Breast Implant-Associated Chronic Inflammatory Malignancies

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No relevant disclosures.
BIA-ALCL Is Now a Well-Recognized Distinct Lymphoma

1997
First case report by Keech and Creech¹

Early 2000s
Rising case reports²

2011
FDA announcement

2016
WHO recognizes as distinct clinical entity
NCCN Guidelines established

2019
Updated NCCN Consensus Guidelines

2022
>1300 cases worldwide

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FDA announces link between breast implants, SCC and other various lymphomas

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Purpose

Here, we present a report of diagnostic work-up, patient outcomes, and most up-to-date treatment guidelines for patients with BIA-BCL, BIA-SCC, and BIA-ALCL.
Methods

• Prospective data collection (IRB# PA14-0321) of patients presenting with breast implant associated malignancies at M.D. Anderson Cancer Center from 2012 onwards
  • Clinical data, pathology, and outcomes were collected via Redcap database
  • Query of ASPS global network BIA-ALCL world cases

• Secondarily, a systematic literature review was performed of all reported cases of BIA-SCC and BIA-BCL.
  • Medline, Pubmed, and EMBASE were queried for relevant search terms

• Combined institutional and literature data used to develop initial work-up and treatment guidelines for BIA-SCC and BIA-BCL
BIA-BCL
BIA-BCL Cases/Literature Review

22 Citations Meeting Inclusion Criteria

34 Literature Cases

14 Institutional Cases (2 unpublished)

36 Total Unique Cases
36 BIA-BCL Cases

**Diagnosis**

Heterogenous group of BCL
- 24 cases (66.7%) DLBCL (mostly EBV+)
  - 18/22 (81%) EBV+
- Other types: marginal zone, follicular, CLL/SLL, plasmablastic

**Presentation**

44.4% seroma/swelling
- 38.9% pain
- 13.9% systemic symptoms
- 11.1% asymptomatic

**Stage at Diagnosis (MDACC BIA Staging)**

- IA-IC (Confined to capsule) – 72.2%
- IIA (Mass extending beyond capsule) – 5.6%
- IIB or III (Lymph nodes) – 11.1%
- IV (Distant metastasis) – 8.3%
- Unknown - 2.8%

**Age at Presentation**

58.9 years (34-83 years)

**Implant Characteristics**

15.9 years (4-44 years)

- 58.3% textured
- 11.1% (4 cases) smooth only history
- 30.6% unknown

*EBV+ DLBCL only reported in textured cases*
36 BIA-BCL Cases

Treatment

- Surgery alone – 58.3%
- Chemotherapy – 33.3%
- Radiation – 13.9%
- Stem cell transplant – 2.8%

Outcome

16.5 months follow-up (1-96 months)

3 patients (8.3%) recurred after initial treatment
   1 patient never had implant removal – suspect ongoing stimulus for disease
   1 patient refused chemotherapy
   1 patient underwent delayed surgery, followed by chemotherapy with recurrence x2. Eventually adequately treated with ASCT.

NED – 80.6%
- Ongoing disease – 2.8%
- DOD – 0%
- Lost to Follow Up – 16.7%
BIA-BCL Clinical Example

52 year old female
2005 – bilateral breast augmentation, saline
2010 – bilateral implant replacement for rupture with Allergan Natrelle textured implants
2022 – bilateral capsulectomy and implant removal for CC, EBV+ DLBCL discovered incidentally
BIA-BCL Key Takeaways

• Heterogenous group of B cell lymphomas
  • EBV+ DLBCL most common
• Thought to be similar to post-transplant lymphoproliferative disorder (secondary to immunosuppression)
• Removal of the immunosuppressed environment (complete capsulectomy) is the mainstay of treatment
BIA-SCC
BIA-SCC Cases/Literature Review

English Only, Human Case Reports
MEDLINE/PUBMED/EMBASE
Search up to December 2022 for the Terms:
“Squamous Cell Carcinoma,” or “Squamous Carcinoma,” and

20 Citations Meeting Inclusion Criteria

19 Literature Cases SCC
3 Literature Cases SCM

3 Institutional Cases SCC (2 unpublished)
3 Institutional Cases SCM

21 Total Unique Cases SCC
6 Total Unique Cases SCM
21 BIA-SCC Cases

**Age at Presentation**
56.9 years (40-81 years)

**Implant Characteristics**
25.3 years (10-42 years)

- 33.3% textured
- 19.0% smooth with prior unknown implant
- 4.8% smooth only history
- 14.3% liquid silicone injections
- 28.6% unknown

**Presentation/Work-Up**
- Mass present in most (85.7%)
- Swelling or seroma (71.4%)
- Pain (52.4%)
- Ulceration/wound (23.8%)

**Stage at Diagnosis (MDACC BIA Staging)**
- IA-IC (Confined to capsule) – 23.8%
- IIA (Mass extending beyond capsule) – 61.9%
- IIB or III (Lymph nodes) – 14.3%
- IV (Distant metastasis) – 0%
21 BIA-SCC Cases

Outcome

22.2 months follow-up (3-96 months)

7 patients (33.3%) recurred after initial treatment
  3 patients with inadequate surgery with local recurrence
  4 patients adequately treated (wide surgical margins + chemo/radiation) but still recurred

Lost to Follow Up – 38.1%
Of those with follow up...
NED – 50%
**Ongoing disease** – 25%
DOD – 25%

Treatment

Surgery alone – 33.3%
Chemotherapy – 47.6%
Radiation – 38.1%
BIA-SCC Clinical Example – 62 year old female

Pre-operative

Mass highlighted in red

Planned chest wall excision
Capsule adherent to rib

Implant removed with capsule left intact overlying the mass

Left - Planned rib resection
Right – mass excision
Post resection with custom titanium ribs

1 month post op follow up

Poorly differentiated SCC
Presumed Precursor: 6 Cases of Squamous Metaplasia

- Average age 56.7 years
- Implant time 9.8 years
- Presentation:
  - 3 with seroma/CC
  - 2 with a wound/draining fistula
  - 1 with a cystic mass extending from the capsule
- All patients treated with capsulectomies and implant exchange or removal
BIA-SCC Key Takeaways

• Seems to **develop later** than BIA-ALCL or BIA-BCL (20+ years implant)
• Thought to be similar to SCC seen in Marjolin’s ulcer (chronic inflammation)
• More **aggressive** clinical course than BIA-ALCL or BIA-BCL
• More often presents with a mass that extends beyond the capsule, necessitating a **wider surgical resection**
BIA-ALCL
77 BIA-ALCL Cases

Demographics
53.5 years (35-77 years)
33.8% for reconstruction
63.6% for cosmetic

Implant Characteristics
14.5 years (2-44 years)
All with textured history where full history known

Presentation/Work-Up
88% with local breast symptoms
72% with seroma

Stage at Diagnosis
IA-IC (Confined to capsule) – 57.6%
IIA (Mass extending beyond capsule) – 18.6%
IIB or III (Lymph nodes) – 18.6%
IV (Distant metastasis) – 5.1%

Treatment
Surgery alone – 62.3%
Chemotherapy – 32.5%
Radiation – 14.3%
ASCT – 2.6%

Outcome
30.1 months follow-up (1-296 months)
4 patients (5.2%) recurred after initial treatment
NED – 62.3%
Ongoing disease – 2.6%
DOD – 1.3%
Lost to Follow Up – 33.8%
BIA-ALCL

Key Takeaways

- **>1350 cases** worldwide (ASPS Global Network)
- Well described at this point
- Usually takes an **indolent** course, early stages adequately treated with surgery alone
- We have demonstrated it is safe to perform **immediate smooth implant-based reconstruction**

Kaplan Meier Survival Curves: IA-BCL, IA-SCC, BIA-ALCL

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Work-Up

Symptoms

- >1 year since implant
- Swelling or seroma
- Mass
- Pain
- Wound
- Skin changes
- Lymphadenopathy

Imaging

- US and mammogram
- +/- MRI
- Effusion
- Mass

Tissue Sampling

- FNA fluid (>50 mL)
- Mass
- Incisional/Core Needle Bx

Path Workup

- If squamous cells present

Findings

- Benign – no further workup
- Indeterminate – referral to tertiary center
- Malignancy – see treatment

Path Workup

- Cytology
- Flow cytometry
- IHC
- BIA-BCL: CD20, EBV
- BIA-SCC: p63
- BIA-ALCL: CD30, ALK
**Treatment Guidelines**

### Additional Workup
- H&P
- Labs: CBC with diff, CMP, LDH, *EBV, HIV, hepatitis*
- Imaging: PET/CT Scan
- Multidisciplinary evaluation

### Surgery
- **En bloc resection (1-2 cm margin):**
  - *Can consider immediate reconstruction with smooth implants*

### Staging
- **Stage IA-IC**
  - Confined to capsule
- **Stage IIA**
  - Mass beyond capsule
- **Stage IIB-IV**
  - Advanced disease

### Adjuvant Treatment
- Complete excision
- None
- Systemic therapy: -Cisplatin/5-FU -Brentuximab/Vedotin -Target to specific BCL
- Consider RT: -local residual disease -for recurrence or palliation

### Follow Up
- H&P, PET/CT every 3-6 months for 2 years
Conclusions

• BIA-BCLs and BIA-SCCs are **newly emerging** classes of breast implant associated malignancies

• Public reporting of cases will help to gather information and guide additional treatment guidelines
BIA-BCL References

BIA-BCL References cont.


BIA-SCC References

5. Goldberg, Mytien Thi MDa; Llaneras, Jason MDb; Willson, Thomas D. MDa; Boyd, John Brain MDa; Venegas, Rose J. MDb; Dauphine, Christine MDb; Kalantari, Babak N. MDe. Squamous Cell Carcinoma Arising in Breast Implant Capsules. Annals of Plastic Surgery: March 2021 - Volume 86 - Issue 3 - p 268-272
BIA-SCC References cont.

Thank you