

Rare, Nonaggressive Form of Lymphoma Linked to Breast Implants

An Update

This research highlight is an update of an earlier RAND work, published in 2011, that investigated a link between breast implants and a rare cancer of the immune system called anaplastic large cell lymphoma (ALCL).¹

In the late 1990s, doctors found ALCL, a rare disorder, in a woman with breast implants. In 2011, RAND researchers reviewed the medical literature to explore the incidence of this condition among women with breast implants and the evidence actually linking the condition with breast implants. They found 29 reported cases worldwide and sufficient evidence to suggest an association. Breast implant–associated anaplastic large cell lymphoma (BIA-ALCL), as it came to be called, usually develops as an accumulation of fluid (called a *seroma*) in the space immediately surrounding an implant. It is a cancer of the immune system—specifically, a non-Hodgkin’s lymphoma—and not a cancer of the breast tissue. As the review also showed, BIA-ALCL is considered relatively benign, because it generally remains confined to the implant capsule (i.e., it does not metastasize to the rest of the body), with clinical symptoms that include swelling, pain, lumps, or asymmetry of the affected breast.

A panel of experts convened by the research team suggested that women diagnosed with BIA-ALCL should have the affected implant removed, along with the surrounding fibrous capsule, but that follow-up treatment with radiation and chemotherapy appeared to be unnecessary, based on a lack of evidence that the disease spreads beyond the breast.

In 2011, the U.S. Food and Drug Administration (FDA) issued guidance that reflected these recommendations.²

Key findings:

- Breast implant–associated anaplastic large cell lymphoma (BIA-ALCL) is a rare, nonaggressive cancer that, in most cases, can be treated by removal of the affected implant and surrounding capsule.
- Fluid accumulation between the breast implant and capsule that occurs a year or more after implantation should be assessed by a plastic surgeon or surgical oncologist.
- BIA-ALCL almost never requires radiation or chemotherapy, but patients should be followed with regular ultrasound imaging.
- Research is needed to identify and confirm risk factors for BIA-ALCL; a patient registry would help to gather data around this rare condition.

Since then, the RAND research team has identified 54 more cases. Given that some 5 to 10 million women receive breast implants worldwide annually and that the researchers have identified only 83 cases in the literature, BIA-ALCL remains exceedingly rare. Nevertheless, to interpret the implications of these new cases and update its earlier recommendations, the research team convened a panel of medical experts in March 2014. The panel’s task was to review the additional cases and provide recommendations regarding the diagnosis, treatment, and follow-up of this rare condition.

The panel agreed that a seroma found near a breast implant a year or more after implantation should be evaluated with an ultrasound, and fluid should be sampled to determine its cause. Panelists recommended that patients with test results showing the presence of BIA-ALCL should undergo removal of the affected implant, as well as the surrounding capsule and any enlarged lymph nodes. The panel also agreed that most women did not need additional radiation or chemotherapy and that the condition, if confined

¹ Kim B, Roth CP, Chung KC, Young VL, Van Busum KR, Schnyer C, and Mattke S, “Are Breast Implants Linked to a Rare Form of Lymphoma?” Santa Monica, Calif.: RAND Corporation, RB-9584, 2011 (www.rand.org/t/RB9584).

² FDA, “FDA Advises Women with Breast Implants,” last updated January 20, 2015 (<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm240985.htm>); FDA, “Anaplastic Large Cell Lymphoma (ALCL) in Women with Breast Implants: Preliminary FDA Findings and Analyses,” last updated November 1, 2013 (<http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/ImplantsandProsthetics/BreastImplants/ucm239996.htm>).

to the capsule, generally has a good prognosis. Finally, the experts recommended that after implant removal, women should undergo a PET-CT scan to confirm the disease stage and then continue follow-up every six months for at least five years, with breast ultrasound imaging yearly for at least the first two years.

The Expert Panel Weighs in on Risk Factors

The team polled the experts about potential risk factors associated with BIA-ALCL, including patient characteristics, the reason for breast implantation (i.e., cosmetic versus reconstructive), and features of the implants themselves. Panelists did not express confidence in any of the possible risk factors suggested, including length of time since the surgery; such patient characteristics as ethnicity, obesity, human leukocyte antigen (HLA) types (HLAs are proteins found on the surface of almost all cells in the human body that help the immune system tell the difference between body tissue and foreign substances), history of cancer, and history of autoimmune disease; or the type of implant filling (i.e., saline versus silicone). The panel agreed that neither implant size nor rupture and leakage of silicone-filled implants were risk factors for BIA-ALCL. The only risk factor on which they agreed was having an implant with a textured shell instead of a smooth shell. Still, given the small number of cases identified to date, there is too little information to confirm any of these potential links.

Next Steps

Given the small number of cases of BIA-ALCL thus far, research is needed to confirm guidance on the diagnosis and management of this condition. In addition, a case registry

should help identify factors that increase the risk for BIA-ALCL or affect disease severity.

Note: This report summarizes research findings and should not be construed as offering medical advice to any individual patient or physician. As with any decision relating to medical care, individual patients need to make their own decisions, in consultation with their physicians, based on all of the risks and benefits of the contemplated treatment.

This research highlight summarizes RAND Health research reported in the following publications:

Gidengil CA, Predmore Z, Mattke S, van Busum K, and Kim B, "Breast Implant-Associated Anaplastic Large Cell Lymphoma: A Systematic Review," *Plastic and Reconstructive Surgery*, published online ahead of print December 8, 2014.

Kim B, Roth C, Chung KC, Young VL, van Busum K, Schnyer C, and Mattke S, "Anaplastic Large Cell Lymphoma and Breast Implants: A Systematic Review," *Plastic and Reconstructive Surgery*, Vol. 127, No. 6, June 2011, pp. 2141–2150.

Kim, B, Predmore Z, Mattke S, van Busum K, and Gidengil CA, "Breast Implant-Associated Anaplastic Large Cell Lymphoma: Updated Results from a Structured Expert Consultation Process," *Plastic and Reconstructive Surgery—Global Open*, Vol. 3, No. 1, January 2015, p. e296.

Kim B, Roth C, Young VL, Chung KC, van Busum K, Schnyer C, and Mattke S, "Anaplastic Large Cell Lymphoma and Breast Implants: Results from a Structured Expert Consultation Process," *Plastic and Reconstructive Surgery*, Vol. 128, No. 3, September 2011, pp. 629–639.

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