

Fibroadenoma with Multinucleated Giant Cells

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Abstract

Background: Fibroadenoma are benign breast tumors with varied stromal and epithelial morphological presentations. Multinucleated giant cells are infrequently seen in fine needle aspiration of these lesions. The rarity of this finding many a times create confusion and may lead to incorrect diagnosis. These giant cells may be confused with highly mitotic cells and fibroadenoma may be confused with malignancy. This may change the treatment of the patient. Hence, the correct cytologic diagnosis is often not difficult if cytologists pay attention to other distinctive morphologic features and clinicoradiologic findings. **Aim & objective:** To analyse FNAC findings in fibroadenoma with multinucleated giant cells. **Materials & methods:** 100 cases of fibroadenoma with initially deceptive clinical and radiological picture were taken. FNAC smears were screened and findings were recorded for presence of stromal multinucleated giant cells. **Result:** Out of 100 cases, 8 cases showed features of fibroadenoma alongwith presence of multinucleated giant cells. **Conclusion:** Fibroadenoma with multinucleated giant cells are very uncommon and diagnosis can be challenging with unusual presentation or morphological similarity to other tumors that arise in close anatomic site. The correct cytologic diagnosis can be made if cytologists pay attention to the otherwise-classic features of fibroadenoma.

Keywords: Fibroadnoma, giant cells, stromal, benign.

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INTRODUCTION

Fibroadenoma are benign breast tumors with varied stromal and epithelial morphological presentations. Multinucleated giant cells are infrequently seen in fine needle aspiration of these lesions.^[1]

Some of the breast lesions with multinucleated giant cells are apocrine cyst, fat necrosis, tuberculosis, phyllode tumor and peculiar subtypes of invasive breast carcinoma, such as metaplastic carcinoma.^[2]

The giant cells in apocrine cyst, fat necrosis and tuberculosis are of histiocytic nature, while those in metaplastic carcinoma represent sarcomatous change of the carcinoma cells. Sometimes osteoclast-like giant cells are seen in association with invasive lobular carcinoma and low grade invasive ductal carcinoma, especially invasive cribriform carcinoma. In contrast, the giant cells seen in phyllodes tumor and fibroadenoma are stromal in origin.^[3-5]

The correct cytologic diagnosis is often not difficult if cytologists pay attention to other distinctive morphologic features and clinicoradiologic findings. However, if the association of multinucleated stromal giant cells and fibroadenoma is not noticed, misdiagnosis may occur. Till date, very few cases of fibroadenoma with multinucleated giant cells in FNAC has been described in the literature.^[6]

Aims & Objective: To analyse FNAC findings in fibroadenoma and look for stromal multinucleated giant cells.

MATERIALS AND METHODS

A Hospital based descriptive observational study was done

in the Department of Pathology, ABVIMS, New Delhi over a period from June 2018 to March 2022. 100 cases of fibroadenoma with initially deceptive clinical and radiological picture were taken. FNAC smears were (Giemsa stained and Papanicolaou stained) screened and findings were recorded for presence of stromal multinucleated giant cells.

RESULTS

FNAC slides of 100 cases of fibroadenomas were screened for the presence of multinucleated stromal giant cells. Out of 100 cases, 8 cases showed features of fibroadenoma with presence of stromal multinucleated giant cells. The age group of the patient ranged from 19years to 37years. The details of these cases are summarized in Table 1.

One case showed bilateral breast lump. Right breast was more frequently involved than left. The size of the lump varied from 0.5x0.5 cm to 5x6 cm. Findings of radiological investigations (USG) were available only in 2 cases. Table 1 shows the clinical details of cases in which presence of stromal multinucleated giant cells were identified.

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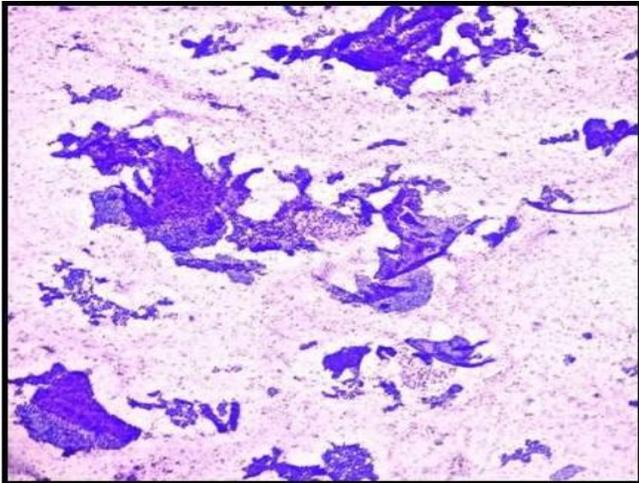


Figure 1: Direct smear displaying cohesive ductal cells grouped in sheets and stromal multinucleated large cells isolated among background bare nuclei. (Giemsa stain, 200X).

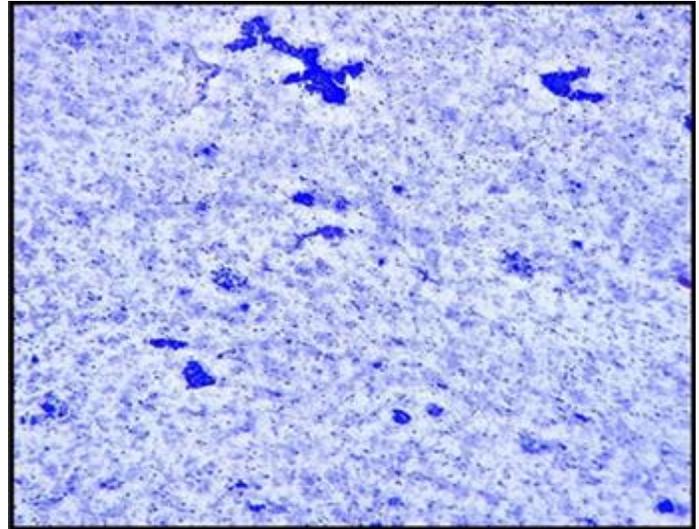


Figure 3: Direct smear, displaying cohesive ductal cells grouped in a group and sheet pattern and a stromal multinucleated large cell isolated among bare nuclei in the background (Giemsa stain, 100X)

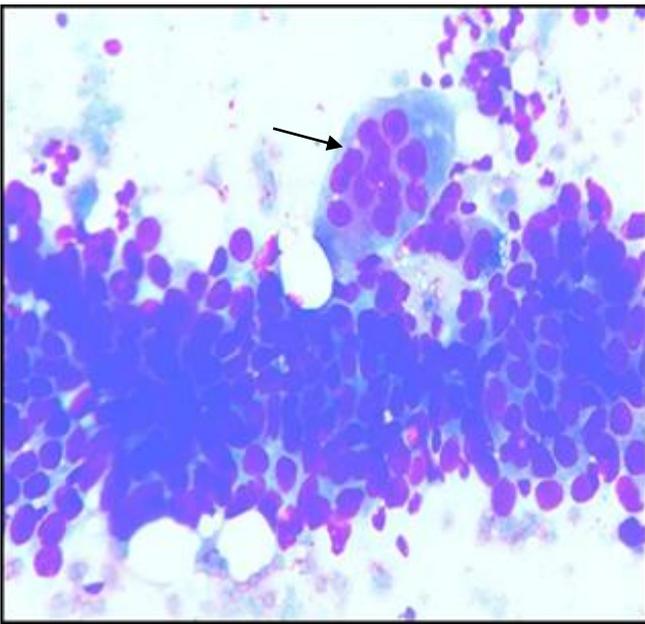


Figure 2: Direct smear, displaying cohesive ductal cells organised in a sheet and a stromal multinucleated large cell (arrow) isolated among bare nuclei in the background. (Giemsa stain, 400X)

The FNAC aspirates were cellular and contained clusters and sheets of benign ductal epithelial cells along with fibromyxoid stromal fragments, occasional multinucleated giant cell and many bare bipolar nuclei in haemorrhagic background. The ductal cells were mitotically inactive, and there was no evidence of nuclear pleomorphism. These giant cells possessed pale, amphophilic cytoplasm with ill-defined cell borders and round to oval nuclei; fine chromatin; and sometimes distinct nucleoli. The nuclei numbered 5–10 and were arranged randomly [Figure 1 -4].

In contrast to the histiocytic giant cells seen in apocrine cyst and fat necrosis, the cytoplasm was not vacuolated. Associated epithelioid histiocytes or foamy macrophages were not seen in the background. The FNAC smears of all the cases showed similar findings and the final cytological diagnosis of fibroadenoma with stromal multinucleated giant cells were given.

These patients underwent lumpectomy and diagnosis was confirmed on histopathology as fibroadenoma.

Table 1: Clinical details of cases

S.No.	Age/Sex	Laterality	Size Of Lump	Usg Findings
1.	27 Y/F	Bilateral	Right – 1x1 cm Left – 0.5x0.5 cm	Not available
2.	37 Y/F	Left	3x2 cm	Not available
3.	37 Y/F	Right	5x6 cm	A well-defined large hypoechoic lesion retroareolar and outer upperquadrant of right breast. Size 5to6cm. S/O fibroadenoma.
4.	28 Y/F	Right	0.8x0.8 cm	a well-defined small hypoechoic lesion right medial quadrant of right breast. Size 0.8x0.8cm. S/O fibroadenoma
5.	19 Y/F	Right	1x1 cm	Not available
6.	30 Y/F	Left	1x1 cm	Not available
7.	36 Y/F	Right	1.5x1 cm	Not available
8.	20 Y/F	Left	2x2 cm	Not available

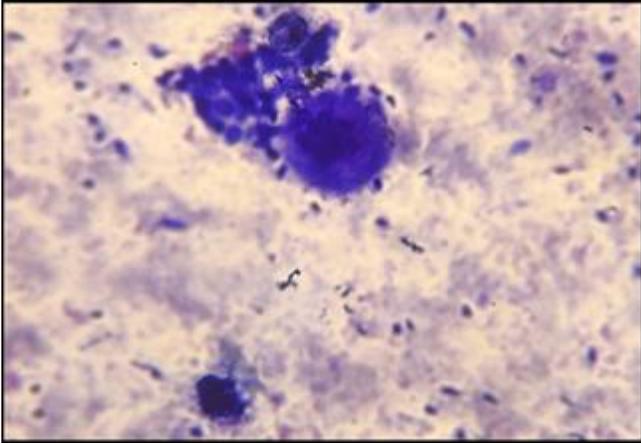


Figure 4: Direct smear showing stromal multinucleated giant cell and coherent groups of unremarkable-looking ductal cells with bare nuclei in the background. (Giemsa stain, 400X).

DISCUSSION

FNAC of breast lump has been considered as a useful tool with a sensitivity of 96% and specificity of 100% in diagnosing benign and malignant lesions.^[1] However, many a times there can be confusion because of presence of certain rare features like multinucleated cells which may mimic other conditions and misinterpretation of findings may occur. Fibroadenoma breast is one such lesion where we get a variety of cytological findings apart from its classical picture. One such rare finding is presence of multinucleated giant cells. Very few cases of fibroadenoma with stromal multinucleated giant cells in cytology have been reported so far.^[3-6]

The pathogenesis of these multinucleated stromal giant cells in fibroadenoma is still not clear. It has been proposed that multinucleated giant cell give strongly positive expression for vimentin on immunohistochemistry. This is one of the type 2 IF protein in the cyokeratin. It is known for its role in maintaining cell shape integrity of the cytoplasm and stabilizing cytoskeletal interaction.^[3]

Previous studies have reported this rare finding in patients with age varying from 20 to 50 years.^[3] In present study, the age of the patients ranged from 19 years to 37 years. The size of the lesion has been reported as 3-6 cm by Seema V et al^[3]. In our study, the size of breast lump varied from 0.5x0.5 to 5x6 cm. Bilateral breast lump was seen in 12 % (one out of 8 cases) with fibroadenoma with giant cells in our study. However, previous studies have reported similar finding in 9 % cases. Earlier studies have reported the incidence of this finding as 2 out of 11 cases.^[3] The present study found the incidence to be 8 out of 100 cases which accounts for 8% of cases. The radiological correlation was found in 2 cases in study by Seema V et al.^[3] Similar finding was seen in our study.

The microscopic examination of FNAC smears in previous cases described classical picture of fibroadenoma with stromal type giant cells.^[3-6] Similar findings were seen in our study. In the present study, the classical picture of fibroadenoma - staghorn arrangement of bland-looking

benign ductal epithelial cells and numerous background naked nuclei were present. Few features like distinct nucleoli and nuclear hyperchromatism (due to degeneration) in these giant cells should not be confused with malignant features. Also, the presence of these stromal giant cells does not indicate any change in biologic behaviour of this entity. This is more associated with presence of mitotic figures, pleomorphic cells or any sarcomatous change. These multinucleated giant cells are important in metaplastic carcinoma as in these cases it can be neoplastic or sometimes histiocytic in nature and may represent any sarcomatous transformation.^[4] The diagnosis of metaplastic carcinoma requires the presence of carcinomatous and mesenchymal components. The mesenchymal component usually present as proteinaceous or chondromyxoid substance on fine needle aspirate smears.^[2] Occasionally, osteoclast-like giant cells are observed in association with invasive lobular carcinoma^[7] and low grade invasive ductal carcinoma, especially invasive cribriform carcinoma.^[8] In contrast to the multinucleated stromal giant cells seen here, osteoclast-like giant cells usually contain > 10 nuclei. The number of nuclei, however, is not the main distinguishing feature, as the multinucleated stromal giant cells seen in some of the reported cases of fibroadenoma contained many more nuclei than in the present study.^[4-6] Also, in order to differentiate it from low grade ductal carcinoma with osteoclast-like giant cells, stromal hypervascularity, hemosiderin granules and a bloody background in aspirates along with three-dimensional cell balls with tubular or cribriform patterns should also be seen.^[9] However, these tumor cells are often of low grade and may be mistaken for benign proliferative breast diseases.

CONCLUSION

The correct cytologic diagnosis in fibroadenoma with stromal multinucleated giant cells can be made if cytologists pay attention to the otherwise-classic features of fibroadenoma and the differentials can be wisely excluded. Proper clinic-radiologic correlation is helpful before a final conclusion.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Powell CM, Cranor ML and Rosen PP: Multinucleated stromal giant cells in mammary fibroepithelial neoplasms: A study of 11 patients. *Arch Pathol Lab Med* 1994; 118:912-916.
2. Gupta RK: Cytodiagnostic patterns of metaplastic breast carcinomain aspiration samples: A study of 14 cases. *Diagn Cytopathol*.1999; 20:10-12.
3. Seema V, Kalyani R, Murthy V S. Multinucleate giant cells in FNAC of benign breast lesions: its significance. *J Clin Diagn Res*. 2014;8: FC01-FC04. Doi: 10.7860/JCDR/2014/9654.5256.
4. Berean K, Tron VA, Churg A, Clement PB: Mammary fibroadenoma with multinucleated stromal giant cells. *Am J Surg Pathol*. 1986; 10:823-7.
5. Nielsen BB, Ladefoged C: Fibroadenoma of the female breast with multinucleated giant cells. *Pathol Res Pract* 1985; 180:721-726.

6. Lanjewar DN, Raghuwanshi SR, Mathur SR, Gudi MA, Bhosale AS: Fine needle aspiration diagnosis of a breast fibroadenoma with multinucleated stromal giant cells. *Acta Cytol.* 1999; 43:530–532.
7. Agnantis NT, Rosen PP: Mammary carcinoma with osteoclast-like giant cells: A study of eight cases with follow up data. *Am J Clin Pathol.* 1979; 72:383–389
8. Holland R, van Haelst UJ: Mammary carcinoma With osteoclast-like giant cells: Additional observations on six cases. *Cancer* 1984; 53:1963–1973
9. Rosen P. Multinucleated mammary stromal giant cells- A benign lesion that simulates invasive carcinoma. *Cancer.* 1979; 44(4):1305–08.