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Case report

MUCINOUS CARCINOMA OF BREAST: A DIAGNOSTIC PITFALL

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ABSTRACT

Mucinous carcinoma is also known as mucoid carcinoma, colloid carcinoma, gelatinous carcinoma and mucin producing carcinoma. They are uncommon neoplasms of the breast and the reported incidence varies from 1-4%. Most of the mucinous carcinomas occur in older age group. FNAC can aid in diagnosis of mucinous carcinoma with only a few FNAC studies documented in literature. We present here a 56year old lady with a huge ulcerated breast mass clinically diagnosed as Malignant Phyllodes tumor. An FNAC was done which showed epithelial cell clusters with mild atypia in a background of both bluish violet and pink extracellular material. Spindle shaped cells were noted in the ground substance which led to a diagnosis of a phyllodes tumor with extensive myxoid change. Mastectomy was performed and the histopathological features confirmed a diagnosis of mucinous carcinoma. The tumor had areas showing thick collagenized fibrous septae separating tumor cell clusters and also areas of fibrosis. The pitfall in FNAC diagnosis may be due to the sampling from such an area.

Keywords: Mucin, Phyllodes tumor, Spindle cells

INTRODUCTION

Carcinomas having at least 90% of the structure with pure mucin are designated as Mucinous carcinoma.^{1,2} They have glistening cut surface and soft consistency. The size of tumor is usually between 1- 4cm in diameter. The prognosis of mucinous carcinoma is better than ductal carcinoma and hence it is important to diagnose this category of breast carcinomas. The incidence of pure mucinous carcinoma with nodal metastasis is low, accounting for 2-4%.³⁻⁵ Since there are reports of deaths even 12 years or more after therapy, long term follow up of patients is suggested.⁶ FNAC can aid as an important pre-operative diagnostic tool in many breast carcinomas. A few FNAC studies regarding mucinous carcinomas are reported in literature.⁷⁻¹⁰

CASE REPORT

A 56 year old lady presented with myalgia and swelling of left breast. On clinical examination, the

whole breast was swollen with a breast mass measuring 12x10x6cm, involving all the quadrants of the left breast. There were a few palpable small lymph nodes in the axilla. A clinical diagnosis of malignant phyllodes tumor was considered because of the huge size of the tumor. An FNAC was performed. The smears showed clusters of epithelial cells with mild atypia and a background material with spindle shaped cells (Fig.1a, 1b). A bluish violet to pink background material was noted which showed spindle shaped cells (Fig 2). No mitotic figures and areas of necrosis were noted. Even though a differential diagnosis of mucinous carcinoma was considered, a final diagnosis of phyllodes tumor with extensive myxoid change was given because of the myxoid staining quality of the background substance, the presence of the spindle shaped cells and the huge size of tumor.

A mastectomy with axillary clearance was performed and specimen was received in the histopathology lab. The skin surface showed bosselated appearance and areas of ulceration from which jelly-like material was extruding out (Fig 3a). Cut surface showed a tumor measuring 12x10x6cm cm with gelatinous and jelly like appearance. (Fig 3b). Areas of haemorrhage and focal cystic changes were noted. The histopathology sections showed tumor cells floating in pools of extracellular mucin which constituted more than 90% of the tumor area (Fig 4a). There were also areas of fibrosis and thick collagenized fibrous septatae within the tumor (Fig 4b). No mitotic figures and atypia were noted in the areas with the spindle shaped cells. 7/7 axillary lymph nodes were free of tumor. A diagnosis of Mucinous carcinoma, Modified Nottingham Grade 1 with pathological tumor stage p T4b and N0 was given. The tumor cells were ER and PR positive. The superior and posterior margins were involved by tumor. The patient was referred to an oncology center for further treatment and was lost for follow up.

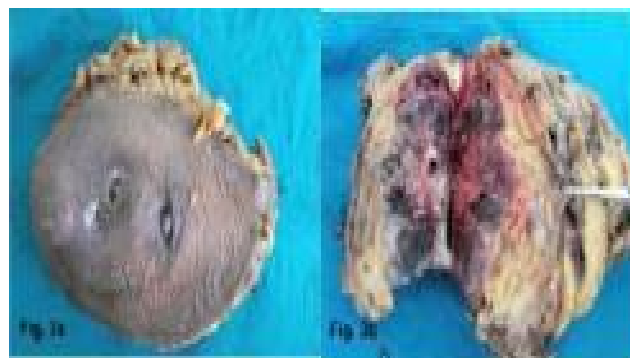


Fig 3a: Mastectomy specimen with bosselated appearance. Jelly-like material extruding from ulcerated areas. **3b:** Cut surface of tumor with jelly-like appearance and areas of hemorrhage.

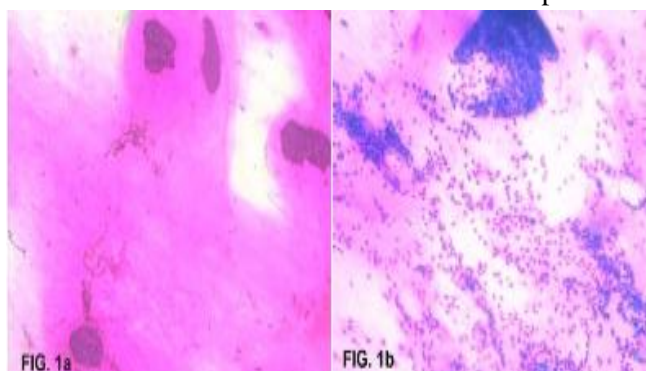


Fig 1a: Islands and clusters of epithelial cell with background material showing a few spindle shaped cells. (PAP X 100), **1b:** Epithelial cell clusters with mild atypia and background substance having spindle shaped cells. (MGG X 100)

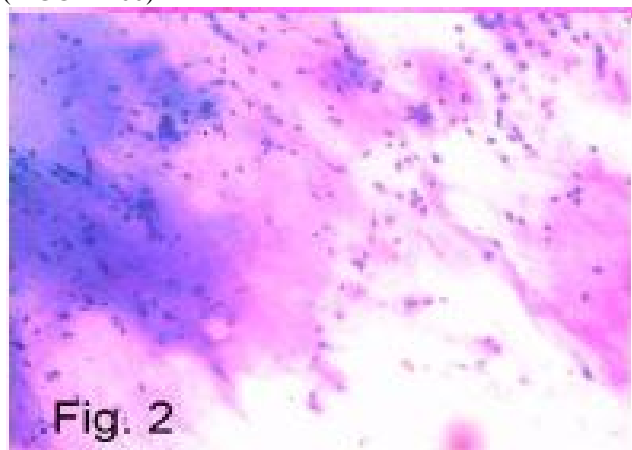


Fig 2: Bluish violet to pink background material with scattered spindle shaped cells. (MGG X 400)

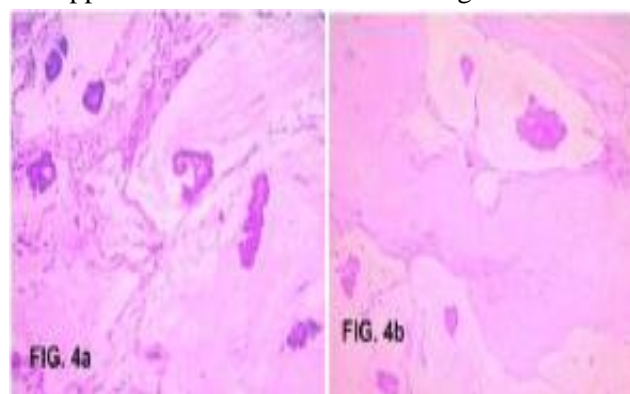


Fig 4a: Microscopy showing islands and clusters of tumor cells floating in pools of extracellular mucin ((H&E X 100), **4b:** Microscopy of mucinous carcinoma with collagenized thick walled fibrous septatae and clusters of tumor cells floating in extracellular mucin pools (H&E X 100)

DICUSSION

FNAC helps in the rapid, noninvasive pre-operative diagnosis of lesions in many parts of the body. There are certain specific cytological features which help in rapid diagnosis of malignant as well as benign tumors. Some authors have documented FNAC studies on mucinous carcinoma of the breast and have found it as an important diagnostic tool.⁷⁻¹⁰

Features that favor a diagnosis of mucinous carcinoma in the FNAC smears are abundant mucin which stains bluish violet in MGG stain.¹¹ Epithelial cells floating in pools of mucin with mild to moderate nuclear atypia can be seen in small clusters, aggregates and singles. Chicken wire blood vessels may also be seen.

Sometimes the epithelial mucin as in mucinous carcinomas may be mistaken for the myxoid stromal ground substance of phyllodes tumor and

fibroadenoma in FNAC smears. MGG helps to differentiate these two. Epithelial mucin stains bluish violet, whereas myxoid ground substance stains pink/violet.¹¹ Another feature is that epithelial mucin is homogeneous and structureless. Myxoid ground substance may be slightly fibrillar and often may show a few fibroblastic spindle cells.

In the present case study the background material showed both the staining qualities by imparting bluish violet as well as pink color. Also there were spindle cells in the ground substance. Probably FNAC from a site with collagenized stroma would have led to the pink staining quality of the background material.

Mucicarmine stains epithelial mucin. FNAC smears of mucinous carcinoma of the breast may show pools of mucicarmine-positive material. Benign cystic changes, normal lobules and ducts may show mucicarmine-positive mucin. Hence it does not help to exclusively confirm a diagnosis of mucinous carcinoma.

False diagnosis of epithelial neoplasm is possible if there is significant epithelial proliferation in Phyllodes tumor. This can cause an important diagnostic pitfall in Phyllodes tumor. The epithelial cells in this case report showed only mild atypia. Since epithelial proliferations can occur in Phyllodes tumor it could not be totally excluded.

Pure mucinous carcinoma show usually ill-defined lobulated sonographic and mammographic margins. In the majority of cases mammographic calcifications are absent (82%).¹² Imaging of Phyllodes tumor may show rounded usually sharply defined mass containing clefts, cysts and sometimes coarse calcification. Since mammography was not done in this patient, the findings could not be correlated.

CONCLUSION

We would like to conclude that the cytological diagnosis of mucinous carcinoma may have pitfalls. Hence it may be also included in the differential diagnosis and the issue may be resolved after a histopathological assessment of the tumor.

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