

Metastatic carcinoma of breast masquerading as acute leukemia at presentation: A case report with review of the literature

Jayasudha Arundhathi Vasudevan, Rekha Appukuttan Nair, Renu Sukumaran, Preethi Thattaruparambil Ramadas

Department of Pathology, Division of Pathology, Regional Cancer Centre, Thiruvananthapuram, Kerala, India

ABSTRACT

Development of clinically apparent bone marrow involvement is a rare occurrence in metastatic breast cancer. We are reporting a case of 60-year-old female patient with breast carcinoma and simultaneous total bone marrow replacement by the carcinoma cells, mimicking an acute leukemia at presentation, which has not been reported in the literature.

Key words: Acute leukemia, breast, metastatic carcinoma

INTRODUCTION

Symptomatic involvement of bone marrow is an extremely rare occurrence in metastatic breast cancer as compared to micrometastasis in bone marrow.^[1] Bone marrow carcinomatosis is clinically suspected in patients with advanced stage disease and unexplained cytopenias.^[2] Presence of total marrow replacement by carcinoma cells in the initial presentation itself is an extremely rare event which is not yet described. We are presenting this case because of this rarity.

CASE REPORT

A 60-year-old female patient presented with a lump in the breast of 6 months duration. Local examination revealed left-sided breast lump measuring 4 cm × 2.5 cm in the upper and lower inner quadrant of the breast with no nipple, skin or chest involvement. Multiple left axillary lymphnodes were also present with the largest lymphnode measuring

2 cm × 2 cm. Right breast and axilla were normal. Routine laboratory investigations revealed hemoglobin - 5.8 g%, TC - 6900/mm³, platelet count - 60,000/mm³. Peripheral smear examination revealed a leukoerythroblastic blood picture. Bone marrow aspiration revealed total replacement of the bone marrow by atypical cells with scanty basophilic cytoplasm and round to oval nucleus with an immature chromatin [Figure 1a and b]. Atypical cells were myeloperoxidase negative by cytochemistry. Bone marrow biopsy also confirmed the total replacement of the marrow by the same atypical cells [Figure 1c]. Immunohistochemistry was done on bone marrow biopsy. Tumor cells were positive for pancytokeratin, cytokeratin 7, negative for E-cadherin and positive for estrogen receptor [Figure 1d-f]. Trucut biopsy done from the breast lump also showed the same tumor cells arranged singly and in Indian file pattern [Figure 1g]. Thus, diagnosis of invasive lobular carcinoma of the breast with extensive bone marrow infiltration was given.

DISCUSSION

There is a paucity of published data on the incidence of clinically apparent bone marrow carcinomatosis in breast cancer. One of the largest case series studying bone marrow involvement in breast cancer revealed only 0.17% of patients with this condition.^[1] In routine clinical practice, presence of leukoerythroblastic blood picture is regarded as a sign of bone marrow involvement after ruling out hematologic causes like hemolysis, myelodysplastic syndrome or a

Access this article online

Quick Response Code:



Website:

www.ccij-online.org

DOI:

10.4103/2278-0513.154806

Address for correspondence: Dr. Rekha A Nair, Department of Pathology, Division of Pathology, Regional Cancer Centre, Thiruvananthapuram - 695 011, Kerala, India. E-mail: drrekhanair@gmail.com

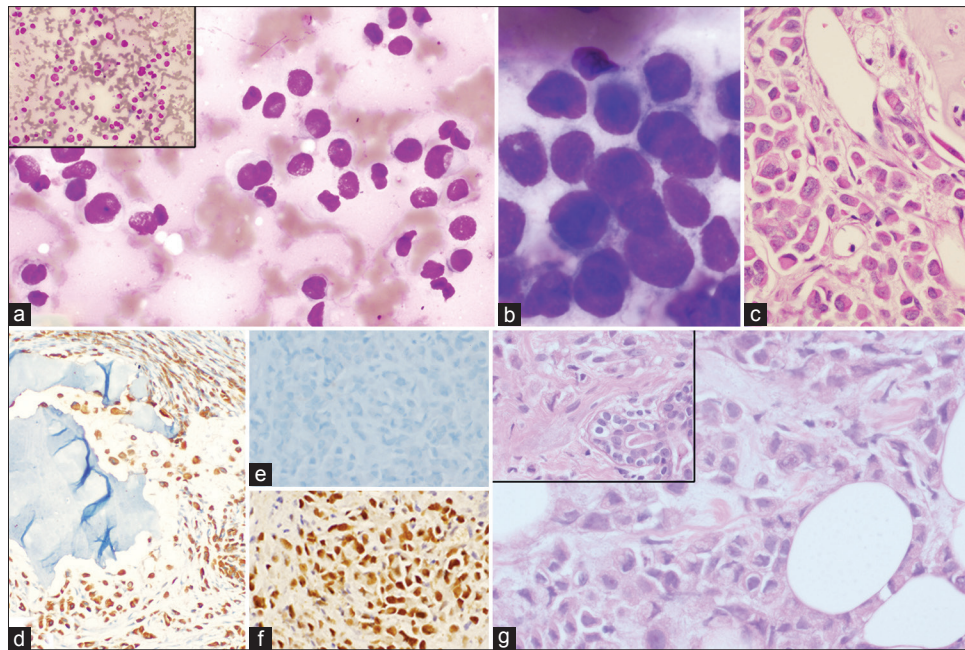


Figure 1: (a) Bone marrow aspirate showing tumor cells arranged singly and in loosely cohesive clusters (Giemsa, ×400). Inset showing the low power appearance (Giemsa, ×100). (b) Cells have scanty cytoplasm, round to oval nucleus with irregular nuclear membranes and fine chromatin with inconspicuous nucleoli (Giemsa, ×1000). (c) Bone marrow biopsy showing marrow replaced by the tumor cells (H and E, ×400). (d) Tumor cells are positive for CK 7. (e) Negative for e-cadherin. (f) Positive for ER. (g) Trucut biopsy from the breast showing the same tumor cells (H and E, ×400). Inset showing the breast tissue at the periphery (H and E, ×400)

myeloproliferative neoplasm.^[3,4] Studies have shown a close association between bone metastasis and bone marrow involvement. Bone marrow may be the initial site of metastatic disease in bones, and osseous metastasis would result by invasion from marrow.^[5] Although bone metastasis can occur in metastatic disease, most of them will be presenting as osteolytic metastasis in bone rather than as diffuse bone marrow infiltration. There are case reports of synchronous occurrence of carcinoma of the breast and acute myeloid leukemia.^[6] Breast cancer can also present synchronously with malignant lymphomas.^[7,8] Clustering of blasts is described in acute myeloid leukemia which can also present in breast as granulocytic sarcomas.^[9,10]

CONCLUSION

Immunohistochemistry is absolutely indicated to distinguish metastasis from breast cancer and a hematologic malignancy in such difficult scenarios. Our search of literature did not reveal any reported case of metastatic breast cancer with total marrow replacement by the tumor cells in its very initial presentation, thus simulating an acute leukemia, which prompted us to report this interesting case.

REFERENCES

1. Kopp HG, Krauss K, Fehm T, Staebler A, Zahm J, Vogel W, et al. Symptomatic bone marrow involvement in breast cancer – Clinical presentation, treatment, and prognosis: A single institution review of 22 cases. *Anticancer Res* 2011;31:4025-30.
2. Delsol G, Guiu-Godfrin B, Guiu M, Pris J, Corberand J, Fabre J.

3. Leukoerythroblastosis and cancer frequency, prognosis, and physiopathologic significance. *Cancer* 1979;44:1009-13.
4. Rubins JM. The role of myelofibrosis in malignant leukoerythroblastosis. *Cancer* 1983;51:308-11.
5. Shamdas GJ, Ahmann FR, Matzner MB, Ritchie JM. Leukoerythroblastic anemia in metastatic prostate cancer. Clinical and prognostic significance in patients with hormone-refractory disease. *Cancer* 1993;71:3594-600.
6. Kamby C, Guldhammer B, Vejborg I, Rossing N, Dirksen H, Daugaard S, et al. The presence of tumor cells in bone marrow at the time of first recurrence of breast cancer. *Cancer* 1987;60:1306-12.
7. Mishra PP, Mahapatra M, Choudhry VP, Saxena R, Pati H, Dixit A, et al. Synchronous occurrence of breast carcinoma and acute myeloid leukemia: Case report and review of the literature. *Ann Hematol* 2004;83:541-3.
8. Cheung KJ, Tam W, Chuang E, Osborne MP. Concurrent invasive ductal carcinoma and chronic lymphocytic leukemia manifesting as a collision tumor in breast. *Breast J* 2007;13:413-7.
9. Dutta Roy S, Stafford JA, Scally J, Selvachandran SN. A rare case of breast carcinoma co-existing with axillary mantle cell lymphoma. *World J Surg Oncol* 2003;1:27.
10. Arber DA, Brunning RD, Orazi A, Porwit A, Peterson L, Thiele J, et al. Acute myeloid leukaemia, not otherwise specified. In: Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, et al., editors. WHO Classification of Tumors of Haematopoietic and Lymphoid Tissues. 4th ed. Lyon: International Agency for Research on Cancer; 2008. p. 136-7.
11. Thachil J, Richards RM, Copeland G. Granulocytic sarcoma – A rare presentation of a breast lump. *Ann R Coll Surg Engl* 2007;89:W7-9.

Cite this article as: Vasudevan JA, Nair RA, Sukumaran R, Ramadas PT. Metastatic carcinoma of breast masquerading as acute leukemia at presentation: A case report with review of the literature. *Clin Cancer Investig J* 2015;4:570-1.

Source of Support: Nil, **Conflict of Interest:** None declared.