Primary breast lymphoma: a case report and review of the literature

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Abstract

Primary breast lymphoma (PBL) represents 0.04-0.5% of all malignant breast tumors, <1% of all patients with non-Hodgkin's lymphomas and 1.7-2.2% of all patients with extra nodal lymphomas. Despite the high prevalence of breast cancer, primary breast lymphoma is very rare. We report a rare case of PBL, successfully treated with surgery, chemotherapy and radiotherapy. This is the first case of PBL to be reported from Sudan to our knowledge.

Introduction

Primary breast lymphoma (PBL) is rare, representing 0.04-0.5% of all malignant breast tumors, <1% of all patients with non-Hodgkin's lymphomas and 1.7-2.2% of all patients with extra nodal lymphomas.[1] It is defined as a malignancy primarily occurring in the breast in the absence of previously diagnosed lymphoma. It occurs almost exclusively in women and is bilateral in 11% of the cases.[1] The median patients' age for PBL is 60-65 years. Almost 50% of PBL are B cell lymphomas, mostly CD20 positive. 15% are follicular, MALT 12.2%, with Burkett and Burkett's like lymphomas constituting 16.3% respectively. Other types include marginal zone lymphoma, small lymphocytic lymphoma and anaplastic large cell lymphoma. The most common type of PBL is diffuse large B cell lymphoma (DLBCL).[2]

Case Report

A 56-year-old Sudanese multipara woman with WHO performance status of 1, presented with a central mass in the right breast. It was located just above the areola and measured 4x4 cm. On examination, the lesion was firm, mobile with no attachment to the skin or the chest wall. In the ipsilateral right axilla, there was a firm mobile node which measure 3x2 cm was detectable. The patient described no loss of weight, excessive sweating or fever. She underwent a Tru-cut biopsy, which was reported as non-Hodgkin's lymphoma. On immunohistochemistry, the lesion was found to be CD20 positive, CD3 negative (Figures 1 and 2).

A CT chest, abdomen and pelvis and bone scan failed to demonstrate any other sites of disease. ECHO was normal (EF 65%), as well as CBC, UE and LFT. She had a wide local excision. Pathology confirmed a 4x3 cm non-Hodgkin's lymphoma mass (CD20 positive, CD3 negative, CD5 negative, Ki67 50%). The excision margins were negative and there was no evidence of lympho-vascular invasion. Bone marrow was normal, ESR = 59. LDH = 145 U/L. The patient was then commenced on 3 cycles of RCHOP (cyclophosphamide = 750 mg/m^2, vincristine 1.4 mg /m^2 = 2 mg, adriamycin = 50 mg/m^2, rituximab = 375 mg/m^2 and prednisolone 100 mg daily for 5 days) with allopurinol cover and hydration. She tolerated her treatment very well. Additionally she had a course of external radiation to the chest wall, supraclavicular fossa and the axilla (40 Gy in 15 fractions) by Co 60. This was followed by three more cycles of R-CHOP. She was regularly attending the outpatient clinic and was free of any evidence of disease when last seen 2 years after treatment.

Discussion

We report a rare case of primary breast lymphoma, PBL, successfully treated with surgery, chemotherapy and radiotherapy. This is the first case of PBL to be reported from Sudan to our knowledge.

The diagnostic criteria for PBL were described by Weisman and Liao in 1972 and remain the standard definition for this disease.[3] It include the following criteria: i) the clinical site of presentation is the breast; ii) history of previous primary lymphoma or evidence of wide spread disease is absent at diagnosis; iii) lymphoma is demonstrated with close association with the breast tissue in the pathology specimen; iv) ipsilateral lymph node may be involved if they develop simultaneously with the primary breast tumor.[3] The important prognostic factors for PBL are: Ann Arbor stage, size >4-5 cm, performance status, elevated LDH level, type of surgery, radiotherapy administration and chemotherapy treatment.[4-6]

Baseline data from large clinical trials showed that 25-37% of patients have significant symptoms. However in 26 original publications about PBL, the range was 0-22%.[7]

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Surgery should be reserved for diagnosis and must be minimally invasive, as extensive surgery carry a high morbidity rate without proven advantage over lumpectomy alone. Axillary clearance has no role in treatment of PBL.[4]

Radiotherapy for localized PBL following surgery or chemotherapy decrease ipsilateral local recurrence significantly.[4]

Jennings reported a meta-analysis of 465 PBL patients treated during the period between 1972 and 2005, with a mean follow up period of 48 month. They concluded that mastectomy didn't offer any benefit and treatment that included radiotherapy in stage 1, node negative disease, showed benefit in overall survival OS and disease free survival DFS (P=0.002). They emphasized the importance of nodal involvement.[4]

Miller reported that patients treated with three cycles of CHOP and involved field radiotherapy have a significantly better DFS and OS than patients treated with CHOP alone, and that three cycles of CHOP and involved field radiotherapy are superior to eight cycles of CHOP alone for the treatment of localized intermediate and high grade PBL. They also found that the use of rituximab with CHOP increase survival significantly better than CHOP alone.[8]

The role of CNS prophylactic treatment in PBL DCBCL has been addressed in many publications. In the largest series of PBL, the incidence of CNS relapse was 4-5%, similar to that of nodal DCLBC. Other experts reported that CNS prophylaxis is not justified.[9,10]

Lyons reported 17 cases of PBL treated at the Cleveland clinic foundation between 1980 and 1996. All of them were staged as 1E (disease confined to the breast) or breast and ipsilateral axillary nodes involvement.

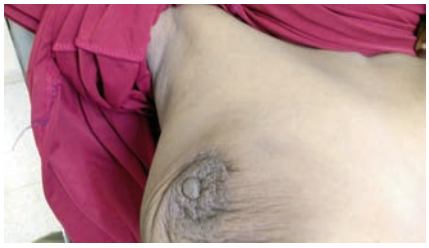

Figure 1. Photograph demonstrates slight skin bulge caused by the supra-areolar lump.

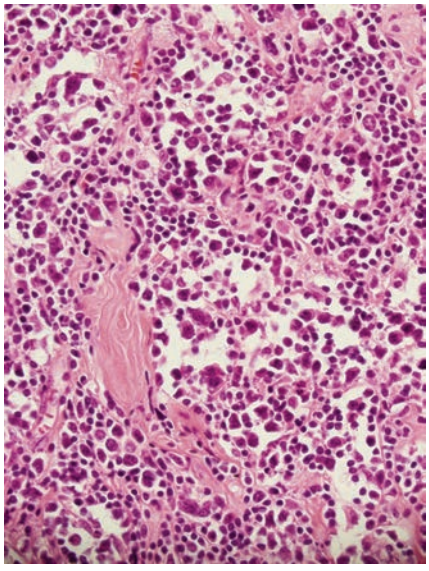

Figure 2. Immunohistochemistry shows the lesion to be CD20 positive, CD3 negative.

They were treated with surgery, radiotherapy and chemotherapy combination. Median follow up period was 34 months (range of 7-38 months). Five patients survived for at least 5 years after diagnosis.[11]

Surgery in PBL varied from biopsy only to radical mastectomy. Both chemotherapy and radiotherapy were used as adjuvant or primary treatment and a standard consensus for treatment is not available.[12]

William reported on 92 publications, with 465 patients treated for PBL (age range 17-95 years; mean = 54 years). The commonest type of PBL was diffuse large cell lymphoma. Five years DFS was 44.5%. They concluded that treatment with mastectomy only didn't offer survival advantage, treatment that included radiotherapy in stage 1E node negative patients showed benefit in OS and DFS. Treatment that included chemotherapy in stage 2 with nodes involvement showed overall survival and DFS benefit. They also found that histology grade predicted survival.[13]

Ryan *et al.* in 2008 published the results of a retrospective international study of 204 patients with PBL DLBCL. Median age was 64 years with median OS = 8 years and median DFS = 5.5 years. They concluded that the combination of limited surgery, Adriamycin based chemotherapy, and involved field radiotherapy produced the best outcome in the pre rituximab era.[14]

Ganjo *et al.* in 2007, reported the Stanford database of PBL cases, in 1981-2005 period. They found 37 cases. DLBCL was the commonest type (49%). Patients presented with stage 1E or 2E. The DLCBL confirmed patients received doxorubicin based chemotherapy and involved field radiotherapy (dose range 3600-5040 cgy). Among the DLCBL patients, 5 years DFS = 61% and OS = 82%.[12]

Conclusions

Despite the high prevalence of breast cancer, primary breast lymphoma is very rare. We documented reporting the first case of primary breast lymphoma from Sudan, diagnosed and successfully treated with surgery, chemotherapy and radiotherapy.

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