Cancer Treatment Communications 8 (2016) 5–7

Contents lists available at ScienceDirect

Cancer Treatment Communications

journal homepage: www.elsevier.com/locate/ctrc

Carcinoma breast masquerading as extramedullary plasmacytoma breast: An unusual case report with review of literature

Nidhi Mahajan, Annapurna Saksena, Parth Desai, Seema Kaushal, Shyama Jain *, Ronak Patel

Department of Pathology and Department of Radiology, Maulana Azad Medical College, New Delhi 110002, India

ARTICLE INFO

Article history:
Received 5 March 2015
Received in revised form
26 February 2016
Accepted 4 April 2016

Keywords:
Myeloma
Plasmacytoma
Carcinoma breast
Morphological mimics
Cytology

ABSTRACT

Fine needle aspiration cytology continues to be the first line modality for definitive diagnosis of palpable and non palpable breast masses. Despite its high accuracy, some cases may pose a diagnostic dilemma. We present a case of a 42 year old female who was clinico-radiologically and cytologically mislabelled as plasmacytoma but was subsequently diagnosed as poorly differentiated carcinoma breast on histopathology and immunohistochemistry. Aspiration cytology is a minimally invasive procedure with rapid turn around time but in cases with unusual cytological picture, a core biopsy along with immunohistochemistry must accompany cytology to maximize the preoperative diagnosis of malignant breast lesions in order to ensure appropriate management.

1. Introduction

Fine needle aspiration cytology (FNAC) is a safe, cost effective and accurate investigative tool for evaluation of breast lesions. It has a wide range of accuracy (72–99%) in diagnosis of breast malignancies and in their subtyping [1]. Surgeons insist upon diagnosis on aspiration cytology and consider it definitive for many subtypes to plan the mode of treatment. However, some cases may pose hindrance on cytology leading to misdiagnosis. We present a case of a 42 year old female with right breast lump mislabelled on cytology as plasmacytoma and subsequently diagnosed as poorly differentiated carcinoma on histopathology. This case depicts a clinical, radiological and cytomorphological mimicry of breast carcinoma as plasmacytoma and emphasises the awareness of variable features of the former on cytology as its treatment differs radically.

2. Case report

A 42 year old postmenopausal female presented with the complaint of a lump in the right breast for the past 2 months. The lump was painless, gradually increasing in size and not associated with nipple discharge. She had no history of bone pain, weight loss, fever and no family history of breast cancer. Clinical examination revealed a 2×2 cm firm, non-tender lump in the upper inner quadrant of right breast (Fig. 1(a)). No skin changes or nipple discharge was observed. Right sided axillary lymphadenopathy was also seen. Mammogram showed a well circumscribed round lesion with soft tissue density in the upper inner quadrant with a sharp interface with adjacent fibro-glandular parenchyma. There was absence of internal calcification or any architectural distortion (Fig. 1(b) and (c)). Ultrasonography revealed a well defined 2.5×2.4 cm hypoechoic mass with moderate internal vascularity and posterior enhancement. There were few hyperechoic rims in the centre. Radiological findings were suggestive of a benign lesion. FNAC was performed as per standard procedure and air dried Giemsa stained smears were examined. Smears showed highly cellularity with sheets of plasma cells in different stages of maturation. Cells had abundant basophilic cytoplasm, a perinuclear hof, an eccentrically placed nucleus and prominent nucleolus (Fig. 2(a)). Many bi and multinucleated forms were also seen and mitosis was frequent (Fig. 2(b)). Immunocytochemistry (ICC) for kappa and lambda was non contributory. In view of these dispersed mature and immature plasma cells, a thorough haematological, biochemical and radiological workup of the patient was advised to exclude a plasma cell dyscrasia. Serum protein, creatinine, blood urea, calcium and serum protein electrophoresis were within normal limits. Urine for M protein was negative. Hemogram revealed haemoglobin of 11.5 g/dl with normal leucocyte and platelet count. Bone marrow aspirate showed normal hemopoiesis with no increase in plasma cells. Based on the above clinical, radiological and cytological features, a diagnosis of

* Corresponding author.
E-mail address: jainshyama@gmail.com (S. Jain).

http://dx.doi.org/10.1016/j.ctrc.2016.04.001
2213-0896/

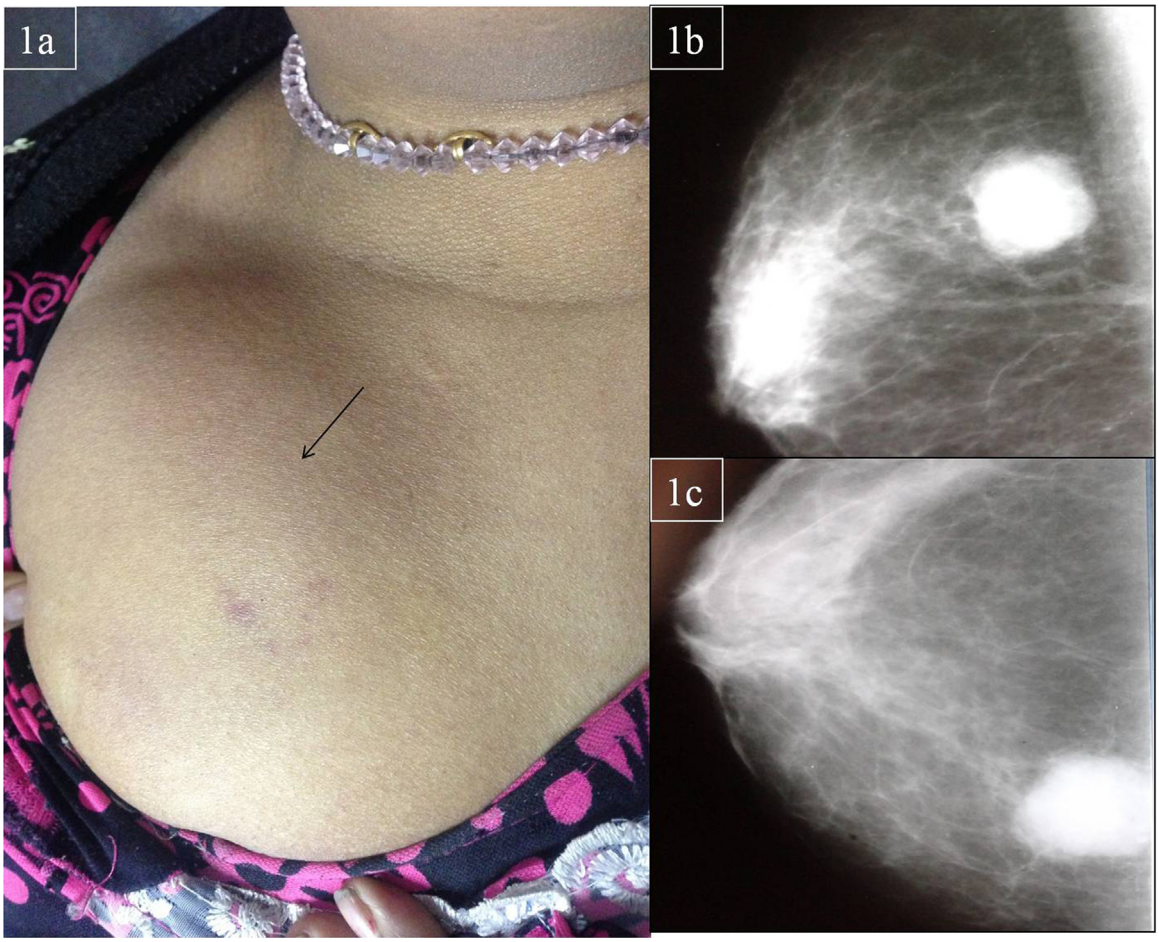

Fig. 1. Clinical photograph of right breast lump (1a), Right breast mammogram showing a well defined round soft tissue density lesion in upper inner quadrant of breast. No internal calcification or architectural distortion seen, mediolateral oblique view (1b) and craniocaudal view (1c).

primary extramedullary plasmacytoma of breast was made and a histopathological correlation was advised. Patient underwent a trucut biopsy which was received in our department as multiple linear grey white soft tissue cores. Sections examined showed diffuse infiltration by tumor cells with abundant cytoplasm, an eccentric nucleus and prominent nucleolus (Fig. 2(c)). Many mitotic figures were seen. The tumor elicited marked desmoplastic response. Immunohistochemistry (IHC) revealed focal positivity for pan-cytokeratin (CK, Fig. 2(d)) and focal expression of epithelial membrane antigen (EMA). The tumor cells were negative for LCA, kappa and lambda antibodies which were demonstrated in the background lymphocytes and plasma cells. IHC for S-100 and chromogranin was also negative. Thus, in view of the histological and IHC findings, a final diagnosis of poorly differentiated carcinoma was given and the patient was taken up for a modified radical mastectomy. She had an uneventful post operative period and is on follow up with no recurrence to date.

3. Discussion

Aspiration cytology of breast is used as a nationwide screening and diagnostic tool for breast cancer evaluation. FNAC is a part of the triple assessment of breast lesions and has been recognised as a minimally invasive, cost effective procedure with rapid turnaround time [2]. It provides accurate diagnosis with high positive predictive value and recently, biomarkers can also be evaluated on cell block material prepared during FNAC. Many clinicians continue to rely on FNAC alone for diagnosis and plan further management of these patients; however this may not be true for all cases. Plasma cell tumors in the breast can present in two different clinical forms, one as secondary during the course of disseminated multiple myeloma and the other as an extramedullary solitary lesion in the breast [3]. Although solitary extramedullary plasmacytoma (SEP) can arise anywhere throughout the body, majority present in the head and neck region namely in paranasal sinuses, nasal cavity, salivary glands, oropharynx and larynx. Sites rarely involved are testis, bladder, urethra, ovary, pleura, thyroid, brain and breast [4]. When plasmacytoma involves breast, the disease usually follows a benign behaviour and is associated with good prognosis. In contrast carcinoma breast is a completely different entity and carries a grave prognosis.

The cytologic findings of primary breast cancer (of either ductal or lobular type) can mimic myeloma morphologically in terms of malignant cells with plasmacytoid morphology [3]. The cohesive grouping of malignant epithelial cells and immunocytochemistry are important for distinguishing a primary carcinoma of breast from other plasmacytoid tumors. Khalbuss et al. described the first case of simultaneous occurrence of carcinoma breast with plasmacytoid morphology and multiple myeloma, which led to a diagnostic challenge on FNAC [5]. The present case showed primarily discohesive sheets of plasma cells with complete absence of grouping. Discohesive cells with plasmacytoid morphology can also be seen in neuroendocrine carcinoma of breast, marginal zone lymphoma or immunoblastic lymphoma and myoepithelial carcinoma. The cells in neuroendocrine carcinoma show moderate amount of eosinophilic granular cytoplasm consistent with neurosecretory granules and show positivity for chromogranin and

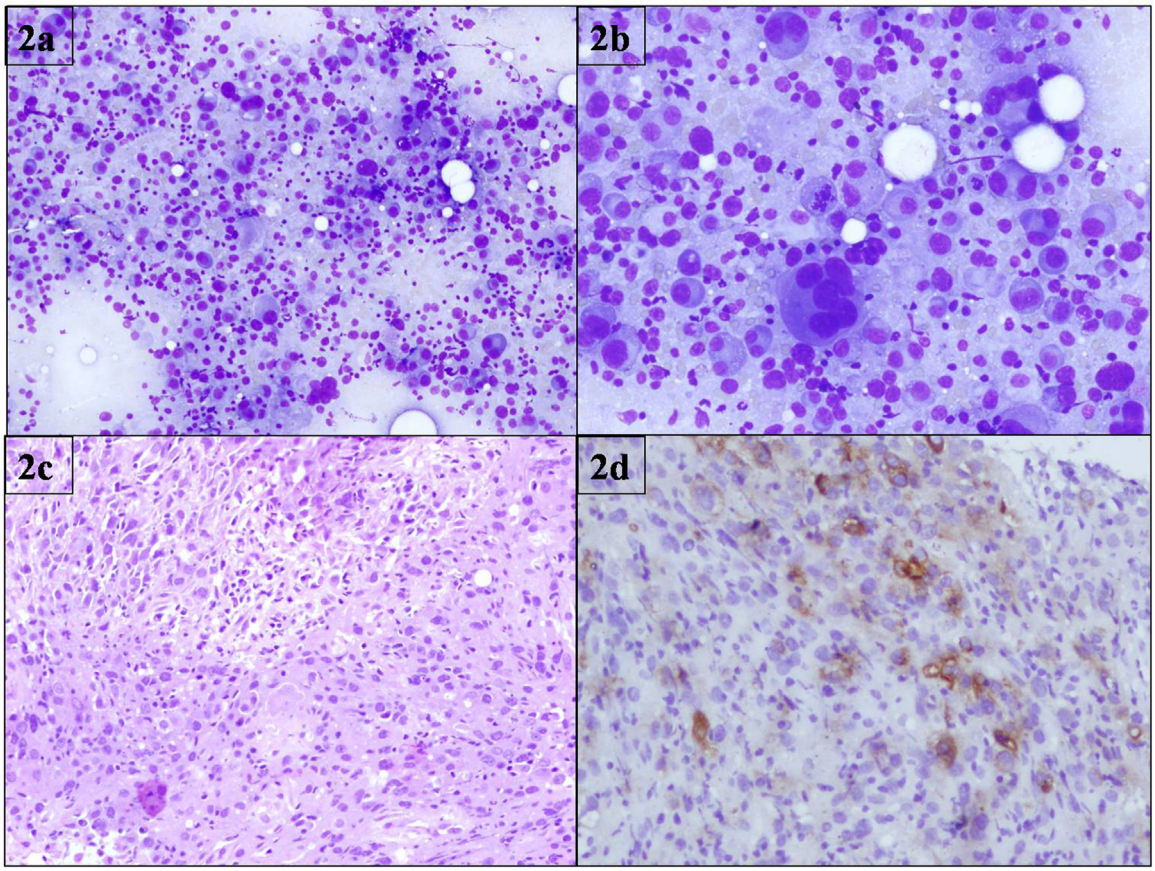

Fig. 2. FNA smears showing plasma cells in varying degrees of maturation (2a, Giemsa X 40). Many bi & multinucleated plasma cells seen, mitosis is brisk (2b, Giemsa X100). Section showing clusters of tumor cells with abundant cytoplasm and eccentric nucleus with moderate desmoplastic response (2c, Hematoxylin & Eosin X100). Immunohistochemistry shows CK positive tumor cells (2d, IHC X400).

synaptophysin. Arborising vascular papillary patterns of monomorphic duct epithelial cells are also observed in these smears. Cells of immunoblastic lymphoma show abundant cytoplasm and eccentric nuclei. ICC for LCA and CD20 is helpful in establishing the diagnosis [6]. Myoepithelial carcinoma (malignant myoepithelioma) of the breast is extremely rare and may show interlacing bundles of spindle cells, clear cells or plasmacytoid cells which stain for CK5/6, S-100, smooth muscle antigen and p63 [7].

Because of its rarity, the radiological features of plasmacytoma in breast have not very well been described. However on mammography, two patterns have been identified. One pattern is that of a typical dense round or oval shaped mass with well or ill defined margin and the other is that of diffuse infiltration. In contrast, breast carcinomas have infiltrative margins and show microcalcifications [8]. Treatment of plasmacytoma in the breast is same as other sites and rests upon chemotherapy and radiotherapy [8]. However, management of carcinoma breast comprises of a constellation of surgery (modified radical mastectomy with ipsilateral axillary lymphadenectomy), neoadjuvent chemotherapy and hormonal therapy.

Breast plasmacytoma mimicking as inflammatory carcinoma has been reported earlier, however the literature on primary carcinoma breast mimicking plasmacytoma is scarce [9]. Despite subtle clinico-radiological and cytomorphological overlap between carcinoma breast and primary plasmacytoma breast, their treatment modalities differ drastically. This case highlights the pitfall of FNAC in accurate diagnosis of malignant breast lesions and that it alone cannot be solely used for planning the treatment of the patient. Also, it emphasises the need for core biopsy and immunohistochemistry as important accompaniments in all cases of diagnostic dilemma.

References

[1] C. Garbar, H. Curé, Fine-needle aspiration cytology can play a role in neoadjuvent chemotherapy in operable breast cancer, ISRN Oncol. 2013 (2013) 935796.
[2] S. Masood, L. Vass, J.A. Ibarra, B.M. Ljung, H. Stalsberg, A. Eniu, et al., Breast pathology guideline implementation in low-and middle-income countries, J. Cancer 113 (2008) 2297–2304.
[3] C. Kelten, M. Akbulut, B. Ege, S. Kabukcu, I. Sari, E. Duzcan, Bilateral breast involvement in multiple myeloma: a diagnostic pitfall in terms of plasmacytoid cytomorphology in breast aspiration cytology, Diagn. Cytopathol. 38 (12) (2010) 936–938.
[4] A. Kaviani, M. Djamali-Zavareie, M. Noparast, S. Keyhani-Rofagha, Recurrence of primary extramedullary plasmacytoma in breast both simulating primary breast carcinoma, World J. Surg. Oncol. 2 (2004) 29.
[5] W.E. Khalbuss, G. Fischer, M. Ahmad, B. Villas, Synchronous presentation of breast carcinoma with plasmacytoid cytomorphology and multiple myeloma, Breast J. 12 (2) (2006) 165–167.
[6] G.L. Giron, P.A. Hamlin, E. Brogi, J.E. Mendez, L. Sclafani, Primary lymphoma of the breast: a case of marginal zone B-cell lymphoma, Am. Surg. 70 (8) (2004) 720–725.
[7] Y. Endo, et al., Myoepithelial carcinoma of the breast treated with surgery and chemotherapy, Case Rep. Oncol. Med. (2013) 164761.
[8] A. Surov, H.J. Holzhausen, K. Ruschke, D. Arnold, R.P. Spielmann, Breast plasmacytoma, Acta Radiol. 51 (5) (2010) 498–504.
[9] A. Gupta, L. Kumar, M. Aaron, A case of plasmacytoma of the breast mimicking an inflammatory carcinoma, Clin. Lymphoma Myeloma 8 (3) (2008) 191–192.