Breast Implant Associated - Anaplastic Large Cell Lymphoma of Rapid Onset Intra-Capsular Seroma

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Introduction

Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) is an uncommon T-cell lymphoma affecting women with breast implants. It most commonly presents as a delayed, rapid onset intracapsular seroma and when evaluated by cytology demonstrates high expression of CD30 cell surface protein and absence of anaplastic lymphoma kinase (ALK).[1]

The literature and data continue to evolve on this immunologic malignancy following the first cases reported in 1997.[2] The National Comprehensive Cancer Network (NCCN) guidelines for the diagnosis, management, treatment and staging of BIA-ALCL were published in 2019.[3] Guideline management following diagnosis includes preoperative staging and prompt removal of implant and excision of associated capsule and affected tissues. Surgical excision remains the mainstay of treatment and is necessary for long-term remission or cure. In advanced stages chemotherapy and radiation are also recommended but uncommonly necessary due to early presentation of this disease. [3]

As this body of literature continues to grow, we discuss a typical patient with history of breast cancer who underwent reconstruction with textured implants and subsequently developed BIA-ALCL. We will discuss her treatment, course, and outcomes.

Case Report

Patient is a 60-year-old female who underwent lumpectomy and radiation for left breast cancer in 2004. She subsequently had implant reconstruction of her left breast and a contralateral augmentation of her right breast with Becker implants. In 2015 the patient came for evaluation regarding ruptured implants. It was at that time that the patient had removal of her bilateral Becker implants and the placement of textured Mentor fifth generation silicone implants. Within one year, the patient developed a left capsular contracture and was brought back to the operating theater for removal of her left breast implant, the placement of Strattice Acellular dermal matrix and a new textured Mentor implant.

She then presented in February of 2020 with unilateral swelling of her left breast (Figure 1). After evaluation she was sent for ultrasound with aspiration with pathologic investigation to rule out breast implant associated anaplastic large cell lymphoma. 250 cc of fluid was aspirated (Figure 2). This was sent off to pathology and found to be positive for BIA-ALCL and was strongly positive for CD30 with multiple T-cells. She was evaluated by an oncologist, with Magnetic Resonance imaging (MRI) and positron emission tomography (PET) imaging performed in February of 2020 which showed no uptake outside the left breast (Figure 3).

On 03/08/2020, She underwent removal of bilateral intact textured Mentor breast implants, evacuation of 220cc seroma of left breast, en bloc resection of bilateral implant capsules and placement of smooth 5th generation silicone implants for reconstruction (Figure 4). Pathological evaluation revealed no involvement of the left breast capsule allowing for TNM stage 1A (T1N0M0).

Post-operatively, she was observed for one night and was discharged home the next day. She has followed up with both the surgical and oncological team and is recovering well without recurrence or new symptoms.

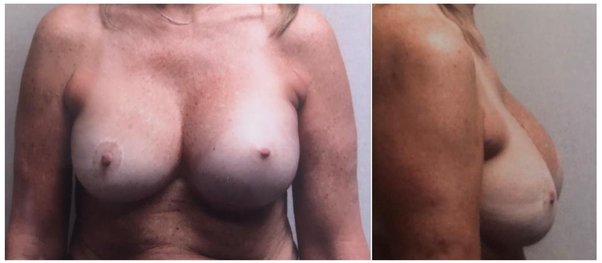

Figure 1: This is a 60-year-old female presenting 5 years following placement of bilateral Mentor textured breast implants for breast reconstruction following left mastectomy for breast cancer. She presented for sudden onset left breast pain and swelling. In the images above there is apparent swelling, increased projection and fullness on the left side.

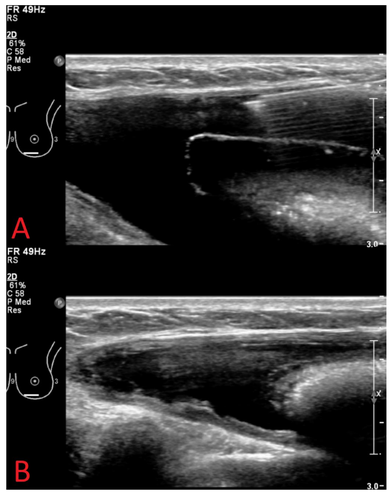

Figure 2a: Procedural image of ultra-sound guided fine needle aspiration of intra-capsular seroma. Of note septations are visible within the capsule.

Figure 2b: Post-Procedural image of remaining seroma following aspiration of 250cc of cloudy red fluid with debris.

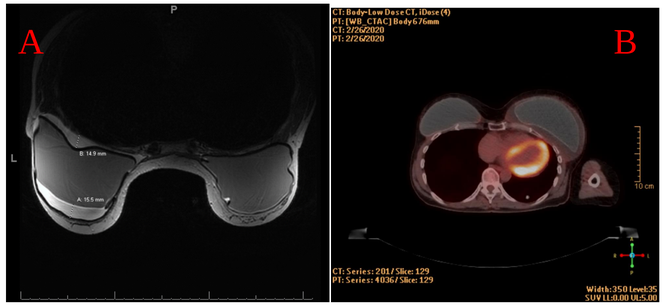

Figure 3a: Prone T2 weighted MRI imaging with significant findings of seroma encasing the left breast implant without other areas on enhancement.

Figure 3b: F-18-fluorodeoxyglucose (FDG) PET-CT image revealing mild FDG avid peri-capsular seroma of the left breast without findings of further enhancement or lymphadenopathy.

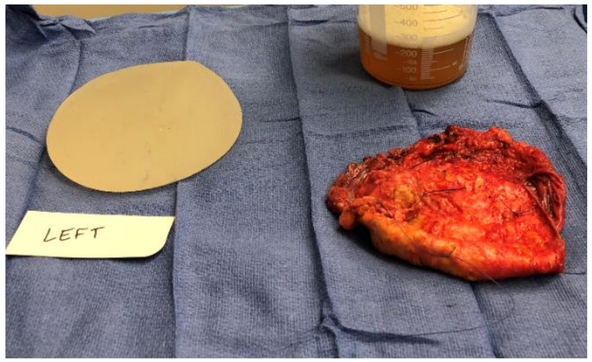

Figure 4: Intra-operative findings revealed a normal, non-ruptured textured breast implant and 220cc's of murky serosanguinous fluid within a dense inflammatory capsule. Capsule was sent for permanent pathological evaluation revealing reactive inflammation without malignancy.

Discussion

Since the first reported cases in 1997 and the initial FDA report in 2011 there continues to be significant additions to the medical literature.[2] The FDA continues to monitor incidence and outcomes associated with breast implants and in August 2020 they released an updated report.[4] Significant findings in this report included an updates total patient number to 733, worldwide. All new patients had textured implants at the time of diagnosis, with 28 exceptions. 27 of 28 individuals had a history of either textured implants or unreported implants. One individual had a history of one smooth implant and no known textured implant. Due to the incomplete history this may or may not be significant but raises the question should a mandatory national registry be implemented for better tracking and future treatment following novel diagnoses such as BIA-ALCL?

In the United States, a voluntary registry has been established, the National Breast Implant Registry (NBIR), a collaboration between The Plastic Surgery Foundation (PSF), FDA, and breast implant device manufacturers (Website).[5] This was established to monitor outcomes data with a safety and quality improvement initiative. The PSF has also established the Patient Registry and Outcomes For breast Implants and anaplastic large cell Lymphoma (ALCL) etiology and Epidemiology (PROFILE) registry with hopes to improve detection, management, and risk factors for the disease.[6]

With the updated FDA findings and most recent NCCN guidelines, further questions remain as index cases continue to age from initial treatment and therapy. We know that immediate reconstruction is effective in return to normal life, from a patient perspective, but follow up remains uncertain.[7] Currently the NCCN guidelines recommend history and physical every 3 to 6 months for two years and further as clinically indicated. They indicate that the role of radiographic surveillance remains unclear but suggest computed tomography (CT) or positron emission tomography (PET) scan could be considered every 6 months for two years.[3] These guidelines are clinically speculative currently and as the understanding of BIA-ALCL continues to evolve, it may be possible to reduce the need for future imaging especially in the earlier stages in many studies. Based on a study by Miranda et al., most patients with BIA-ALCL confined within the fibrous capsule achieved complete remission.[8] So the question remains, do early stage (TNM stage 1A-1B) require serial imaging?

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