AMSER Case of the Month:

Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL)

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Patient Presentation

• 45-year-old previously healthy female with past medical history of bilateral breast augmentation 15 years prior presents with a subacute onset of right breast pain and focal swelling.

• She reports tightening of breast tissue five years prior, but last mammography three years ago showed no concerning findings.

• She is otherwise healthy and has had no other surgeries.

• Family history notable for breast and prostate cancer.

• Physical exam reveals right breast skins changes, pain, swelling, and a palpable inferomedial mass.
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

### American College of Radiology
ACR Appropriateness Criteria®
Palpable Breast Masses

**Variant 1:** Palpable breast mass. Female, 40 years of age or older, initial evaluation. (See Appendices IA-1B for additional steps in the workup of these patients.)

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
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</thead>
<tbody>
<tr>
<td>Mammography diagnostic</td>
<td>9</td>
<td>See references [13-15].</td>
<td>☒</td>
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<tr>
<td>Digital breast tomosynthesis diagnostic</td>
<td>9</td>
<td>See references [16-18,20,85].</td>
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<tr>
<td>US breast</td>
<td>4</td>
<td>If she had recent mammogram (ie, past 6 months), US may be appropriate.</td>
<td>O</td>
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<tr>
<td>MRI breast without and with IV contrast</td>
<td>2</td>
<td>See references [4,49].</td>
<td>O</td>
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<tr>
<td>MRI breast without IV contrast</td>
<td>1</td>
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<td>O</td>
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<tr>
<td>FDG-PEM</td>
<td>1</td>
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<td>Sestamibi MIB</td>
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<td>Image-guided core biopsy breast</td>
<td>1</td>
<td>Varies</td>
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<tr>
<td>Image-guided fine-needle aspiration breast</td>
<td>1</td>
<td>Varies</td>
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**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level*
Circumferential density surrounding implant and mass effect in inferomedial quadrant of right breast.
Right Breast Ultrasound
Right Breast Ultrasound

Approximately 5x2x3 cm heterogeneous mass with circumscribed and indistinct margins.
Differential Diagnosis of Breast Masses

• Fibrocystic disease
• Breast cancer
• Breast cyst
• Breast adenosis
• Breast abscess
• Fat necrosis
• Fibroadenoma
Further Workup

• Following mammography patient had a breast biopsy and seroma aspiration.

• Analysis revealed abnormal pleomorphic cells staining positive for CD30+, CD45 focal weak+, and CD2+.

• PET/CT imaging was ordered to fully characterize the mass.
Avid FDG uptake throughout inner quadrant of right breast with extension to the level of the chest wall. SUV max 28.6.
PET/CT
PET/CT

Uptake in internal mammary node deep to right breast. SUV max of 8.8.
Breast mass with neoplastic cells shown traversing necrotic tissue of the adjacent breast capsule.
Infiltration of tumor mass (yellow arrows) through dermis with invasion and ulceration of overlying skin.
Characteristic features of ALCL including horseshoe cells (yellow) and hallmark cells (blue).
Neoplastic cells are strongly diffusely CD30 positive, including Hallmark cell (arrow).

Neoplastic cells are ALK-1 negative, including Hallmark cells and horseshoe cells.
Final Dx:

Breast Implant-Associated Anaplastic Large Lymphoma (BIA-ALCL)
BIA-ALCL is a rare peripheral T cell non-Hodgkin lymphoma first reported in 1997. It is characterized by pleomorphic CD30+, ALK negative lymphoid cells.

This disease is associated with textured breast implants, and the pathogenesis may stem from inflammation caused by microtrauma or biofilm formation due to the textured surface.

On average symptoms usually develop 8-10 years following augmentation.

Presentation usually consists of a peri-implant effusion, but more advanced disease states can also be associated with a mass.
Case Discussion

• Prompt identification of BIA-ALCL is crucial to treatment, and initial workup should consist of ultrasound or MRI, breast biopsy, and seroma aspiration with flow cytometry.

• PET/CT should be utilized for staging prior to surgical management.

• Complete capsulectomy and implant removal with negative margins is the current standard of care. More advanced disease states may require adjuvant chemotherapy and radiation therapy.

• This disease has a favorable prognosis if detected at the seroma stage, while higher mortality rates are seen in patients with a mass.
Back to Our Patient

• Patient underwent right total mastectomy with incomplete (R2) resection of tumor due to chest wall invasion.
• Left implant resected en-block and replaced with smooth silicone implant.
• Postoperative course complicated by pathologic rib fracture and hematoma from residual tumor.
• Patient underwent 5 cycles of adjuvant chemotherapy followed by consolidative radiation therapy.
• No signs of recurrent or residual disease on follow up PET.
PET/CT: 8 months after mastectomy

Resolving postsurgical changes with max SUV 1.8.

No signs of recurrent or persistent disease.
References:


