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Original Research Paper

General Surgery

A RARE CASE OF METAPLASTIC CARCINOMA OF BREAST IN KILPAUK MEDICAL COLLEGE – A CASE REPORT

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ABSTRACT Metaplastic carcinoma of the breast (MCB) also called as carcinosarcoma is a rare type of breast cancer that accounts for 1% of all cases of invasive breast cancer. This MCB is categorized into special types of breast cancers. MCB is characterized by the presence of multiple components and transitional cells between two tissue types, because the tumour cells differentiate in different directions and degrees into a variety of cells other than glandular cells. However, MCB is often misdiagnosed preoperatively as ordinary breast cancer based on several tissue imaging findings. The diagnosis of MCB is highly difficult with cytology and even with core needle biopsy (CNB). The diagnostic rate of MCB with CNB is as low as 40%, with the remaining 60% diagnosed as ordinary mammary duct carcinoma.
MCB is unlikely to respond to anticancer drugs, surgery as the initial treatment is prioritized over preoperative anticancer drug therapy. Therefore, accurate preoperative diagnosis is important.

KEYWORDS : metaplastic carcinoma of breast, invasive, core needle biopsy, misdiagnosis

INTRODUCTION

Breast cancer originates from glandular epithelial cells, therefore, most breast cancers are adenocarcinomas. However, the epithelium of adenocarcinoma may exhibit a proliferative pattern of non-glandular structures accompanied by metaplastic changes in the squamous epithelium, spindle cells, bone, or cartilage in part or entirely [1], [2], [3], [4]. Previously, these cancers were classified as squamous cell carcinoma, spindle cell carcinoma, or cancer accompanied by osseous or cartilaginous metaplasia,; however, they were collectively classified as MCB in 2003 according to the World Health Organization classification. It is a serious concern that MCB is often misdiagnosed preoperatively as ordinary breast cancer. Since anticancer agents are not effective for MCB, surgery must be the preferred first choice treatment over preoperative anticancer drug therapy.

CASE PRESENTATION

A 55 year old female presented with a lump over her left breast for 5 months, gradually progressive. On examination a lump was seen in upper and lower outer quadrant, no warmth or tenderness. Lump measuring 6*5 cm firm to soft consistency with intrinsic mobility (Fig.1). B/L axilla no palpable lymph node.

Blood investigations was normal. Mammogram suggesting BIRADS 5 lesion. USG b/l breast showed heteroechoic multiloculated circumscribed non parallel lesion measuring 5.9*4.2 cm in zone 2-3 at 3'o clock position with mild internal vascularity, few enlarged lymph node 1.2*0.6cm in left axilla-left birads 4 True cut biopsy showing infiltrating ductal carcinoma with triple negative IHC, with no evidence of any metastasis . PET report revealed 30*28mm irregular hyper metabolic mass in lower outer quadrant of left breast suggestive of carcinoma no evidence of skin, muscle or chest wall invasion enlarged and non-hyper metabolic level 1left axillary lymph node P/O LN metastasis, no evidence of distant metastasis.

Clinically it was T2N0M0 lesion, stage 2, diagnosed as early breast carcinoma and hence proceeded with modified radical mastectomy (Fig.2&3). Post-operative HPE report suggested features of carcinosarcoma with fibrous,cartilaginous, osseous materials(Fig.4) ER PR negative , SMA positive,CK 5/6, CD34negative. Consistent with triple negative carcinosarcoma with smooth mucle diffrentitation .Medical oncologists started her on post-operative chemotherapy with Adriamycin 85mg/ cyclophosphamide 700mg.

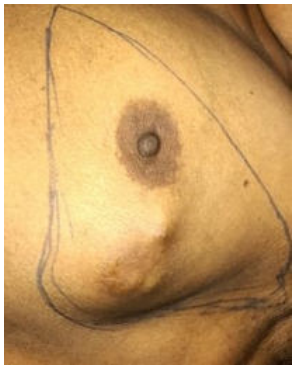


Fig.1 clinically visible lump

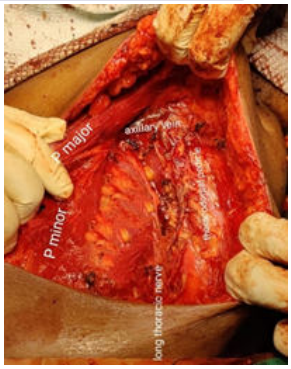


Fig.2 Intraoperative picture

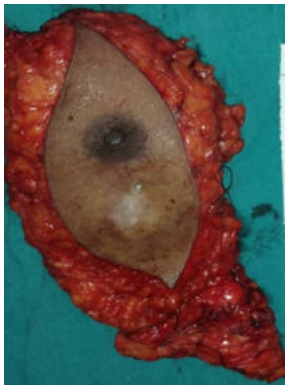


Fig.3 Post mastectomy specimen

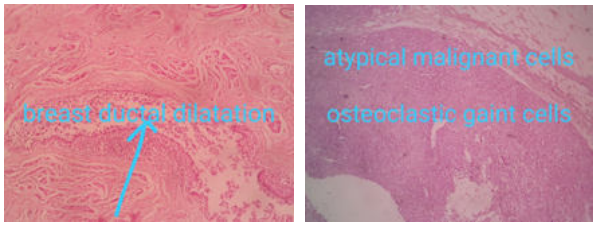


Fig.4 microscopic images showing duct dilation and atypical malignant cells

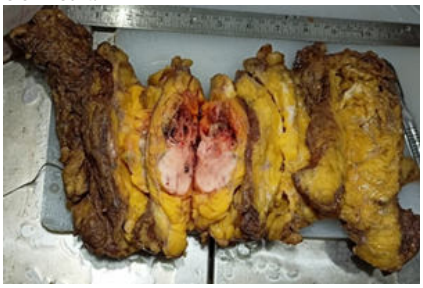
DISCUSSION

MCB is a rare type of breast cancer that accounts for 1% of all cases of invasive breast cancer [1], [5], [6], [7], [8]. This tumor is characterized by the presence of multiple components and transitional cells between two tissue types, because the tumor cells differentiate, in different directions and degrees, into a

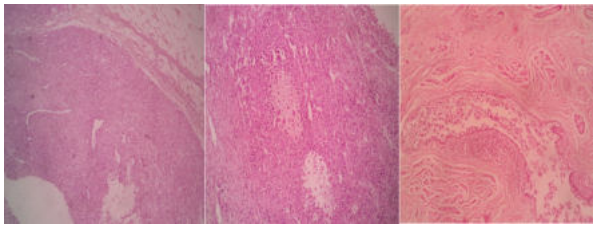
variety of cells other than glandular cells.MCB exhibits the histological patterns of epithelial tumors and is included in the category of special breast cancers.MCB usually presents as a palpable mass and occurs among women older than 50 years [9], [10]. Further, it is characterized by a larger size and more rapid growth than ordinary invasive ductal carcinoma [11].

The tumor is clearly demarcated, and the cut surface is solid and may be glossy or may show cystic changes according to the histological type. The metaplastic component is considered to be derived from the adenocarcinoma component, usually showing a wide variety of transitional features. Although there are no definite diagnostic criteria for metaplastic carcinoma, its diagnosis is generally made when metaplastic components constitute most of the tumor. In metaplastic carcinoma, the tumor cells develop in different directions and show different degrees of differentiation into cells other than glandular cells. Therefore, from a developmental viewpoint, metaplastic carcinomas are classified into pure epithelial metaplastic carcinomas (which show epithelial differentiation such as squamous cell, adenosquamous, or spindle cell carcinoma) and mixed epithelial/mesenchymal metaplastic carcinomas (which include mesenchymal differentiation, such as bone/cartilage metaplasia). These classifications are based on the concept of metaplastic carcinoma originally reported by Wargotz et al., in 1989.

Most metaplastic carcinomas consist of various proportions of squamous metaplasia, spindle cell, bone/cartilage metaplasia, and matrix components. Therefore, they vary in morphology and are considered to have no specific cytological characteristics.For this reason it is difficult to diagnose MCB, which shows a variety of tissue imaging findings, with cytology [5], [7], [11], and even more difficult with CNB. The diagnostic rate of MCB with CNB is as low as 40%, with the other 60% diagnosed as ordinary mammary duct carcinoma [7], [11]. Because MCB is unlikely to respond to anticancer drugs, achieving a pathological response of less than 10% [7], surgery as the initial treatment is prioritized over preoperative anticancer drug therapy. Therefore, accurate preoperative diagnosis is important.However, the diagnosis of MCB cannot rely on imaging features alone because MCB has no distinctive imaging findings [1], [2]. Neither MMG nor US have provided specific images. MCB demonstrates several benign features similar to those of ordinary breast cancer in MMG and US, and subsequently may be misdiagnosed as benign lesions [12], [13]. This makes preoperative diagnosis even more difficult.



GROSS SPECIMEN OF METAPLASTIC CARCINOMA



MICROSCOPY OF METAPLASTIC CARCINOMA

In most cases, the tumors are triple negative tumors, i.e., immunohistologically negative for ER, PR, and HER2/neu [11], , and the prognosis is reportedly poorer than that of other histological types. The incidence of axillary lymph node involvement is variable ranging from 8% to 40% [9], [11],. There is high hematogenous metastatic potential to the lung and bone rather than lymphatic spread [10], Local recurrence and distant metastasis were frequently found in more than half of MCB cases during 5 years of follow-up.The tumor proliferation mechanism of MCB is somewhat different from that of an ordinary ductal carcinoma of the breast [8].This may be related to the lower incidence of lymph node metastasis than that of typical ductal carcinoma. MCB may be unlikely to cause direct skin infiltration despite the presence of a large mass.

According to Wargotz et al., the prognosis varies among different histological subclassifications, with the 5-year survival rate being 63% for squamous cell carcinoma and 64% for spindle cell carcinoma. The tumors often test positive for cytokeratin (CK)5/6, CK14, epidermal growth factor receptor, and p63 [5], [7],. Although high-grade tumors are frequent, mild nuclear atypicality is exceptionally seen in low-grade adenosquamous carcinoma and fibromatosis-like metaplastic carcinoma.MCB is less responsive to neoadjuvant presurgical chemotherapy [3], [7], achieving a pathological response of less than 10% [7], [8]. Therefore, priority should be given to initial surgery [7], [8]. Furthermore, adjuvant chemotherapy is also unsuccessful [3], [8].The prognosis of patients is influenced the type of existing metaplastic components; therefore, it is necessary to perform appropriate histopathological subclassification.

CONCLUSION

MCB is often misdiagnosed preoperatively as ordinary breast cancer. MCB may be less likely to cause skin invasion despite the presence of a large mass than ordinary breast cancer of the same size. Because anticancer agents are ineffective for MCB, surgery must be selected as the initial treatment. Moreover, depending on the case, postoperative adjuvant chemotherapy should not be used. Patients receiving postoperative adjuvant chemotherapy should be selected carefully. If the preoperative histological examination shows the presence of components such as squamous epithelium, spindle cells, or metaplastic stroma even in small amounts, extensive sampling through surgical biopsy should be proactively recommended to avoid misdiagnosis. Increasing the awareness of MCB might reduce he probability of misdiagnosis. When a tumour presents a variety of histological features, it is important to exercise caution in the diagnosis and treatment while considering the possible differential diagnosis of MCB, despite the rarity of this tumor.

Abbreviations: MCB- Metaplastic carcinoma of the breast, CNB- Core needle biopsy,MMG- Mammography, US-Ultrasonography

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