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Carcinoma Breast as a Second Malignancy Following AML; A Case Report and Review of Literature

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Abstract: The improved survival among patients with haematological malignancies has also increased the incidence of second malignancies in these patients. Survivors of Acute myeloid leukemia are at 10 fold more risk of developing second malignancies compared to general population. Carcinoma breast as a second malignant neoplasm following successful treatment of acute myeloid leukemia is rare and only few cases have been reported so far. Here we report one patient who developed carcinoma breast after successful treatment of acute myeloid leukemia along with a review of literature.
Keywords: Second Malignancy; Acute Myeloid Leukemia; Carcinoma Breast.

INTRODUCTION

The outcome in patients with haematological malignancies has improved over the last 40 years. One of the major concern in these long term survivors is the development of second malignant neoplasm's[1]. There are reports that suggest that long term survivors of acute myeloid leukemia (AML) are at 10 fold times risk of developing second malignancies compared to general population[2]. Carcinoma breast is a very rare second malignancy to occur in survivors of acute myeloid leukemia, with only 2 cases reported so far in literature. Here we describe patient who developed carcinoma breast 4 years after successful treatment of acute myeloid leukemia along with a brief review of literature including the cases reported so far.

CASE REPORT

A 55-year-old lady was evaluated for exertional dyspnoea and easy fatiguability of one month duration. She had bilateral supraclavicular and left cervical lymphadenopathy of around 1 cm. Her haemoglobin was 12.6 gm/L, total WBC count was 33700/mm^3, and platelet count was 1.31 lakh / mm^3. The peripheral smear showed 66 % blast cells. Her renal and liver functions were normal, and serum lactate dehydrogenase was 879 U/L. Bone marrow aspiration showed 82 % blasts which were peroxidise negative. Immunophenotyping by flowcytometry showed the abnormal cells to be positive for the myeloid markers CD13, CD14, CD33, CD66, CD11c, HLA DR and negative for the T-cell and B cell markers. A diagnosis of acute myeloid leukemia, FAB type AML M5A was based on Bone marrow and flowcytometry findings.

The was started on 7 +3 induction chemotherapy (seven days continuous infusion of cytosine arabinoside 100 mg/m^2 and daunorubin 60 mg/m2 for 3 days). Bone marrow examination after induction showed, bone marrow in remission with <3% blasts. The patient received consolidation with 3 cycles of high dose cytosine arabinoside (3gm/m^2 twice daily on day1, day2 and day3). After the completion of treatment, patient was under regular follow at haematooncology clinic.

After a disease free survival of 4 years she presented with lump in the left breast. Fine needle aspiration from the breast lump was suggestive of carcinoma. Mammogram showed a 2.6 x 1.8 cm well defined irregular opacity suggestive of malignancy and axillary lymph node with preserved fat hilum (Figure 1). Her chest x-ray and ultra-sonogram of abdomen were within normal limits. Clinically she had stage II (T2 N0 M0) disease. Patient underwent left modified radical mastectomy (MRM). Histopathology examination of MRM specimen showed a 3 x 2 x 1.5 cm circumscribed mass lesion. It was infiltrating ductal carcinoma grade III, all margins of the MRM specimen were negative for malignancy and none of the lymph nodes were positive for tumor cells. The tumor cells were negative for estrogen receptor, progesterone receptor, and her2 U protein. The tumor had a proliferative index (Ki67) of 50%. Patient had stage II(pT2 N0 M0) disease and in view of her triple negative status she was planned for adjuvant chemotherapy (Adriamycin 60 mg/m^2 and cyclophosphamide 600 mg/m^2 every 3 weekly for 4 cycles followed by docetaxel 100 mg/m^2 every 3 weekly for 4cycles). The cumulative anthracycline dose was 180 mg/2 of duanorubicin and 240 mg/m2 of

Adriamycin which was within the safe limits. The patient has completed the treatment and is on follow up and shows no evidence of disease at last follow up.

Table-1: Summary of published Cases of Carcinoma breast occurring as a second malignant neoplasm in survivors of AML

	Age (Years)	AML Subtype	Time interval for second malignancy	Histology Breast Lesion	Surgery	Radiation	Chemotherapy
Hashemi *et al*(7)	39	M4	2 years	Adeno-squamous carcinoma ER-/ PR-Her2U-Positive	Modified radical mastectomy	Yes	Docetaxel carboplatin and trastuzumab*6 cycles
Babu *et al*(6)		M2	7 years	Invasive duct carcinoma Triple negative breast cancer (TNBC)	Modified radical mastectomy	-	Three cycles of 5FU, epirubicin and cyclophosphamide (FEC) and three cycles of docetaxel
Present Case	55	M5	4 years	Invasive duct carcinoma TNBC	Modified radical mastectomy	-	Four cycles of FEC and Four cycles of docetaxel

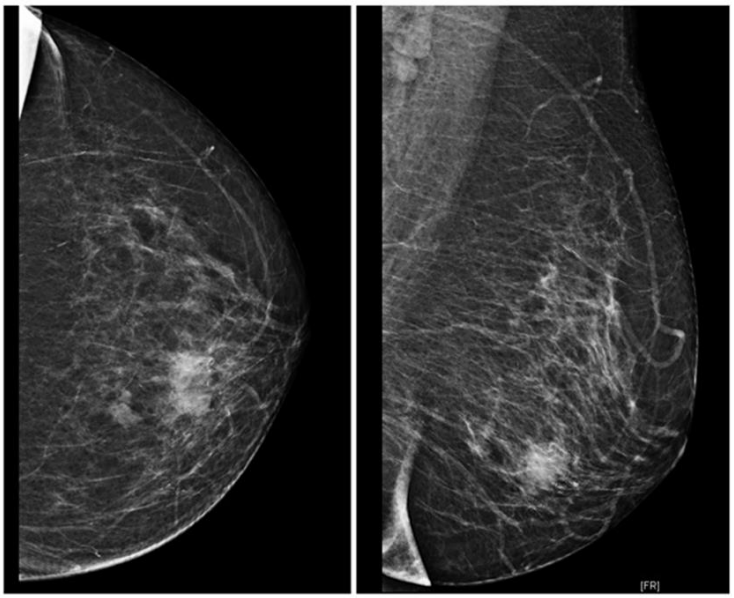

Fig-1: Mammogram (craniocaudal view and mediolateral oblique) showing, a 2.6 x 1.8 cm well defined irregular opacity in the left Breast

DISCUSSION

The advances in treatment of cancers have led to improved survival in these patients and one of the concerns among these long term survivors is the development of second malignant neoplasm. The latent period for development of topoisomerase II-induced secondary leukemias is generally lower (1–3 years), compared to other second malignant neoplasm's[3, 4]. Therapy related factors like chemotherapy, ionising radiation may contribute to the development of these malignancies. Breast cancers, thyroid cancers and sarcomas usually occur as a second malignancy in patients who recieved radiation as a part of treatment[5]. Acute myeloid leukemia (AML) in survivors of carcinoma breast is common but carcinoma breast occurring as second malignancy following AML is very rare. Only 2 cases of carcinoma breast occurring as a second malignancy following acute myeloid leukemia has been reported in literature[6, 7]. The

clinical features and treatment in these cases along with the present case is summarised in table 1.

All the 3 patients underwent a modified radical mastectomy as local treatment and one patient required adjuvant radiation for breast cancer as the patient had node positive disease. All the patients had hormone negative disease and one patient had Her2 U positive disease. All the patients underwent adjuvant chemotherapy with 2 patients receiving sequential anthracycline and taxane. One patient who was Her2 U positive had recieved docetaxel carboplatin and trastuzumab for 6 cycles and then continued on herceptin[7]. One important aspect that has to be taken into account is the cumulative dose of anthracyclines recieved by the patient[8]. Pre treatment assessment of cardiac status with a multiple gated acquisition scans may be good approach in such patients[9]. The total cumulative dose of anthracycline needs to be kept within safe limits and usually 3-4 cycles of anthracycline followed by sequential taxanes may be a logical approach. Prompt diagnosis and early initiation of radical treatment is important for the possible cure in these patients. Although rare breast cancer can occur as a second malignant neoplasm after treatment of breast cancer and needs to be investigated and staged like any other breast cancer. The management must follow the general guidelines for the management of breast cancer except that the higher risk of cardiotoxicity and cumulative dose of anthracyclines must be kept in mind while planning treatment in these patients.

REFERENCES

1. Lim JW, Yeap FS, Chan YH, Yeoh AE, Quah TC, Tan PL. Second Malignant Neoplasms in Childhood Cancer Survivors Treated in a Tertiary Paediatric Oncology Centre. Ann Acad Med Singapore. 2017 Jan;46(1):11–9.
2. Leung W, Ribeiro RC, Hudson M, et al. Second malignancy after treatment of childhood acute myeloid leukemia. Leukemia. 2001 Jan;15(1):41–5.
3. Kumar S. Second Malignant Neoplasms Following Radiotherapy. Int J Environ Res Public Health. 2012 Dec;9(12):4744–59.
4. Ng AK, Kenney LB, Gilbert ES, Travis LB. Secondary malignancies across the age spectrum. Semin Radiat Oncol. Semin Radiat Oncol. 2010 Jan;20(1):67-78.
5. Braunstein S, Nakamura JL. Radiotherapy-Induced Malignancies: Review of Clinical Features, Pathobiology, and Evolving Approaches for Mitigating Risk. Front Oncol. 2013 Apr 3;3:73.
6. Babu G, Saldanha SC, Babu MS, et al. Breast cancer as second malignant neoplasm after acute myeloid leukemia: A rare occurrence. Clin Cancer Investig J. 2016 Sep; 24(5):333-5.
7. Hashemi SM, Mahmoudi Shan S, Jahantigh M, Allahyari A. Atypical breast adenosquamous carcinoma following acute myeloid leukemia in a middle-aged woman: A case report. Mol Clin Oncol. 2017 Feb;6(2):271–5.
8. Volkova M, Russell R. Anthracycline Cardiotoxicity: Prevalence, Pathogenesis and Treatment. Curr Cardiol Rev. 2011 Nov;7(4):214–20.
9. Shureiqi I, Cantor SB, Lippman SM, Brenner DE, Chernew ME, and Fendrick AM. Clinical and economic impact of multiple gated acquisition scan monitoring during anthracycline therapy. Br J Cancer. 2002 Jan 21;86(2):226–32.