Breast Implant-Associated Anaplastic Large Cell Lymphoma: Analysis of Imaging Studies in 44 Patients Reveals Need for Systematic Assessment of Mass Versus No Mass to Improve Diagnostic Accuracy

Running Title: Imaging of breast implant-associated ALCL

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Abstract

BACKGROUND

Breast implant-associated anaplastic large cell lymphoma (ALCL) is a newly described clinicopathologic entity.(1-4) Patients present with an effusion or a mass adjacent to the breast implant, and patients with a mass appear to have a more aggressive clinical course. The spectrum of imaging findings and their sensitivity and specificity to diagnose breast implant-associated ALCL has not been evaluated.

OBJECTIVES

To describe the imaging findings of patients with breast implant-associated ALCL and compare the relative value of imaging techniques to detect the presence of peri-implant effusion or a mass in patients with implant-associated ALCL.

MATERIALS AND METHODS

We retrospectively searched our files for patients with pathologically proven breast implant-associated ALCL who had been assessed by mammography, ultrasound, computerized tomography (CT), magnetic resonance imaging (MRI) or positron emission tomography (PET)-CT. In addition, we extracted similar information from all cases reported in the literature between 1997 and 2013. The imaging findings were correlated with clinical presentation, pathologic and intraoperative findings, and outcome, and the sensitivity and specificity were determined of each imaging modality to detect an effusion or a mass around breast implants. We finally determined the overall survival (OS) and progression-free survival (PFS) for all patients with follow-up information.

RESULTS

We identified 44 patients who had breast implant-associated ALCL and imaging studies between 1997 and 2013. There were 21 patients with effusion only and 20 patients with a mass; and 3 patients did not have either effusion or mass. The sensitivity for detecting an effusion was 50% by mammography, 84% by ultrasound, 55% by chest CT, 82% by MRI, and 38% by PET scan. The sensitivity of these methods for detecting a mass was 33%, 46%, 50%, 50% and 64% respectively. No differences in OS were observed between patients with and without a mass ($p = 0.182$), however, PFS was worse in patients with a mass ($p = 0.001$).

CONCLUSIONS

In this retrospective analysis, ultrasound and MRI appear as the optimal methods to detect breast implant-associated ALCL presenting with an effusion, however no optimal imaging modalities were identified to detect patients presenting with a mass. Since patients with breast implant-associated ALCL presenting as an effusion have better PFS than patients presenting with a mass, optimal combination of imaging studies are needed to properly diagnose breast implant-associated ALCL.

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Disclosure/Financial Support

Dr. Clemens has consulted to the RAND Corporation and Allergan Corporation. None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.