Metaplastic Carcinoma of Breast with Osteosarcomatous Differentiation: A Rare Case Diagnosed by Fine Needle Aspiration Cytology

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Abstract

Metaplastic carcinoma is a rare form of breast cancer. It constitutes a distinct aggressive form of invasive breast cancer with histological evidence of epithelial to mesenchymal transition towards spindle, chondroid or osseous cell type. Osseous metaplasia is an exceptionally rare component in metaplastic breast carcinoma. We present a case of 40 yr old female who was diagnosed with Metaplastic carcinoma of breast on fine needle aspiration cytology (FNAC) and subsequently confirmed by histopathological examination. The patient reported to our institution with complaints of painless left breast lump of 5 yr duration. USG findings revealed large infiltrative hypoechoic mass in left upper quadrant of breast suggestive of malignancy. FNAC of lump showed loosely cohesive clusters of malignant spindle cells along with multinucleated giant cell in background of chondroid stroma. A tentative diagnosis of metaplastic carcinoma breast was made. Modified radical mastectomy was performed. Histopathological examination of specimen revealed presence of osteoid lined by malignant osteoblasts like cells interspersed with multinucleated giant cells.

A diagnosis of metaplastic carcinoma of breast with osteosarcomatous differentiation was confirmed on histopathological examination. Metaplastic breast carcinoma are heterogenous group of tumors constituting 0.2% of breast carcinomas. Age group and clinical features and radiographic features are similar to other invasive breast carcinomas. Cases is presented for its rarity and utility of FNAC in diagnosing such cases having divergent histological features.

Keywords: Fine needle aspiration cytology (FNAC); USG

Introduction

Metaplastic carcinoma is a rare form of breast carcinoma. It constitutes a distinct aggressive form of invasive breast cancer with histological evidence of epithelial to mesenchymal transition towards spindle, chondroid or osseous cell type [1]. Osseous metaplasia is an exceptionally rare component in metaplastic breast carcinoma.

Case Report

We report a case of 40 years female who presented with lump left breast which was diagnosed as a case of metaplastic carcinoma of breast on FNAC and subsequently confirmed by histopathology.

The patient presented with large lump left breast occupying left upper quadrant and measuring about 10 cm × 6 cm.

It was firm in consistency and was attached to underlying structures.

USG Findings

On USG a large infiltrative hypo echoic mass was seen measuring 8.8 cm × 5.4 cm in left upper quadrant of breast which was suggestive of malignancy.

Right breast was normal without any space occupying lesion. There was no evidence of axillary lymphadenopathy.

FNAC of Lump

FNAC of the lump was performed using 22 gauge disposable needle with multiple passes from mass.

Smears were stained with MGG, Pap and H and E stains. The smears showed sheets and clusters of malignant cells with pleomorphic hyperchromatic nuclei with 1-2 prominent nucleoli (Figure 1).
Many pleomorphic poorly cohesive clusters consisting of tumor cells with spindle cell morphology having plump to spindle nuclei were also seen (Figure 2a).

Many stromal fragments including fragments of chondromyxoid material were seen in the background (Figure 2b).

There was high grade cellular atypia. Numerous multinucleated giant cells were scattered between the clusters. Poorly formed ductal structures of malignant cells were present (Figures 1 and 3).

A diagnosis of metaplastic carcinoma breast was made. Patient subsequently underwent modified radical mastectomy.

Gross

Mastectomy specimen was received measuring 18 cm × 13 cm × 8 cm with overlying skin. On cut section a well circumscribed mass measuring 10.0 cm × 8.0 cm × 6.0 cm showing variegated appearance with firm to soft areas.

It was 1 cm away from the skin (Figure 4). Eight lymph nodes were submitted for HPE.

Histopathological Examination

Multiple sections from the mass showed tumor cells arranged in interlacing fascicles associated with presence of malignant osteoid and osteoclastic type giant cells (Figures 5-7).

The individual tumor cells were oval to spindle shaped with pleomorphic nuclei and prominent nucleoli with clear cytoplasm in some.

Areas of ductal component along with lipomatous differentiation were also evident.

Overlying skin and base were free of tumor infiltration.

Lymph nodes did not reveal any evidence of metastatic deposits.

A diagnosis of metaplastic carcinoma breast with osteosarcomatous differentiation was confirmed.
Discussion

Metaplastic carcinoma of breast is a rare malignant tumor, accounting for less than 1% of all the invasive mammary carcinomas [2].

Breast carcinomas with osseous metaplasia is classified as mixed epithelial/mesenchymal metaplastic carcinoma according to WHO classification of tumors [3].

In our case a heterologous element of chondroid material identified in aspirate, was suggestive of metaplastic carcinoma of breast.

Conclusion

Metaplastic carcinoma is a rare subtype of invasive breast cancer characterized by a large tumor size at presentation, lower rate of axillary node involvement, high rate of both local and distant spread.

References