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Primary Burkitt lymphoma of breast presented by bilateral breast enlargement

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Abstract

Burkitt lymphoma is a very aggressive B cell lymphoma, which can rarely involve breast tissue. Although it usually affects children, but primary breast lymphomas usually, occur in older age. In this report, we present a rare case of Burkitt lymphoma in a 40-year-old woman primarily presented by bilateral breast enlargement which shortly followed by gastrointestinal and bone marrow involvement.

Keywords: Burkitt lymphoma, Breast cancer, Malignancy

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Introduction

Burkitt lymphoma is a very aggressive B cell type lymphoma and is one of the fastest growing malignancies. It has three subtypes including endemic, sporadic and immunodeficiency associated types (1,2). The sporadic variant usually affects children and presents with abdominal mass; however, it can become disseminated and involve bone marrow and other organs.

Breast tissue rarely gets involved by malignant lymphoma and it only represents 0.05-0.5% of breast malignancies (3). Most of the breast lymphomas are secondary involvement of breast by a systemic malignant lymphoma, since primary involvement with malignant lymphoma especially Burkitt lymphoma is very rare (4). In this case, we reported an unusual presentation of Burkitt lymphoma in a 40-year-old woman who primarily presented by bilateral breast enlargement and masses which shortly followed by gastric ulcer due to lymphomatous spread and bone marrow involvement.

Case Presentation

A 40-year-old woman was admitted to our hospital due to bilateral significant enlargement of breasts during three weeks. The patient's routine laboratory results including cell blood count (CBC) were within normal range. On physical examination, both breasts were diffusely infiltrated and enlarged with peau d'orange appearance of skin without nipple retraction. Bilateral axillary lymphadenopathies were also present. The patient underwent ultrasound study (US) which revealed diffuse infiltration of bilateral breasts. Considering high suspicion of malignancy, the patient underwent core needle biopsy. Pathologic evaluation of the received samples from breast tissue revealed diffuse infiltration of breast tissue with atypical lymphoid cells. Immunohistochemistry (IHC) staining was conducted for CD20, cytokeratin (CK), leukocyte-common antigen (LCA) markers and revealed positive LCA and CD20 and negative CK results (Figure 1).

Key point

Primary burkitt lymphoma of breast is a very rare condition but thorough physical examination and being aware of possible rare conditions would help physicians to make a correct diagnosis and therapeutic approach.

Few days later, the patient complained of dyspepsia and epigastric pain radiating to her shoulders. The patient underwent upper gastrointestinal (GI) endoscopy, which revealed erythema and polypoid lesions in duodenal first (D1) and second (D2) parts. Biopsies were obtained from the mentioned lesions.

Pathologic evaluation of duodenal samples also revealed duodenal mucosa infiltrated

by atypical lymphoid cells with nuclear pleomorphism. IHC staining was conducted for CD20, CD3, MIB1 (Ki-67) markers and revealed positive results for CD20 and negative for CD3. MIB1 was positive in more than 95% of the malignant cells. The patient diagnosis was lymphomatous involvement of breast and GI tract. For further evaluation and tumor staging, the patient underwent thoracoabdominal computed tomography (CT) scan and also bone marrow evaluation.

Thoracic CT scan revealed multiple anterior mediastinal and also bilateral axillary lymphadenopathies. Abdominopelvic CT showed paraaortic lymphadenopathies, renal hilar infiltration and bilateral adnexal masses with mild ascites.

Bone marrow aspiration and trephine biopsy revealed diffuse marrow infiltration by atypical blast cells with high nuclear/cytoplasmic (N/C) ratio, fine nuclear chromatin, prominent nucleoli and cytoplasmic vacuoles. IHC staining was conducted on bone marrow biopsy specimen, which revealed diffuse positive staining for CD20, CD10 and MIB-1 markers. MIB-1 was positive in more than 95% of the tumor cells (Figure 2). At this time, the patient was anemic with hemoglobin of 5.3 mg/dL.

Finally the patient was diagnosed as Burkitt lymphoma and underwent chemotherapy with hyper-CVAD (cyclophosphamide, vincristine and adriamycin) regimen. The patient also underwent lumbar puncture for cerebral spinal fluid analysis and revealed no lymphomatous involvement.

Two weeks after treatment, the breast sizes were reduced. Patient's CBC also improved and patient hemoglobin increased to 9.6 g/dL.

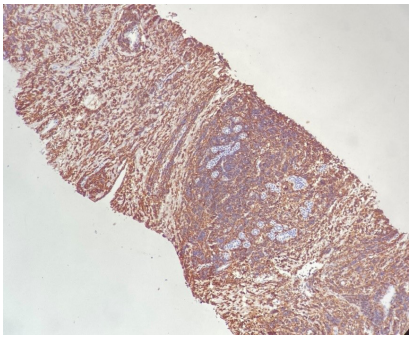

Figure 1. Needle biopsy of the breast tissue stained for CD20 marker by immunohistochemistry method (IHC) showing diffuse and strong positive result (IHC, ×20).

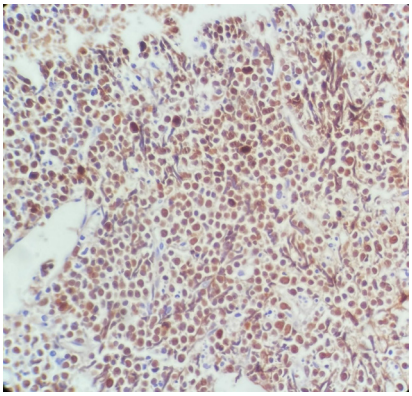

Figure 2. Bone marrow trephine biopsy stained for MIB1 (Ki-67) marker by immunohistochemistry method (IHC) showing more than 95% nuclear staining (IHC, ×20).

Discussion

Breast lymphoma is a rare condition and primary breast lymphoma account for only about 0.05%-0.5% of breast malignancies (3). Most of the breast lymphomas are of B cell type and the patients' median age is about 60-65 years (5) Our patient was 41 years old, presented by bilateral breast enlargement; however, in a very few days GI and bone marrow involvement were detected. Burkitt lymphoma is very aggressive and rapidly progressing malignancy and as we presented in case, our patient's primary disease initiation was with breast involvement but rapidly progressed to a systemic Burkitt lymphoma. Various subtypes of non-Hodgkin lymphomas can involve breast tissue including large B cell lymphoma, follicular lymphoma and marginal zone lymphoma but the least frequent one is Burkitt lymphoma. According to the literature, most of the breast lymphomas present as unilateral breast mass (7), while our patient had bilateral breast infiltration with no mass formation. This kind of involvement, which can mimic inflammatory breast carcinoma, is very rare and has been reported only in a few cases of breast Burkitt lymphoma, which were during or immediately after pregnancy (7).

There are different suggestions for treatment of breast lymphoma ranging from radical mastectomy to radio/chemotherapy; however, data on radiotherapy and chemotherapy are much more promising. In our case, two weeks after receiving chemotherapy regimen of hyper-CVAD, the patient went into remission, her breast infiltrations were resolved and CBC findings became normal. Therapeutic results for Burkitt lymphoma of other sites were also similar showing the main role of chemotherapy in controlling the disease and have suggested radiotherapy for tumors with CNS involvement (8). Our patient experienced a very rapid disease progression, which has not been reported in previous reports. We observed a very rapid progression of the disease with involvement of GI tract, breasts, ovaries and intra-abdominal lymph nodes in a very short time and also a dramatic treatment response to chemotherapy since the follow up US study revealed no lymphadenopathy, ovarian or GI tract involvements. Breast US study was also normal after the treatment. By the time of reporting this case, our patient is hopefully in remission.

Conclusion

Burkitt lymphoma is an aggressive and rapidly progressing

malignancy, which needs very quick diagnostic and therapeutic interventions to save patient life. Primary breast lymphoma is a very rare condition specially the Burkitt subtype but thorough physical examination and being aware of possible rare conditions would help the physicians to make a correct diagnosis and therapeutic approach.

Authors' contribution

RA, AA and HM were the principal investigators of the study. YF and LM were involved in diagnosis and preparing the report. RA and AA revisited the manuscript and critically evaluated the intellectual contents. All authors participated in preparing the final draft of the manuscript, revised the manuscript and critically evaluated the intellectual contents. All authors have read and approved the content of the manuscript and confirmed the accuracy or integrity of any part of the work.

Conflicts of interest

The authors declare that they have no competing interests.

Ethical issues

This case report was conducted in accord with the World Medical Association Declaration of Helsinki. Ethical issues (including plagiarism, data fabrication and double publication) were completely observed by the authors. The patient gave a signed consent for publication of this report.

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