Case Report

Hodgkin's lymphoma of the breast: A rare occurrence

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ABSTRACT

Breast lymphoma is a rare condition, and both as a primary and a metastatic manifestation. The primary form has an incidence ranging from 0.04% to 0.5% of all breast neoplasms, whereas the metastatic form has an incidence of 0.07%. Hodgkin's lymphoma of the breast is a very rare entity both as primary and as well as secondary. Hereby, we report a case of 57-year-old lady presented with a left-sided breast lump with axillary lymphadenopathy. Fine-needle aspiration cytology and histopathological study revealed features of Hodgkin's lymphoma. Fluorodeoxyglucose positron emission tomography scan showed neoplastic lesions at left breast, axilla, thigh, pelvis and inguinal region. She presented with cervical lymphadenopathy, 4 years back, diagnosed as Hodgkin's lymphoma for which she received 12 cycles of chemotherapy followed by thoracic field radiotherapy. Now the patient is further on chemotherapy for recurrence and is being followed-up.

Key words: Breast, chemotherapy, Hodgkin's lymphoma

INTRODUCTION

Malignant lymphoma comprises <0.5% of breast cancer (BC), and 17% of secondary breast locations are lymphomas and 0.7% of all non-Hodgkin's lymphomas (NHL) have a breast localization.[1-5] Primary breast lymphoma (PBL) is a rare disease (accounts for 0.04–0.5% of all breast malignancies) and even more rare is a metastatic localization of lymphoma to the breast (accounts for 0.07% of all breast malignancies), which is usually associated with other extranodal lymphoma.[1-5] Here we report a case of Hodgkin's lymphoma, which recurs at breast after 4 years.

Epstein–Burr virus (EBV) has been postulated to play a role in the pathogenesis of classical Hodgkin's lymphoma (CHL). EBV is found in only a proportion of cases, particularly in mixed cellularity and lymphocyte-depletion variant, but a search for other viruses has been unsuccessful.[6] Immunodeficienct states such as HIV infection may predispose to EBV-associated CHL. In tropical regions, up to 100% of CHL cases are EBV-positive. It is possible that EBV infection of a B-cell replaces one of the genetic alterations necessary for M the development of CHL.[6]

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CASE REPORT

A 50-year-old lady presented with 4 cm × 3 cm × 3 cm left breast lump at upper outer quadrant along with left axillary lymphadenopathy for 3 months duration [Figure 1]. Her other hematological and biochemical parameter including tumor markers (carcinoembryonic antigen, CA 125 and α-fetoprotein) are within normal limit except lactate dehydrogenase, markedly raised. Fine-needle aspiration cytology of the lump showed polymorphic type of cell population comprised of immature and mature lymphoid cells mainly and few polymorphs. Few Reed–Sternberg type giant cells are seen [Figure 2]. Incisional biopsy from the lump also showed polymorphic type cell population consist both mature and immature lymphoid cells and few polymorphs along with few Reed–Sternberg cells [Figures 3 and 4]. These features were consistent with Hodgkin's lymphoma. A whole body fluorodeoxyglucose positron emission tomography scan was done, which revealed neoplastic left-sided breast nodule along with

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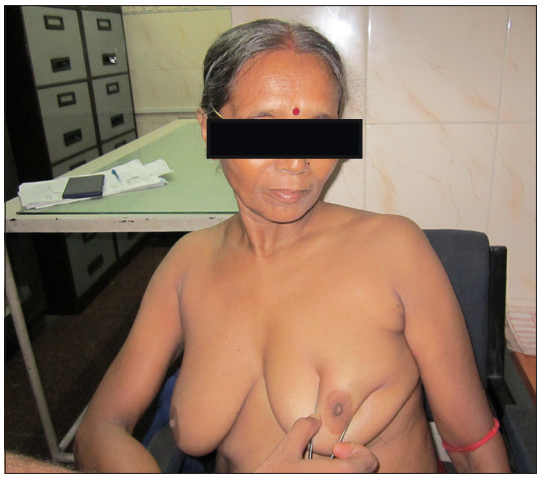

Figure 1: Patient with left breast lump

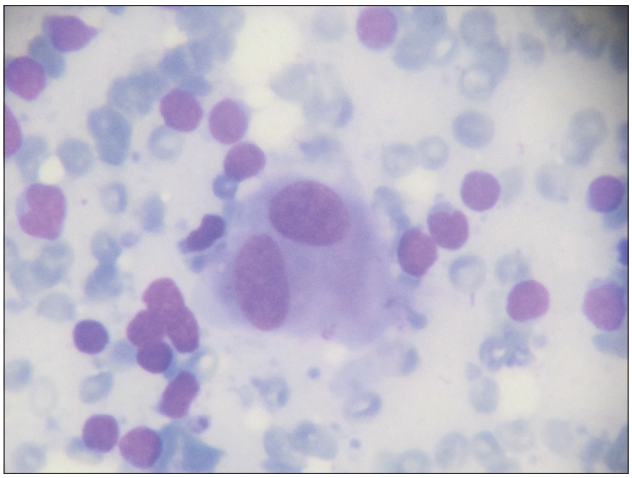

Figure 2: Fine-needle aspiration cytology smear shows one Reed–Sternberg cell in the background of mature and immature lymphoid cell population (Photomicrograph, ×400; H and E)

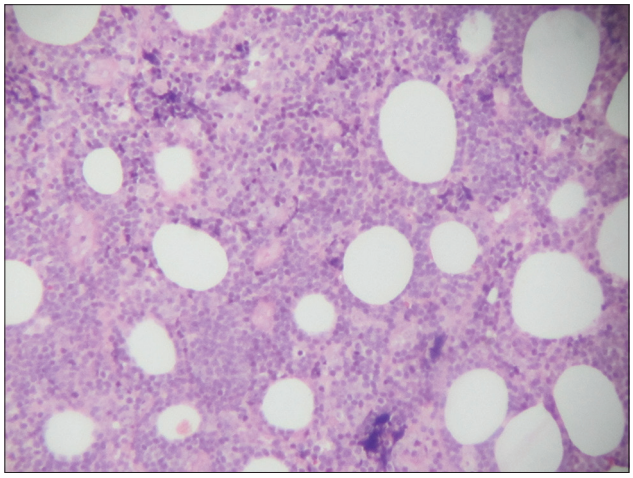

Figure 3: Histopathological section shows polymorphic cell population, mostly composed of lymphoid cells and numerous lipid droplets (Photomicrograph, ×40; H and E)

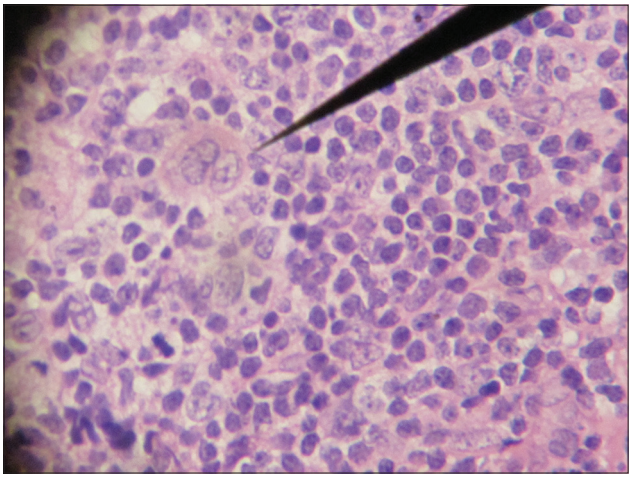

Figure 4: Histopathological section shows polymorphic cell population composed mostly of lymphoid cells, both mature and immature type and few polymorphs. One Reed–Sternberg cell marked with an arrow (Photomicrograph, ×40; H and E)

neoplastic lesions at left axilla, thigh, pelvis and inguinal region [Figure 5].

Four years back, she presented with cervical lymphadenopathy and was diagnosed as Hodgkin's lymphoma (mixed cellular variant). She was treated with 12 cycles of chemotherapy of Adriamycin, Bleomycin, Vincristine and Dacarbazine (ABVD) regimen followed by thoracic field radiotherapy.

DISCUSSION

Primary breast lymphoma is a rare entity accounting for only 1.7–2.2% of the extranodal lymphomas and 0.38–0.7% of NHL.[7] It comprises about 0.04–0.5% of all malignant breast lesions, while Hodgkin's lymphoma of the breast is even rarer.[7] A majority of tumors are of B cell lineage.[8]

Mixed cellularity Hodgkin's lymphoma comprises 20–25% of CHL and median age is 38 years and 70% effected individual are male.[6] EBV has been postulated to play a role in the pathogenesis of CHL. EBV is found in only a proportion of cases, particularly in mixed cellularity CHL and lymphocyte-depleted CHL, but a search for other viruses has been unsuccessful.[6] Loss of immune surveillance inmmunodeficiency states such as HIV infection may predispose to the development of EBV-associated CHL. In tropical regions, up to 100% of CHL cases are EBV positive. It is possible that EBV infection of a B cell replaces one of the genetic alterations necessary for the development of CHL.[6] Our patient was a 57-year-old lady at the time of 1st presentation, and neither immunocomprised nor any EBV association could not be proved.

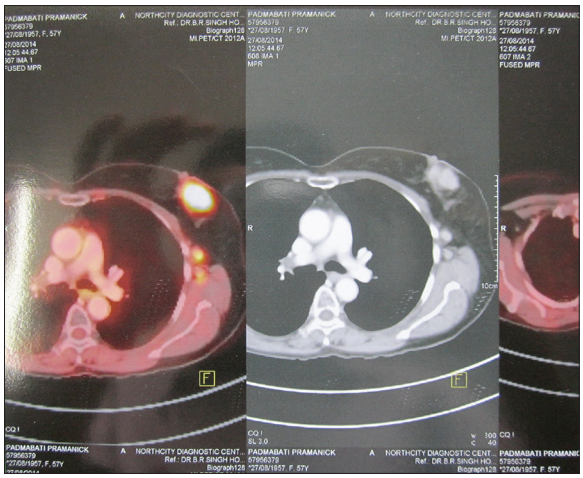

Figure 5: Fluorodeoxyglucose positron emission tomography scan shows neoplastic lesions at left breast and axilla

To the best of our knowledge, only a single case of primary Hodgkin's lymphoma of the breast was reported previously, where 63-year-old female presented with axillary lymphadenopathy and breast lump was the extension of the axillary mass.[9] That patient was treated with chemotherapy.[9] Our patient primarily presented with cervical lymphadenopathy, but 4 years after chemotherapy the disease recurred along with extra nodal manifestations. She was again further planned for chemotherapy.

Several studies have reported an increased risk of development of breast carcinoma in women with the previous diagnosis of Hodgkin's disease (HD).[10] For an Hodgkin's disease survivor who was treated at an age of 25 years with a chest irradiation dose of at least 40 Gy without alkylating agents, estimated cumulative risk of BC by age 35, 45, and 55 years were 1.4%, 11.1%, and 29%, respectively.[11] In patients treated for HD, BC was the most common solid tumor (standardized incidence ratio 75.3; 95% confidence interval [CI], 44.9–118.4), with an estimated actuarial incidence in women that approached 35% (95% CI, 17.4–52.6%) by 40 years of age.[12] Previous history of malignant lymphoma is a negative prognostic factor for women diagnosed subsequently with BC. Recently, ELIOT (intraoperative radiotherapy with electrons) has been described as a new option for early BC patients previously treated for HDs.[13] Our patient in her primary episode of Hodgkin's lymphoma, received 12 cycles of chemotherapy (ABVD regimen) and thoracic field radiation and the disease recurred with both nodal and extra nodal manifestation involving the breast but ductal carcinoma of breast did not develop.

Rahmat *et al*. showed mastectomy or wide excision is no longer indicated for PBL and can be avoided.[9] The combination of chemotherapy and radiotherapy or chemotherapy alone has recently been used for the treatment of PBL.[9] Combined modality therapy consisting of CHOP (cyclophosphamide, doxorubicin, vincristine, prednisolone) and involved field radiotherapy is regarded as the best treatment in patients with PBL.[2,5] The best outcome was noted in patients with diffuse B-cell lymphoma breast who were treated with a combination of limited surgery, anthracycline-containing chemotherapy, and involved field radiotherapy, as reported by the International Extranodal Lymphoma Study Group.[14] In our case also, we decided to start combination of chemotherapy and radiotherapy.

Aim of this paper is to highlight an uncommon oncologic disorder such as Hodgkin's lymphoma of breast, highlighting its clinical, radiological, pathological presentation and to discuss about the possible mode of treatment of this kind of patients.

REFERENCES

1. Gualco G, Bacchi CE. B-cell and T-cell lymphomas of the breast: Clinical – Pathological features of 53 cases. Int J Surg Pathol 2008;16:407-13.
2. Canda AE, Sevinc AI, Kocdor MA, Canda T, Balci P, Saydam S, *et al.* Metastatic tumors in the breast: A report of 5 cases and review of the literature. Clin Breast Cancer 2007;7:638-43.
3. Cohen PL, Brooks JJ. Lymphomas of the breast. A clinicopathologic and immunohistochemical study of primary and secondary cases. Cancer 1991;67:1359-69.
4. Talwalkar SS, Miranda RN, Valbuena JR, Routbort MJ, Martin AW, Medeiros LJ. Lymphomas involving the breast: A study of 106 cases comparing localized and disseminated neoplasms. Am J Surg Pathol 2008;32:1299-309.
5. Ganjoo K, Advani R, Mariappan MR, McMillan A, Horning S. Non-Hodgkin lymphoma of the breast. Cancer 2007;110:25-30.
6. Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, *et al*. WHO Classifi cation of Tumours of Haematopoietic and Lymphoid Tissues. 4th ed. France; International Agency for Research on Cancer (IARC) Lyon. 2008. p. 321-34.
7. Park YH, Kim SH, Choi SJ, Ryoo BY, Kang YK, Lee SS. Primary malignant lymphoma of the breast: Clinicopathological study of nine cases. Leuk Lymphoma 2004;45:327-30.
8. Liu MT, Hsieh CY, Wang AY, Pi CP, Chang TH, Huang CC, *et al*. Primary breast lymphoma: A pooled analysis of prognostic factors and survival in 93 cases. Ann Saudi Med 2005;25:288-93.
9. Rahmat K, Yip CH, D'Cruz NR, Jayaprasagam KJ, Wong KT, Moosa F. A rare case of Hodgkin's breast lymphoma masquerading as locally advanced breast carcinoma. Indian J Cancer 2011;48:118-20.
10. Di Nubila B, Meroni S, Bonello L, Peccatori F, Cassano E, Bellomi M. Breast ductal carcinoma and metastatic lymphoma to the contralateral breast in patient with cutaneous non-Hodgkin lymphoma. Hippokratia 2011;15:84-6.
11. Travis LB, Hill D, Dores GM, Gospodarowicz M, van Leeuwen FE, Holowaty E, *et al.* Cumulative absolute breast cancer risk for young women treated for Hodgkin lymphoma. J Natl Cancer Inst 2005;97:1428-37.
12. Friedberg JW. Secondary malignancies after therapy of indolent non-Hodgkin's lymphoma. Haematologica 2008;93:336-8.
13. Intra M, Gentilini O, Veronesi P, Ciocca M, Luini A, Lazzari R, *et al.* A new option for early breast cancer patients previously irradiated for Hodgkin's disease: Intraoperative radiotherapy

with electrons (ELIOT). Breast Cancer Res 2005;7:R828-32.
14. Ryan G, Martinelli G, Kuper-Hommel M, Tsang R, Pruneri G, Yuen K, *et al*. Primary diffuse large B-cell lymphoma of the breast: Prognostic factors and outcomes of a study by the International Extranodal Lymphoma Study Group. Ann Oncol 2008;19:233-41.

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