

## CYTOMORPHOLOGICAL STUDY OF MUCINOUS CARCINOMA OF BREAST- A CASE REPORT

**Dr. Arti Ramesh Rao Anvikar<sup>\*1</sup>, Dr. Yasmin Altaf Momin<sup>2</sup> and Dr. Mrs. Kalpana Ranjitsingh Sulhyan**

M.D. Assistant Professor, Department of Pathology, Government Medical College, Miraj, Maharashtra, India.

M.D. Associate Professor, Department of Pathology, Government Medical College, Miraj, Maharashtra, India.

M.D. Professor and Head of the Department, Department of Pathology, Government Medical College, Miraj, Maharashtra, India.

**\*Corresponding Author: Dr. Arti Ramesh Rao Anvikar**

M.D. Assistant Professor, Department of Pathology, Government Medical College, Miraj, Maharashtra, India.

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### ABSTRACT

Pure mucinous carcinoma is a rare variant of invasive carcinoma of breast associated with favourable prognosis. On cytological evaluation, it is important to differentiate mucinous carcinoma from other mucin containing benign and malignant lesions of breast. We report a case of pure mucinous carcinoma of breast in a 70 year old woman with an emphasis on the cytodiagnosis. The diagnosis of mucinous carcinoma was suggested on cytology. Modified mastectomy was performed and histopathological examination confirmed the diagnosis as pure mucinous carcinoma.

**KEYWORDS:** Mucinous carcinoma, Breast, Fine needle aspiration cytology.

### INTRODUCTION

Pure mucinous carcinoma of breast is an uncommon variant of invasive breast carcinoma, in which mucinous component comprises more than 90% of the invasive carcinoma.<sup>[1,2]</sup> The diagnosis of mucinous carcinoma on cytology is challenging as many benign and malignant lesions need to be considered in differential diagnosis. We report a case of pure mucinous carcinoma of breast in a 70 year old woman with an emphasis on the cytomorphological features.

### MATERIAL AND METHODS

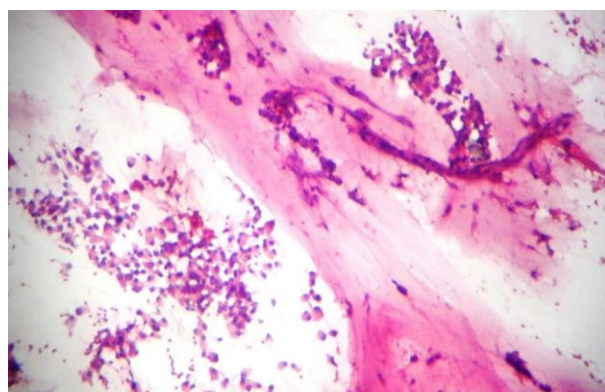
A 70 year old woman presented with lump in right breast since 6 months. There was no history of pain or nipple discharge. On examination, there was a well defined lump in upper inner quadrant of right breast measuring 3cm in diameter. It was firm, mobile and nontender. Nipple and areola and skin over the lump, were normal. Lymph nodes were not palpable. Contralateral breast was normal. General and systemic examination were normal. Ultrasonography revealed a lobulated hypo echoic lesion measuring 3X3X2.5cm in right breast.

Fine needle aspiration cytology (FNAC) was performed. The smears prepared from the aspirate were stained with Hematoxylin and Eosin stain and evaluated. The patient underwent modified radical mastectomy. Gross and histopathological examination of the specimen was done.

### RESULTS AND DISCUSSION

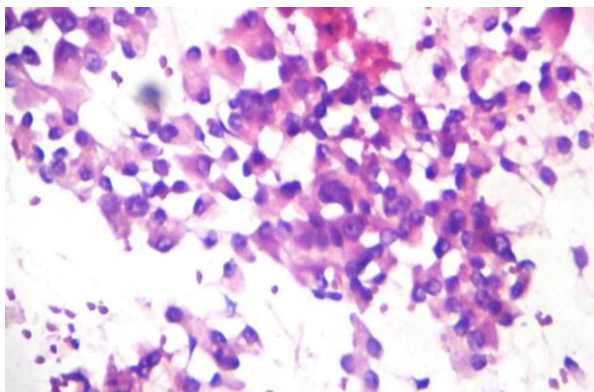
#### Results

The cytology smears were cellular and revealed many scattered and loosely cohesive clusters of atypical cells against the background of abundant mucin (Figure 1).



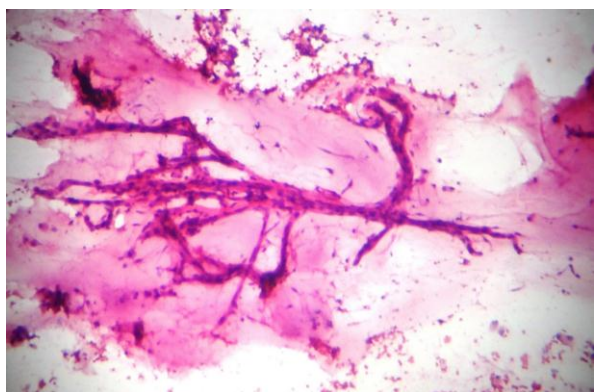
**Figure 1: Photograph of cytology smear showing cellular smear with loosely cohesive and single tumour cells with abundant mucin in the background (H&E X 100).**

High power view showed cells with mild to moderately pleomorphic vesicular nuclei with prominent nucleoli and abundant eosinophilic cytoplasm. Many of the scattered cells showed eccentric nuclei (Figure 2).



**Figure 2: Photograph of cytology smear showing tumour cells (H&E X 400).**

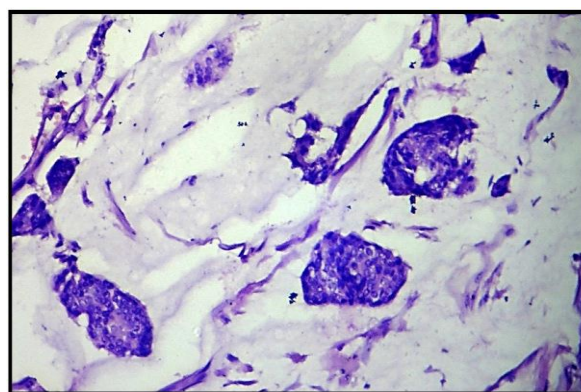
Many branching capillary structures were also present within the mucin pools (Figure 3).



**Figure 3: Photograph of cytology smear showing branching capillary structures within the mucin pools (H&E X 100).**

Bare nuclei were not seen in multiple smears studied. A diagnosis of mucinous carcinoma was suggested on FNAC.

On gross examination, the tumour was well circumscribed measuring 3X3X2 cm. Cut surface showed gelatinous glistening appearance with few grey white areas at the periphery. Axillary dissection revealed 5 lymph nodes largest measuring 1.2 cm in diameter. Histopathological examination revealed a mucin producing tumour with nests of tumour cells floating in abundant pools of extracellular mucin separated by fibrovascular septae (Figure 4), with focal cribriform and glandular pattern. There were no areas of necrosis. Nonmucinous component was not evident on extensive sampling of the tumour. Hence the diagnosis of pure mucinous carcinoma was rendered. Axillary lymph nodes were free of tumour.



**Figure 4: Photograph of tissue section showing nests of tumour cells floating in abundant pools of extracellular mucin (H & E X 100).**

## DISCUSSION

On cytological evaluation, it is important to differentiate mucinous carcinoma from other mucin containing benign and malignant lesions of breast. The most close differential is mucocoele like lesion which is characterized by cystically dilated mucin filled ducts often associated with rupture and extravasation of mucin into the stroma. On cytology, benign mucocoele like lesion can be differentiated from mucinous carcinoma by its scant cellularity, cellular cohesion, no or rare single tumour cells, monolayered arrangement of tumour cells and absence of nuclear atypia. Mucinous carcinomas usually show higher cellularity, more single tumour cells, three-dimensional clusters of tumour cells, and mild to marked nuclear atypia.<sup>[3,4]</sup> However, mucocoele like lesion may harbor atypical ductal hyperplasia, ductal carcinoma or even mucinous carcinoma and hence needs to be excised.<sup>[1]</sup>

Myxoid ground substance in fibroadenomas or phyllodes tumour can resemble epithelial mucin in mucinous carcinoma. These can be differentiated from mucinous carcinoma by the presence of epithelial and myoepithelial element, the differential staining characters of mucin and myxoid ground substance by May Grunwald Geimsa stain and positive staining of epithelial mucin by mucicarmine.<sup>[5]</sup>

The malignant tumours that need to be considered in the differential diagnosis on cytology include metaplastic carcinoma and Mixed invasive carcinoma no special type with mucinous carcinoma. The chondroid matrix in matrix producing carcinomas may sometimes resemble mucin. However the cells do not contain intracellular mucin.<sup>[1]</sup>

In mixed mucinous carcinoma, the amount of mucin is usually scanty. The nuclear atypia is more conspicuous with prominent nucleoli and there may be presence of necrosis.<sup>[6,7]</sup> Bhatia et al observed that in mucinous carcinoma, cell clusters comprised uniform cells with rounded contours. Invasive ductal carcinoma with extracellular secretions showed at least some clusters

with irregular margins. The presence of Chicken wire or thin walled vessels has been found in pure and mixed mucinous carcinoma.<sup>[7,8]</sup>

In conclusion, presence of mucin in breast cytology warrants the possibility of mucinous carcinoma. Appropriate interpretation of cytological findings is important to differentiate from benign as well as malignant mimickers and to arrive at the correct diagnosis.

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