 3 cm, but occasionally they can be greater than 10 cm in size. In the paediatric age group, a fibroadenoma measuring more than 5 to 8 cm is designated as giant or juvenile fibroadenoma. The gross appearance is similar to fibroadenomas in adults. The smooth, sharply demarcated mass displays a myxoid or fibrous cut surface.

CASE REPORT

We have studied FNAC of breast lesions for a period of 24 months. Among the 50 cases of breast lesions for which FNAC was done, 19 cases were fibroadenomas in adult patients. Juvenile fibroadenoma was found to be 1 case, which comprised 5% in our study.

A 10 year old girl was advised FNAC for the breast mass, with duration of 4 months. The mass was located on the left breast in the upper outer quadrant. It was firm, non-tender mass measuring 5x4 cm. There was a slight alteration in the contour of the breast. Fine Needle Aspiration Cytology (FNAC) showed cell-rich smear of elongated, branching fragments of ductal epithelium and numerous single bipolar nuclei in the background. Amidst the cohesive ductal epithelial cells, fragments of fibromyxoid stroma were also seen. The classical stag-horn pattern of fibroadenoma was evident (Figure 1).

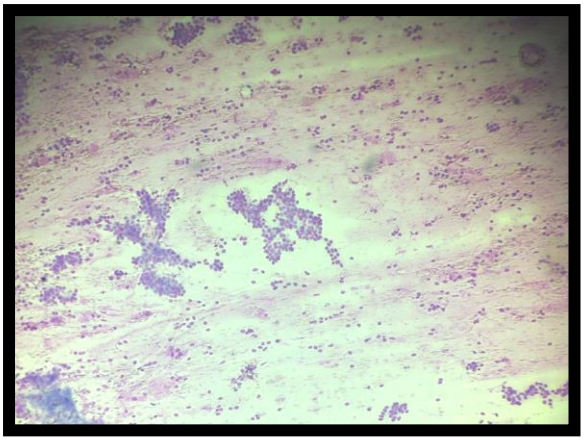

Figure 1: (10x) Cytological smear showing stag-horn pattern, typical of fibroadenoma.

We had histopathology correlation of the mass and it was confirmed by the appearance of epithelial hyperplasia with the surrounding fibro myxoid stroma forming peri canalicular and intra canalicular type (Figure 2).

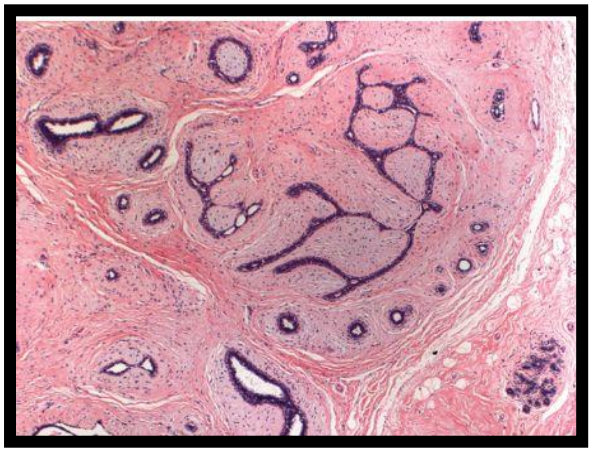

Figure 2: (10x) Histopathology section of fibroadenoma showing both intracanalicular and pericanalicular type.

DISCUSSION

In prepubertal children, the breasts are composed of epithelial-lined ducts surrounded by a connective tissue stroma.[2,3] These ducts are often enlarged at birth in both male and female full-term infants because of the effects of maternal hormones. Bilateral sub areolar palpable nodules are common and may persist for the first 6-12 months of life.[3,4] In girls, a second phase of breast development begins at puberty.

The onset of pubertal breast development is called thelarche, which normally occurs after age 8-9 years and before 13 years of age. Under the influence of oestrogen, progesterone, and other hormones, the ducts begin to elongate and branch, leading to lobular differentiation and the development of terminal duct lobular units. Upon completion of this process, the mature female breast is composed of fatty tissue and glandular elements supported by a framework of fibrous connective tissue (Cooper ligaments). In typical fibroadenomas, the glandular epithelial component of fibroadenoma exhibits an intracanalicular or a pericanalicular pattern or a mixture of the two. These histological patterns have no prognostic implications.

Juvenile fibroadenomas should be distinguished from benign phyllodes tumors. In contrast to benign phyllodes tumors, juvenile fibroadenomas usually have a pericanalicular growth pattern, and the epithelial hyperplasia is a more prominent feature. Stromal cellularity is less and the cells show no peri ductal concentration, no atypia, and few mitoses, if any. Although some degree of stromal overgrowth with separation of the glandular elements may be present, this again is less prominent than in benign phyllodes tumors, and large areas of stroma devoid of epithelium are not seen. Distinction between the two is important because juvenile fibroadenomas should be treated by excision with preservation of as much of the surrounding normal tissue as possible, whereas in the case of benign phyllodes tumors, a rim of normal tissue should be included in the excision. The degree of epithelial hyperplasia can occasionally be severe and worrisome.

Occasionally, juvenile fibroadenomas are multiple or bilateral, or both, and they may recur repeatedly. The breast can sometimes contain innumerable lesions of various sizes and has been likened to a sack of marbles. This condition is more common in black than in white women and typically presents in the early teens. The fibroadenomas may recur rapidly after excision, and the histological appearance in this situation may be that of a conventional or juvenile fibroadenoma; moreover, these patterns may coexist. The rapidity and frequency of recurrence usually wane after the third decade.[5-7]

Metaplasia within the stroma occurs more frequently in phyllodes tumor than in fibroadenomas; fat, bone, cartilage, and skeletal muscle have all been recorded. The epithelial component also shows a variety of appearances; hyperplasia is common, and squamous metaplasia is seen more often than in fibroadenomas, although apocrine metaplasia is less frequent. The malignant element of phyllodes tumors, when present, is the stroma. Very rarely, carcinoma *in situ* arises within the epithelial component of a phyllodes tumor. Malignant transformations in the epithelial components of fibroadenomas are generally considered rare. The incidence of a carcinoma evolving within a fibroadenoma was reported to be 0.002-0.0125% .[8] The differentials of juvenile fibroadenoma include low-grade phyllodes tumor, virginal hypertrophy, and rarely lipoma, hamartoma, breast abscess, macro cyst, adenocarcinoma, and pseudoangiomatous stromal hyperplasia.

Juvenile breast hypertrophy can result in rapid and distressing asymmetrical enlargement of one or both breasts. Histological examination shows abundant connective tissue and duct proliferation, frequently with epithelial hyperplasia. Breast abscesses can cause sudden and rapid growth in the breast with pain and redness. Histological examination usually shows focal collection of polymorphs with necrotic material in the lobules. Hamartomas can also result in breast enlargement and histologically reveals an admixture of ducts, lobules, fibrous stroma, and adipose tissue in varying proportions. Pseudoangiomatous stromal hyperplasia of breast reveals a complex inter anastomosing spaces, some of which have spindle-shaped stromal cells at their margins simulating endothelial cells.[9,10]

CONCLUSION

Juvenile fibroadenomas should be distinguished from other benign masses of breast. Since it is seen in pre menarche age group, reassurance of the patient is equally important.

ACKNOWLEDGEMENTS

The authors would like to thank the department of surgery and the technical staff of department of pathology, Dr. B.R. Ambedkar Medical College, Bangalore, for their help.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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DOI: 10.5455/2349-3933.ijam20140515
Cite this article as: Swarnagowri BN, Sharma G, Bhuyan M. Juvenile fibroadenoma: a cytology case report. Int J Adv Med 2014;1:58-60.