CASE REPORT

A Case Report on Breast Carcinoma Co-Existing with Axillary Diffuse Large B Cell Lymphoma.

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Abstract

Simultaneous presentation of invasive breast carcinoma and diffuse large B cell lymphoma is a rare condition. We presented a case of a 63-year-old lady with diffuse large B cell lymphoma in the right axillary lymph nodes and co-existing invasive breast carcinoma in the right breast. She noticed a lump in her right breast by self-examination in July 2021, but she did not seek medical attention for that lump. She again noticed another lump at the right axilla in August 2021, and another lump at left axilla in September 2021. Then she consulted a surgeon and base line investigations were done. All the investigations were normal except the mammogram, which showed cancer in the right breast. The right mastectomy and right axillary clearance operation was done. The lymph nodes sections showed normal lymphoid architecture were totally obliterated due to diffuse sheet of proliferation of medium size to large lymphoid cells. These neoplastic lymphoid cells were CD3-, CD5-, CD20+, BCL2+, CD10-, BCL6-, Cmyc-, MUM1- with high Ki67 expression and it matched with diffuse large B cell lymphoma, activated B cell phenotype. The breast tumor mass showed normal architecture was effaced due to proliferation of neoplastic uniform epithelial cells which were dispersed as a single strand within a dense sclerotic stroma. These tumor cells are CD20-, ER+ and it was confirmed these tumor cells are not lymphoma cells and they are invasive carcinoma of the right breast. Double pathology of DLBCL and invasive carcinoma breast needs special attention for proper management.

Keywords: *Breast carcinoma, DLBCL in axillary lymph node, immunophenotyping of lymphoma, CD20 expression.*

Introduction

Simultaneous presentation of invasive breast carcinoma and diffuse large B cell lymphoma is a rare condition [1]. Diffuse large B cell lymphoma accounts for 25% to 35% of adult non-Hodgkin lymphomas in developed countries and, a higher percentage in developing countries [2]. Invasive breast carcinoma is the most common carcinoma in women, accounting for 23% of all cancers in women and it is more than twice as common as cancer at any other site [3]. The term multiple primary malignant tumors (MPMTs) are used when two or more independent primary malignancies of different histologies/origins in the same individual are found [4]. In large-scale study and review literature, the prevalence of MPMTs was between 0.73% and 11.7% [5, 6].

Case Report

A 63-year-old lady noticed a lump in her right breast by self-examination in July 2021, but she did not seek medical attention for that lump at that time. She again noticed the appearance of another lump at the right axilla in August 2021 and one more lump at left axilla in September 2021. Then she consulted a surgeon, and a baseline investigation was done. All the investigations were normal except the mammogram which showed cancer in the right breast. At that time, she had no definite B symptoms. She have no hepatosplenomegaly except axillary lymphadenopathy. There was no history of family members with breast cancer. She had menarche at the age of 13 years and menopause at the age of 42 years. She is single. The right mastectomy and right axillary clearance operation was done in December 2021. The lymph nodes sections showed total obliteration of normal lymphoid architecture due to diffuse sheet of proliferation of medium size to large lymphoid cells (Figure 1. A & B). These neoplastic medium size to large lymphoid cells were CD3-, CD5-, CD20+ (Figure 1. C), BCL2+ (Figure 1.
D), CD10- (Figure 1. E), BCL6-, Cmyc-, MUM1-, with high Ki67 expression (Figure 1. F) and it matched with diffuse large B cell lymphoma, non-germinal center B cell phenotype. The breast tumor mass showed normal architecture was effaced due to proliferation of neoplastic uniform epithelial cells which were dispersed as a single strand within a dense sclerotic stroma (Figure 2. A & B). These tumor cells are ER+ (Figure 2. C), CD20- (Figure 2. D) and it is confirmed these tumor cells were not lymphoma cells and they were invasive lobular carcinoma of the right breast. Bone marrow examination was done and no evidence of metastatic carcinoma or malignant lymphoma.

Discussion

Multiple primary malignant tumors (MPMTs) can arise at any age. Some clinical reports stated that the medium age of MPMTs patients was over 50 yrs. Here, our patient was 64 years old. According to SEER data results (1973-2003), the most common primary tumors in patients with MPMNs are breast carcinoma, prostate carcinoma, respiratory system and lung cancers, colorectal cancer, and urinary system cancers [7].

Most frequently observed tumor pairs (primary tumor- second tumor) in women were breast cancer-gynecologic cancer (9.7%), colorectal cancer-breast cancer (5.8%), breast cancer-colorectal cancer (4.5%), gynecologic cancer-breast cancer (3.8%) and malignant mesenchymal tumor combinations (3.2%) according to the study of Babacan NA et al. Here our study shows breast cancer and hematological cancer, diffuse large B cell lymphoma [8].

These diffuse large B cell lymphoma patients usually present with a rapidly enlarging tumor mass at single or multiple nodal or extra nodal sites, about half of them have stage I or II disease. Many patients are asymptomatic, but B symptoms and specific localizing symptoms may be present [9].

With the gene expressing profiling technique, the DLBCL can be divided into two main molecular subgroups; the germinal center B cell phenotype

(GCB) and activated B cell phenotype (ABC). Patients with germinal center B cell phenotype had a significantly better overall survival than those with activated B cell phenotype [10].

The relative frequencies of the GCB subtype and the ABC subtype vary based on geographical location, median age of the patient population, and methodology used, but they are about 60% and 40% respectively [11].

The distinction between ABC subtype and GCB subtype should be made in all cases of DLBCL at diagnosis and Hans algorithm is considered as an acceptable alternative method because it had high concordance with the gene expressing profiling results [12].

Hans algorithm includes CD10, BCL6 and MUM1, where GCB subtype is CD10+ or BCL6+/ CD10-MUM1- and ABC subtype is with CD10-/MUM1+ (BCL6 positive or negative) [13].

There was a tendency to improve survival in GCB and ABC subtypes receiving chemotherapy with Rituximab. In the study of Huang Hong-Hui et al suggested that in the CHOP therapy group, the molecular subtype of GCB had a significantly better prognosis than ABC subtype. However, there was no significant difference in the R-CHOP therapy group. This study showed that the addition of rituximab has altered the prognostic role of cell of origin [14].

Co-existing of breast carcinoma and diffuse large B cell lymphoma has never been reported in Myanmar and this might be a co-incidence and it has the possibility of a common link between the two cancers.

Conclusion

In the situation of two primary malignant tumors, a delay in diagnosing second primary malignancy may occur and this may affect overall treatment strategy and prognosis. Double pathology of DLBCL and carcinoma breast needs special attention for proper management. Histopathological examination and immunohistochemical markers are essential for the right diagnosis in both malignancies. Clinicians need to be aware of simultaneous presence of second primary cancer probabilities. Histopathologic evaluations and other ancillary measures of suspicious lesions for second tumors should be carefully proceeded.

Statement of ethic

The authors have no ethical conflicts to disclose. Informed consent was obtained from the patient.

Conflict of interest

The authors declare no conflict of interest.

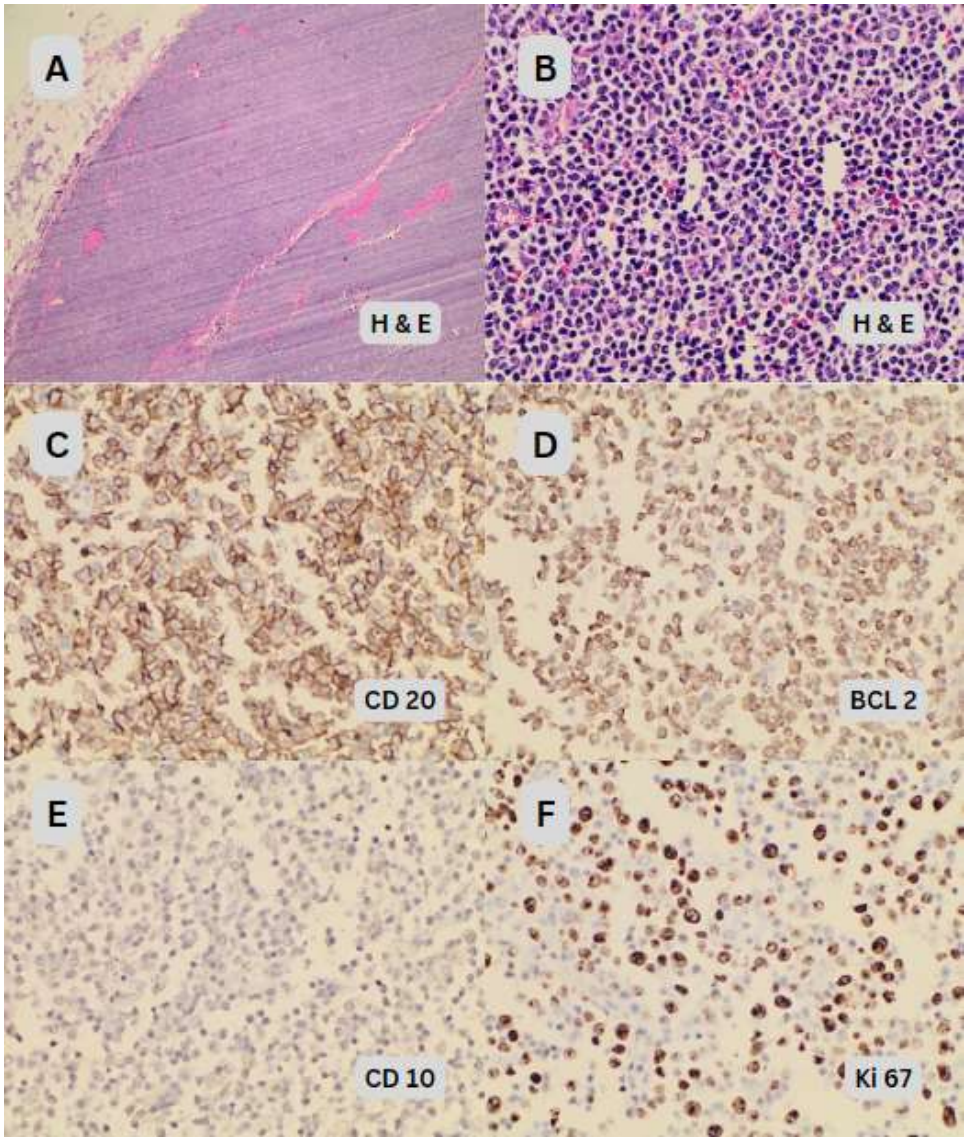

Figure 1(A-F). Diffuse Large B cell lymphoma**. A.** Low power view of axillary lymph node show total effacement of normal lymphoid architecture **B.** High power view showing proliferation of medium sized to large lymphoid cells with scanty cytoplasm, irregular nuclear outline, and prominent nucleoli. The neoplastic tumor cells show CD20+ in **Figure C**, BCL2+ in **Figure D**, CD10- in **Figure E,** and High Ki67 expression in **Figure F**.

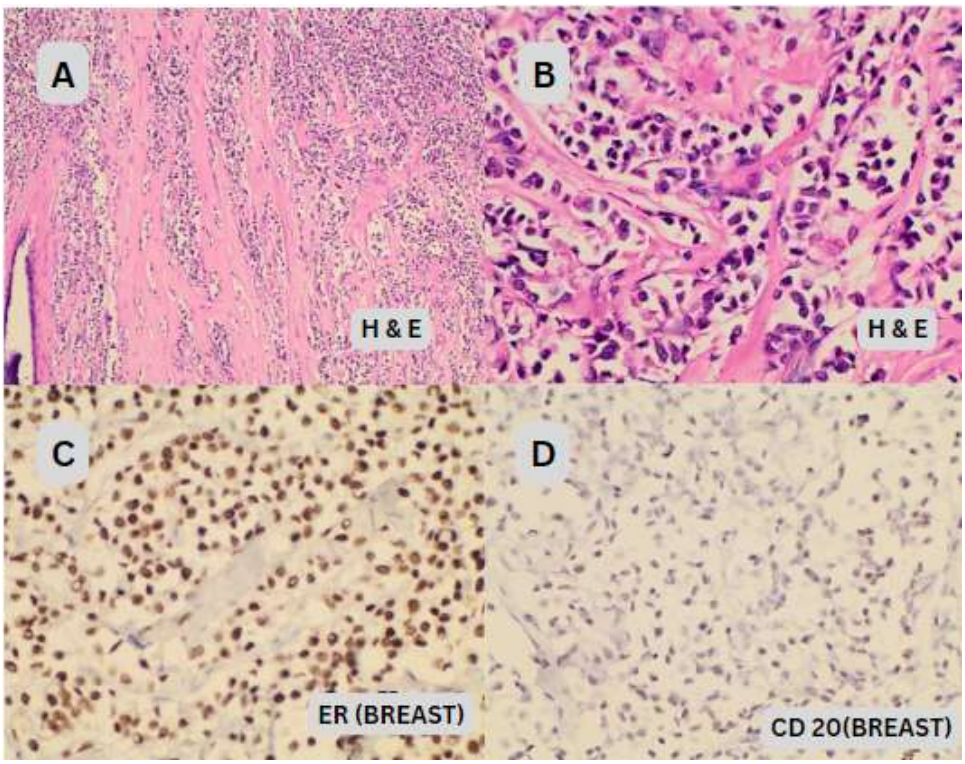

Figure 2(A-D). Invasive lobular carcinoma of the right breast. **A.** Low power view of invasive lobular carcinoma of breast, **B.** High power view shows invasive lobular carcinoma cells, **C**. Invasive carcinoma cells show positive expression of ER, and **D**. no expression to CD20 antibody.

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