

Case Report

Pure Mucinous Carcinoma of the Breast

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ABSTRACT

Mucinous carcinoma of the breast is a well differentiated, rare histological type of invasive ductal carcinoma, seen in oldest median age (69 years). We describe a case of a 60 yr old female with large right breast mass of 10 years duration with no nodal involvement. The reasons to present this case are 1) Because of its rarity. 2) Despite having a large tumour size, the axillary lymph node is not involved, hence rendering favourable prognosis. 3) Fine needle aspiration cytology can be used as an important tool in early detection of pure mucinous carcinoma of breast. 4) Careful clinical examination should be performed when suspicious for mucinous carcinoma because lymph node metastasis changes prognosis and treatment modalities .5) Pure mucinous carcinomas should be distinguished from mixed neoplasm, because the latter have a poorer prognosis that is most likely related to the extent of invasive carcinoma lacking extracellular mucin.

Keywords: Mucinous Carcinoma, Breast

Introduction

Mucinous carcinoma (MC) of breast is a rare histologic type of breast cancer occurring in elderly females and is characterized by abundant extracellular mucin secretion to a degree that mucin forms a large proportion of tumour volume relative to epithelium. Its prevalence is in the range of 1- 7% of all mammary neoplasms (1).Two types have been described: Pure (PMC)

and Mixed (MMC) (2). PMC is rare and has been associated with a better short-term prognosis than infiltrating ductal carcinoma and mixed mucinous carcinomas (3).

Case Report

A 60-yr-old post menopausal woman presented to our hospital with complaints of breathlessness, cough with expectoration, giddiness and loss

Received: 24 june 2012

Accepted: 9 january 2013

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of appetite. The doctors noticed a lump in her right breast on routine chest examination which the patient revealed to be of 10 years duration. Although she had noticed the lump long time ago, she had not sought treatment. The tumor had enlarged gradually from the size of a pea and had rapidly increased in size and ulcerated over the past two months. On examination, the tumor was located in the upper inner quadrant of the right breast, measured 9×4×4 cm, and was nodular and soft to firm in consistency (Fig. 1). A fine needle aspiration was advised.

Cytological examination revealed a mucinous background against which were seen monomorphic tumor cells arranged in loose clusters and also singly scattered (Fig. 2). Individual tumor cells had abundant eosinophilic cytoplasm, round to oval monomorphic to mildly pleomorphic eccentrically located nuclei with fine granular chromatin. Intracytoplasmic mucin or signet ring cells were not detected. A diagnosis of mucinous carcinoma of the right breast was made. The surgeons performed a lumpectomy with wide local excision and we received a skin covered specimen measuring 10×5×2 cm. Skin was wrinkled and nodular and was attached to the underlying tumor. Cut surface showed a lobulated tumor measuring 8.5×4.5×4cm having gray- white solid and gelatinous areas (Fig. 3). The tumor was reaching up to the skin. Histopathological examination confirmed the diagnosis of pure mucinous carcinoma of the breast with no component of ordinary invasive ductal cancer. The tumor was well circumscribed and arranged in a lobular pattern. Clusters of tumor cells were seen floating in extracellular pools of mucin (Fig. 4). The tumor cells were large, mildly pleomorphic with moderate amount of eosinophilic cytoplasm and vesicular nuclei with prominent nucleoli. Surgical margins were involved except for the inferior margin which was free. The post-operative period was uneventful. She was followed up until 5 months and was asymptomatic.



Fig. 1- Clinical photograph showing tumor in the upper inner quadrant of the right breast, measuring 9×4×4 cm, nodular in appearance and soft to firm in consistency

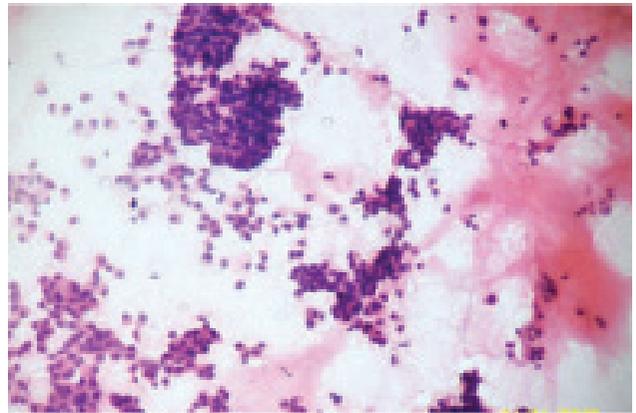


Fig. 2- FNA smear showing a mucinous background against which are seen monomorphic tumor cells singly scattered and in loose clusters. (H&E-200×)

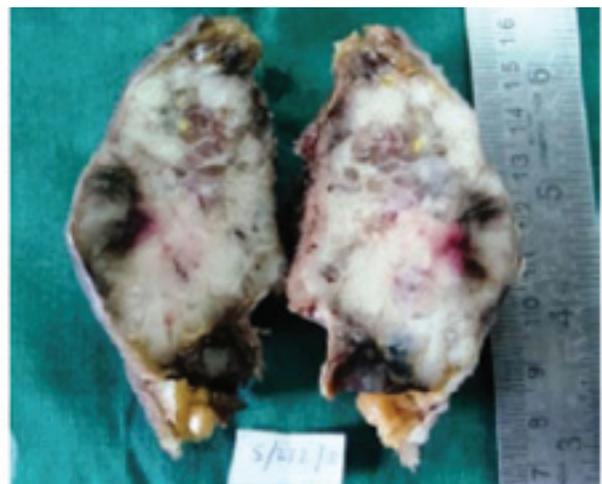


Fig. 3- Gross appearance showing a lobulated tumor measuring 8.5× 4.5× 4 cm having gray-white solid areas and gelatinous areas on cut surface

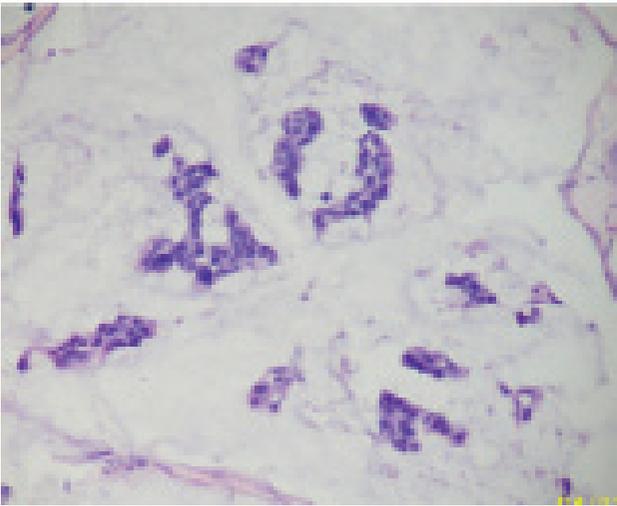


Fig. 4- Photomicrograph showing clusters of tumor cells seen floating in extracellular pools of mucin (H&E-400×)

Discussion

Infiltrating duct carcinoma not otherwise specified (NOS) is the most common type of breast cancer and is commonly seen in combination with other types. Mucinous carcinoma of breast is a distinct well differentiated type of invasive carcinoma (1). It is characterized by large amounts of mucin production and is in general defined as having a mucinous component of 50% or more (4, 5) or having extracellular mucin to the tune of at least one third of the volume of the tumor. It accounts for 1- 7% of all breast tumors but not more than 2% when the diagnosis is limited to only pure type (1,6). Cardenosa *et al.* (7) had described ten cases of pure MC with an with an age range of 31-88 years old (mean age 67 years). This case was within their age range. The reported prevalence of pure mucinous carcinoma is 7% in women 75 years or older and 1% in women less than 35 years of age (7). Pure MC appears as a well-defined mass lesion but the mixed type shows an indistinct or microlobulated pattern on radiologic imaging (8, 9). Wilson *et al.* had described 20 cases of

mucinous carcinoma in which 17 cases (85%) presented with a palpable mass (1). Our patient presented with similar complaints.

Most MC patients complained palpable mass in their breast, and radiologically it frequently mimics a benign lesion (10). Sharma *et al.* had emphasized the role of FNAC in diagnosing mucinous breast carcinoma (11).

They described smears revealing abundant pink mucoid material with numerous moderately pleomorphic epithelial cells lying either discretely forming loose clusters or entrapped within stromal material (11).

Our FNAC findings are in concordance with their result. Grossly it is circumscribed and has a variable soft gelatinous consistency and glistening cut surface. Microscopically the tumor is composed of group of malignant cells showing little pleomorphism with low mitotic activity and are embedded in a pool of extracellular mucin surrounded by bands of fibrous connective tissue. Histologically MC is classified into two subgroups based on the degree of cellularity-the pure type and the mixed mucinous ductal type. MCs with invasive areas not surrounded by mucin are called as mixed (12).

Mucinous carcinomas of breast are usually well differentiated or moderately well differentiated and have few mitotic figures. However carcinoma in situ can coexist with them (12). Our case showed feature of pure mucinous carcinoma without any other component. There is a likely-hood that all MCs originate as a pure carcinoma.

As the carcinoma grows a clone of tumor cells dedifferentiates and shows the NOS pattern of invasive ductal carcinoma (1). Thus larger tumors are more likely to be mixed tumors. Park S *et al.* in their study of 104 patients of MC had described that truly pure tumors are characterized by less aggressive behavior

and favorable histologic grade, and are rarely associated with nodal disease (13).

Our case showed similar results. Pure mucinous carcinomas are usually positive for estrogen and progesterone receptors and usually do not over express the HER2/neu protein or show p53 protein accumulation (14, 15).

It has to be differentiated from mucocele like lesions which are mucous filled cyst lined by flattened epithelium with focal areas of hyperplasia often producing a papillary pattern (16). Studies have revealed the association of same lesion with atypical ductal hyperplasia (ADH), carcinoma in situ (CIN) and mucinous carcinoma. Hence when mucocele like lesions are encountered, it should be adequately sampled to rule out mucinous malignancy (16).

Pure MC should be differentiated from the mixed variety because the latter has a poorer prognosis. Lymph node status is the most significant factor for survival (17). Positive lymph node status is associated with worse prognosis (17). MCs show more favorable clinic-pathological characteristics, such as lower incidence of nodal metastasis, higher expression of estrogen and progesterone receptors, and differentiated grade (18).

Therefore the prognosis of mucinous breast cancers is better than that of infiltrating ductal carcinomas NOS with a 10 yr survival of more than 80% (13, 14, 19, 20). Treatment modalities include surgery, chemotherapy and radiation therapy (18).

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