



MULTINUCLEATE GIANT CELLS IN FIBROADENOMA: A CASE SERIES OF UNUSUAL FINDINGS

Pathology

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ABSTRACT

Multinucleated giant cells that appear in a fibroadenoma are typically benign, reactive cells of fibroblastic or macrophage origin; their presence is considered a rare but normal feature in benign breast tumour, though due to their diverse and bizarre appearance, they can initially be a source of confusion for pathologists who might suspect cancer. A retrospective data of 97 reported cases of Fibroadenoma in Cytopathology section of Chhattisgarh Institute of Medical Sciences was collected. Samples obtained were stained with May-Grunwald Giemsa stain, Papanicolaou stain (Pap) and Field's stain for reporting. Among all studied cases, giant cells were detected in 10 cases, age ranging from 14-31 yrs, among which majority were fused apocrine type giant cell. The presence of these pleomorphic, multinucleated large cells in small specimens like those obtained at fine needle aspiration or core biopsy, may be misinterpreted as a malignant process. Awareness of this phenomenon is critical in facilitating accurate diagnosis and appropriate management of the patient.

KEYWORDS

Multinucleate giant cell, Fibroadenoma

INTRODUCTION

Fibroadenomas are common benign breast tumors characterized by mixed epithelial and stromal proliferation. Fibroadenomas can usually be easily diagnosed on FNAC and biopsy due to presence of classical cyto- and histomorphological features. However, sometimes the diagnosis may be confused by association with unusual findings like presence of giant cells in otherwise typical cases of fibroadenoma. These giant cells may be of oncocytic or stromal cell type and can confuse the diagnosis in cases where scanty material is obtained or where typical diagnostic features are lacking.

Multinucleated giant cells within breast tissue were initially detailed by Rosen in 1979.¹ These cells have since been observed in various breast pathologies, leading to an interesting and diverse set of differential diagnoses. Multinucleated giant cells (MGCs) in breast FNAs signal inflammation or repair from infections (TB, fungal, cat scratch), foreign material (sutures, implants), or conditions like granulomatous mastitis, mimicking malignancy but often benign, requiring careful cytology to differentiate from malignant giant cells in tumours like metaplastic carcinoma, crucial for accurate diagnosis.² Most reported cases involve the age groups between 14-31 years, which coincides with the predominant incidence of majority cases of fibroadenoma.

Huo L et al, in his study, found an incidence of 4.5% (9 cases showing giant cells among 200 consecutive mastectomy specimens). The presence of these multinucleated giant cells did not appear to be associated with any breast cancer risk factors.³

Although these multinucleated giant cells were identified in benign breast lesions very long back, there isn't much literatures available discussing regarding them. This study aims to report and discuss the rare finding of multinucleated giant cells in cases of otherwise typical fibroadenomas, which; if considered out of context, may be misinterpreted as histiocytic (inflammatory) or neoplastic

mesenchymal lesions.

MATERIALS AND METHODS

A retrospective analysis was performed of all cases of fibroadenoma in Cytopathology section of Chhattisgarh Institute of Medical Sciences over the past 2 years (July 2023- August 2025). A total of 10 (10.3%) cases were found to have multinucleated giant cells, from the total 97 FNAC diagnosed fibroadenoma cases. The slides stained with May-Grunwald Giemsa stain, Papanicolaou stain (Pap) and Field's stain were retrieved and reviewed. Clinical history and physical examination findings were recorded from the cytopathology registers of the Pathology Department. Age, gender, location, laterality, cytomorphological features and nature of giant cells were studied in all cases and histopathological correlation was made wherever possible. The initial diagnosis was based on the presumptive clinical diagnosis. The final diagnosis was made after incorporating the Cytopathology and Histopathology reports. Diagnostic cytopathological findings suggestive of fibroadenoma with multinucleated giant cells were noted in every individual case. Multinucleated giant cells were categorized into different types based on the study conducted by Huo L et al.³

OBSERVATION

97 women, who presented to the Surgery OPD, with complaints of lump in the breast were diagnosed as fibroadenoma, out of which 10 cases (10.3%) were found to be associated with multinucleated giant cells, by cytology and histology (Table 1). The age ranged from 14 to 31 years. Majority (60%) belonging to the age group 11-20 years (Fig. 1). Right breast was involved in 60% cases, while bilateral breast was involved in other 40%, size varying from 1-5 cm (Table 1). Of the 10 cases having multinucleate giant cells, 80% were of fused apocrine giant cell type, one had stromal giant cells and one case associated with granulomatous mastitis had Langhan's type giant cell (Table 1). 40% cases were associated with fibrocystic change, while 3 cases were subtyped as cellular fibroadenoma (Table 1). Among 8 cases with fused apocrine type giant cells, 4 were associated with fibrocystic changes (Fig. 2).

Table 1: Cases Of Fibroadenoma With Multinucleated Giant Cells

Case No.	Age	Laterality & Location	Size	Cytological & Histological Diagnosis	Associated Finding	Nature of Giant Cells
1.	14	Right breast - upper outer quadrant	4x5 cm	Cellular Fibroadenoma (Bilateral)	-	Fused apocrine type giant cell
		Left breast - upper inner quadrant	1x1 cm			
2.	18	Right breast - lower outer quadrant	3x2 cm	Classical Fibroadenoma	Fibrocystic Change	Fused apocrine type giant cell
3.	18	Right breast - upper outer quadrant	4x3 cm	Classical Fibroadenoma	Fibrocystic Change	Fused apocrine type giant cell

		Left breast - upper outer quadrant	2.5x2.5 cm			
4.	18	Right breast - lower inner quadrant	2x2 cm	Cellular Fibroadenoma	Fibrocystic Change	Fused apocrine type giant cell
5.	19	Right breast - upper outer quadrant	3x2.5 cm	Classical Fibroadenoma (Bilateral)	-	Fused apocrine type giant cell
		Left breast - upper outer quadrant	3.5x2 cm			
6.	19	Right breast - lower inner quadrant	3x3 cm	Left breast: Classical Fibroadenoma	Fibrocystic disease	Fused apocrine type giant cell
		Left breast - upper outer quadrant	2x2 cm	Right breast: Fibrocystic disease		
7.	21	Right breast - upper outer quadrant	2x1 cm	Classical Fibroadenoma	-	Fused apocrine type giant cell
8.	23	Right breast – subareolar	1x1 cm	Cellular Fibroadenoma	-	Stromal Giant cell
9.	24	Right breast - lower inner quadrant	3x2 cm	Classical Fibroadenoma	Granulomatous Mastitis	Langhan's type giant cell
10.	31	Right breast - upper outer quadrant	3x3 cm	Classical Fibroadenoma	-	Fused apocrine type giant cell

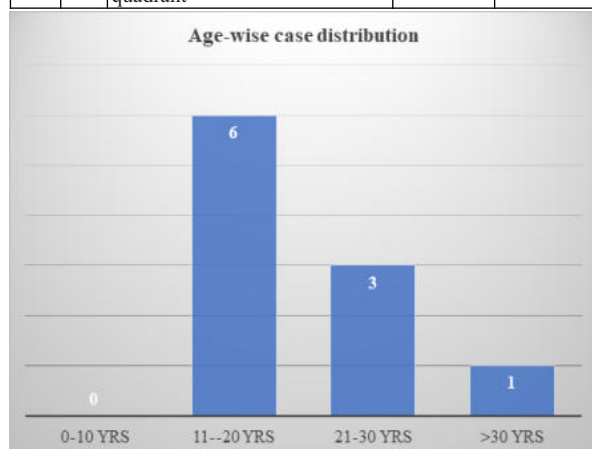


Fig. 1. Age-wise case distribution

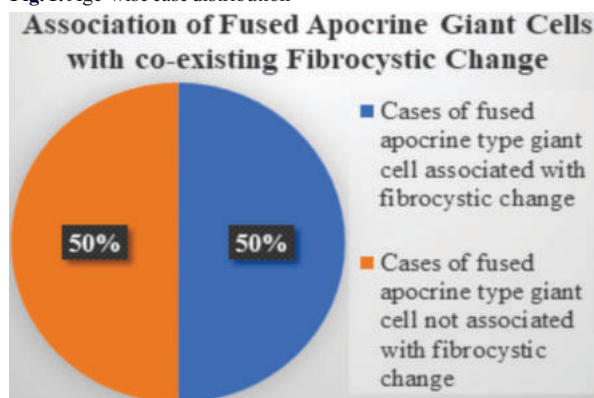


Fig. 2. Association of Fused Apocrine Giant Cells with co-existing Fibrocystic Change

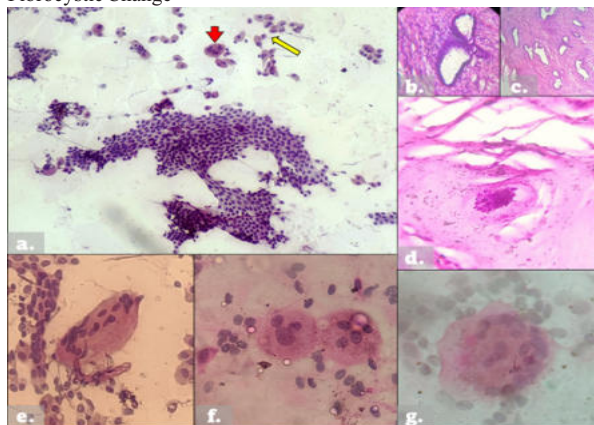


Fig. 3. Types of Multinucleated Giant Cells seen in association with

Fibroadenomas

a. Staghorn pattern of Fibroadenoma with numerous apocrine cells (yellow arrow) and fused apocrine giant cells (red arrowhead). Pap Stain; 10X. CP.

b. Epitheliosis in Cellular Fibroadenoma. H&E, 40X. HP.

c. Classical Fibroadenoma. H&E, 5X. HP.

d. Stromal Giant Cell in Cellular Fibroadenoma. H&E, 40X. HP.

e. Fused Apocrine Giant Cells. Pap Stain; 10X. CP.

f. Fused Apocrine Giant Cells. Pap Stain; 40X. CP.

g. Fibroadenoma associated with Granulomatous Mastitis showing Langhan's type Giant Cell. H&E Stain; 40X. CP.

DISCUSSION

Multinucleate giant cells in fibroadenoma are rarely identified in fine needle aspiration cytology, an OPD procedure with 96% sensitivity and 100% specificity in identifying benign and malignant lesions.⁴ Multinucleated giant cell in breast tissue were described originally by Rosen in 1979, concluded that multinucleated stromal giant cells in breast tissues represented a non-neoplastic process.¹ Stromal giant cells were also described in fibroadenoma by Heneghan HM et al⁵, Schoelink J et al⁶, Wawire J et al⁷, Huo L et al⁸, Ryska A et al⁹ and Gon S et al⁹. However, in contrast to Rosen's case series, where all his patients were aged between 40–50 years, our cases represent a more younger age group.^{10,11}

It was also observed that giant cells were better observed in cytological smears when compared to tissue sections, probably due to loosening and wide spreading of the ductal epithelial cells. Though two cases in our study showed stromal giant cells and Langhan's type giant cells, majority (80%) of cases with giant cells in our study were of fused apocrine giant cell type. References on fused apocrine giant cells and their clinic-pathological significance in fibroadenoma are extremely rare in available literature. The only literature available was that of Neilson BB et al¹², who described a case in which giant cells were of epithelial nature, caused by epithelial degeneration secondary to myoepithelial swelling of unknown cause. In our series, the high incidence of co-existing fibrocystic change (40% cases) may be presumed responsible for the formation of fused apocrine giant cells; as apocrine metaplasia in fibrocystic change is a well-documented phenomenon.^{13,14,15}

The other common giant cells seen in breast on FNA smears are foreign body, Langhan's type, tumor giant cells and osteoclastic giant cells.^{2,9} Commonest breast lesions with giant cells noted are fat necrosis, phyllodes tumour, breast malignancies and tubercular mastitis, while giant cells are being rarely reported in fibroadenoma according to literature available.^{2,4,9}

In otherwise classical cases, giant cell is just an incidental finding. In FNAC fibroadenoma, where yield is very low or stroma is cellular, there is a chance that it can be misinterpreted as phyllodes tumour or other benign/malignant mesenchymal lesions.¹⁻⁹

CONCLUSION

An attempt is made to study various types of multinucleate giant cells in fibroadenoma on cytology with histological correlation wherever possible. The presence of these pleomorphic, multinucleated large cells in small specimens like those obtained at fine needle aspiration or

core biopsy, may be misinterpreted as a malignant process.

The typical benign cytoarchitecture of a fibroadenomas, in a background of naked multiple nuclei indicates the benign nature of the lesion and has no known malignant potential. Awareness of this phenomenon is critical in facilitating accurate diagnosis and appropriate management of the patient.

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