New B-cell Lymphomas in the Setting of a Previous Rare Breast Implant–Associated B-cell Lymphoma

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Summary: We present a follow-up of a patient who underwent right-sided subtotal mastectomy and placement of right-sided saline implant in 1968 for a phyllodes tumor and then in 2012 was diagnosed with a rare B-cell type lymphoma of the right breast. In 2015, she was diagnosed with diffuse large B-cell lymphoma involvement of the left breast and left leg and experienced subsequent self-regression of leg lesions without therapy. (Plast Reconstr Surg Glob Open 2016;4:e1148; doi: 10.1097/GOX.0000000000001148; Published online 23 November 2016.)

Primary breast lymphoma comprises 0.5% of breast malignancies and is defined by the presence of a primary lymphoma within the breast with or without nodal involvement but no other extramammary sites of involvement. Lymphomas associated with breast implants are even rarer and are mostly of the T-cell type. These include approximately 60 reported cases of anaplastic large cell lymphoma associated with breast implants and 4 cases of cutaneous T-cell lymphoma. Only 5 cases of implant-associated B-cell types have been reported in the literature, including a previous case report about the patient described in this study published in Plastic and Reconstructive Surgery in 2014. The majority of T-cell and B-cell breast implant–associated lymphomas are well localized, and implant removal alone has been reported in several cases as satisfactory treatment. However, there is still no consensus on medical treatment as there are so few occurrences and limited long-term outcome studies. In this report, we provide updates regarding the patient described previously in Plastic and Reconstructive Surgery, specifically the presentation of diffuse large B-cell lymphoma (DLBCL) involvement of the left breast and left leg 3 years after the initial diagnosis.

CASE REPORT

In 1968, our patient, a white woman, underwent right-sided subtotal mastectomy and placement of a right-sided saline implant for a phyllodes tumor. Forty-four years later, in 2012, the patient underwent removal of the implant with complete capsulectomy for right breast discomfort and swelling. Histology of the periprosthetic fluid and inner capsule lining showed large neoplastic cells, with moderate amounts of cytoplasm and round to irregular nuclear contour. Immunohistochemistry (IHC) was positive for CD20, CD45, and B-cell lymphoma 6 (BCL-6) and negative for CD3, CD5, CD30, and anaplastic lymphoma kinase 1 (ALK-1). The patient was diagnosed with large B-cell lymphoma.

The initial bone marrow biopsy was negative, and the initial positron emission tomography–computed tomography (PET/CT) showed mildly increased activity only in the left breast, which subsequently resolved on serial scans. No chemotherapy or radiation was given because of the lack of evidence of disease elsewhere, and the patient continued to be monitored with PET/CT scans at 6-month intervals. The patient was asymptomatic and without evidence of disease until her follow-up appointment in June 2014 when she complained of mild fatigue. In December 2014, the patient complained of soreness in her left lateral chest and axillary region associated with a 1-month history of cough. Physical examination showed no masses or lymphadenopathy, and chest x-ray was negative.

In March 2015, the patient reported development of firm, tender nodules on her left leg near the knee. These shiny, pink lesions were associated with neuropathic pain and mild swelling of her leg. Mammography performed, thereafter, was negative; however, magnetic resonance imaging showed enhancement of the left breast.

In June 2015, the patient underwent a core needle biopsy of the left breast (Fig. 1) and a punch biopsy of a lesion in the left medial proximal pretibial region. Immunohistochemistry of both samples was positive for CD20, CD45, BCL-6, BCL-2, and MUM-1. The left breast biopsy was positive for CD5 and negative for CD10, ALK-1, and cyclin D1. The pathology of both left breast and left leg was consistent with DLBCL.

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The patient came to our dermatology clinic in August 2015 for evaluation of leg nodules undergoing spontaneous regression. Physical examination showed only one 12-mm pink nodule on the left proximal pretibial region, compared with 4 to 5 subcutaneous nodules that were observed 2 months earlier.

**DISCUSSION**

In this report, we present a case of DLBCL presenting 3 years after the initial diagnosis of breast implant-associated B-cell lymphoma. All of the patient’s biopsies are consistent with DLBCL, which is known to behave as an aggressive lymphoma. The original implant-associated lymphoma and the new breast lymphoma share a similar morphological and immunohistochemical profile except for CD5 positivity in the left breast lymphoma versus CD5 negativity in the right breast implant-associated lymphoma. This raises the question of whether the new breast lymphoma represents recurrent disease or a second primary neoplasm.

Expression of CD5 occurs in approximately 10% of DLBCL cases. Most CD5+ cases are suspected transformations of low-grade lymphomas. The presence of CD5 in the new left breast lymphoma may argue against recurrent disease and support transformation from an unrecognized low-grade lymphoma. However, phenotypic shift in recurrent lymphoma is not unusual, and our patient was extensively monitored after her original implant lymphoma without any evidence of low-grade disease. It is also possible that the patient’s left breast lymphoma is an independent primary neoplasm. The patient’s leg lymphoma and second breast lymphoma occurred concurrently and have similar immunohistochemical markers, supporting their relatedness. If this is the case, it is unclear which is the primary lesion. Primary cutaneous DLBCL, leg type is more frequent in women, especially after the sixth decade of life and can present with nodules, all of which are features consistent with our patient’s lymphoma. It mainly affects one or both legs but can affect any part of the body, which could be reflected in our patient’s breast involvement. Primary cutaneous DLBCL, leg type is an aggressive cancer with a poor prognosis; our case would be the third showing spontaneous resolution. However, we must also consider that the leg lymphoma could be a metastasis from the left breast lymphoma. To distinguish these possibilities would be difficult and would be unlikely to change management. The patient’s skin lesions resolved spontaneously, and she completed radiation therapy to the left breast in October 2015. As of her most recent PET/CT in June 2016, there was no evidence of active disease.

**CONCLUSIONS**

This case highlights the limited knowledge of the behavior of rare implant-associated B-cell type lymphomas and the importance of reporting long-term outcomes of patients with rare lymphomas to develop appropriate surveillance protocols.

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