

Breast Implant-Associated Anaplastic Large Cell Lymphoma- A Late Complication of Textured Breast Implant: Case Report

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1. Abstract

Breast implant associated-anaplastic large cell lymphoma (BIA-ALCL) is a rare but now well-recognized non-Hodgkins Lymphoma of T cell origin. World Health Organization first recognized this disease as a sequela of textured breast implant in 2016. This is a case report of a 75-year-old-female with a diagnosis of right breast cancer in 1996 treated with mastectomy and immediate reconstruction with a textured saline breast implant in 2001. Patient had started to notice an increase in size and firmness of the reconstructed breast twenty-three years later and was diagnosed with BIA-ALCL. She underwent removal of the breast implant and total capsulectomy. Patient currently remains recurrence-free. Her case is being presented to bring attention to a late complication of breast implants. The case report highlights the features, work-up, and treatment of BIA-ALCL.

2. Introduction

1.1. Breast implant associated-anaplastic large cell lymphoma (BIA-ALCL) was first described in 1997. Since then, there has been an increasing amount of research investigating the pathogenesis, epidemiology, work-up, clinical manifestations, and treatment of the disease. World Health Organization first recognized this malignancy in 2016 [1]. According to the American Society of Plastic Surgeons, approximately 1:2,207-1:86,029 women with textured implants are presently at risk for developing BIA-ALCL during their lifetime [2]. After the breast implant was placed in the appropriate position, it took an average of 11 years to establish a diagnosis of BIA-ALCL for 81% of the cases. However, it is to be noted that these figures are limited due to absent information of the implant type and plane of placement. No difference in cancer incidence has been found whether the breast implant was placed after breast cancer surgery versus for cosmetic reasons [3].

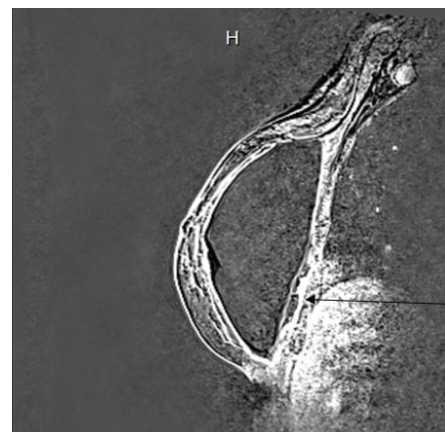
1.2. Typically, the lymphoma is localized, and patients have outstanding results with implant removal as well as full capsulectomy alone. However, a minority of patients end up developing extensive disease which necessitates systemic treatment [3]. Most of the cases have been linked to textured implants raising concerns that the texture of the surface of the implant causes some type of reaction in the surrounding cells leading to malignant transformation of lymphocytes [4]. Patients who present with delayed onset seroma have up to a 10% chance of being diagnosed with BIA-ALCL. Among all the diagnosis of BIA-ALCL, up to 80% of patients will have delayed seroma [3]. Patients usually present with the following features: breast enlargement, lump, pain, and asymmetry [2,3]. Some cases present with a palpable mass. Other diagnoses that may be considered are external trauma and infections. Uncommonly, patients present with lymph node involvement, cutaneous skin lesions, capsular contractures, and B symptoms [3]. The diagnosis is established by cytology, flow cytometry, and immunochemistry [6]. Of note, twenty percent of cases include lymph nodes; they are associated with a worse outcome compared to those with non-lymph nodal involvement. Metastasis to liver, small bowel, CNS, bones, chest wall, and mediastinum have been reported. Interestingly, there have been

a few reported cases with bilateral implants associated BIA-ALCL [3]. A case report is presented of BIA-ALCL that was diagnosed twenty-three years after placement of a textured saline implant after mastectomy. The disease was limited to the capsule. Thus, patient underwent complete capsulectomy along with removal of textured saline implant.

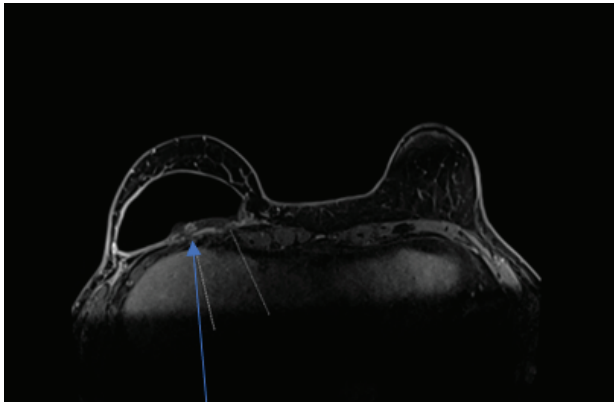
3. Case Presentation

3.1. 75-year-old female was diagnosed with stage T1N0 right breast cancer in 1996. She underwent right mastectomy followed by chemotherapy. No radiation treatment was given. A retropectoral adjustable implant was placed at the time of surgery. Five years later, a textured saline implant was placed.

3.2. Patient noticed increasing size and firmness of the right reconstructed breast along with a bubble near the surface in late 2023. Neither pain nor erythema were noted. Same findings were confirmed on physical exam. In January 2024, the textured saline implant that was placed in right subpectoral area was removed along with partial capsulectomy of the anterior segment of capsule. A new smooth silicone implant was placed. There was no fluid noted, and the removed part of the capsule appeared thickened. The textured saline implant and resected part of capsule were sent to pathology. The report revealed presence of BIA-ALCL in the capsule. There were abundant large anaplastic lymphocytes noted positive for CD4 and CD30 but negative for AE1/AE3, ALK and CD8. PET CT showed no evidence of any metastasis. Hematology-Oncology was consulted. For patient's limited disease, local resection was recommended without any need for systemic treatment. In February 2024, MRI of the right breast showed intact silicone implant and moderate amount of mildly complex peri-implant fluid. There was mild to moderate circumferential capsular enhancement.

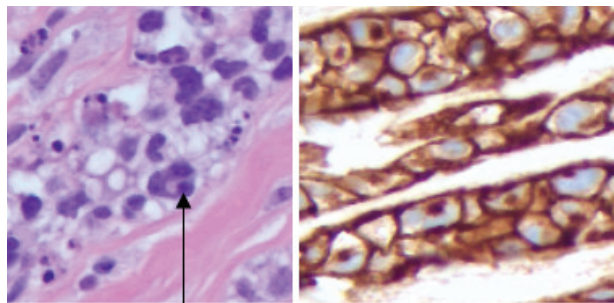


Right breast MRI: Moderate amount of mildly complex peri-implant fluid and non-specific area of focal thickening.



Right Breast MRI: nonspecific focal area of thickening.

3.3. Patient underwent remaining capsulectomy and replacement with a new smooth silicone implant in February 2024. The periprosthetic fluid showed rare scattered atypical cells CD 30 +. The capsule was also involved with anaplastic large cell lymphoma cells.



Anaplastic large cell lymphoma cells

CD30+ stain

4. Follow-Up

4.1. Bilateral breast MRI in August 2024 was reported normal without any evidence of recurrence. So far patient has done well without any evidence of recurrent disease or metastasis.

5. Discussion

5.1. This case report provides a real-life example of a patient with an uncommon disease, BIA-ALCL. However, each patient is unique and may not only have a different clinical presentation but also a different outcome. BIA-ALCL is quite a rare type of non-Hodgkins-Lymphoma. Overall prognosis is favorable with cure rates of 93% in limited stage I disease. Surgery alone is curative in most of these cases. Although, systemic chemotherapy and radiation treatment have been used [6]. Most common symptoms are unilateral swelling, erythema, pain, and periprosthetic effusion [2,6]. The periprosthetic effusion (seroma) is usually delayed onset with an average time of eleven years after the implant placement [3]. In about 30% cases, a mass is palpable. Other findings could be capsular contracture and enlargement of local lymph nodes [4].

5.2. The exact etiology regarding the pathogenesis of BIA-ALCL is unclear. The inflammatory response seen in BIA-ALCL is predominantly

due to T lymphocytes which are involved in various immune responses. Activation of JAK/STAT3 signaling pathway has been commonly associated with the development of BIA-ALCL. Also, presence of a bacterial biofilm in the implant apparently stimulates the immune system, and all of this ends up causing a chronic immune response leading to formation of BIA-ALCL [4]. Moreover, mesenchymal cells have also been studied in the evolution of BIA-ALCL [5].

5.3. Initial study is ultrasound that shows periprosthetic effusion followed by MRI of the breast to look for any mass and enlarged lymph nodes. Diagnosis is confirmed by fluid aspiration and flow cytometry analysis of aspirated fluid [6]. Involved lymph nodes have several layers of abnormal T lymphocytes with horseshoe/kidney shaped nuclei. Immunohistochemistry confirms that these cells are CD 30 positive and ALK negative [6]. PET CT is usually ordered to check the extent of disease. Staging is done according to MD Anderson Center TNM staging for BIA-ALCL [6].

5.4. For BIA-ALCL, the primary treatment is en bloc surgical resection of the capsule, implant, and any peri-implant seroma since most of these tumors are stage I at initial presentation [6]. Patient who presents with widespread disease involving lymph nodes or positive margins are treated with systemic treatment including anthracycline based chemotherapy, radiotherapy or immunotherapy with monoclonal antibody targeting CD-30 [6].

6. Conclusion

6.1. BIA-ALCL, although rare, is a well-recognized type of non-Hodgkins Lymphoma now. Most of the cases are early stage at the time of diagnosis and have 93% cure rate with surgical resection alone [6]. The exact pathogenesis is unclear. These tumors are usually slow-growing but can occasionally spread to lymph nodes. Long term prognosis is usually excellent.

7. Acknowledgement

Special thanks to Danielle Saranczak in helping to gather medical information from different institutions for this case report.

8. Informed Consent

Written informed consent was obtained from the patient for this case report.

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