

Predicting pathologic nodal response following neoadjuvant chemotherapy for invasive breast cancer utilizing sequential axillary nodal imaging techniques.



Marielle Ferstenberg D.O¹, Stewart Anderson PhD², Michael Cowher M.D³, Kristin Krupa M.D¹, Kelly Krupa M.D¹, Angela Keleher M.D¹, Thomas Julian M.D¹

¹Division Breast Surgical Oncology, Department of Surgery, Allegheny Health Network, Pittsburgh, PA, USA
²Division of Biostatistics, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania
³Division of Surgical Oncology, Department of Surgery, West Virginia University, Morgantown, West Virginia

Introduction

❖ Currently, there is no consensus regarding the appropriate method of imaging assessment of metastatic axillary lymph node response both during and at the conclusion of neoadjuvant chemotherapy (NCT) for invasive breast cancer (IBC). As post-neoadjuvant lymph node status frequently influences surgical management, understanding the role of various imaging modalities for preoperative lymph node assessment is increasingly valuable to surgeons.

Objectives

❖ Determine which specific axillary imaging modalities (ultrasound (US), MRI, or CT) either individually or in sequence, were best to correctly identify the pathologic status of axillary lymph nodes after NCT.

Methods

- ❖ An IRB-approved retrospective review of 86 tumors in 79 patients who underwent NCT for IBC at our institution was completed from January 2015 until April 2017.
- ❖ Documented imaging performed before, during and after completion of NCT as well as the characteristics of the primary breast lesion and final lymph node pathological status.
- ❖ We used sensitivity, specificity and logistic regression to assess how well different modalities predicted final pathologic lymph node status.

Results

- ❖ 50% of patients underwent partial mastectomies
- ❖ 58.1% of the primary cancers were ER positive, 47.7% were PR positive, 32.6% were HER-2 positive and 32.6% were triple negative.
- ❖ Clinically prior to NCT, 82 tumors had a median size of 2.65 cm (range: 0 – 14cm)
- ❖ 55.8% of US, 54.5% of MRI, 50% of CT prior to NCT were positive for nodal disease
- ❖ Median number of lymph nodes surgically excised was 5 (range: 0 – 25) following NCT
- ❖ 33.7% of lymph nodes were found to be histologically positive on final pathology (range of 1 to 14 positive nodes)
- ❖ On final pathology, 24 lymph node-positive patients had measurable metastasis size with a median value was 0.85 cm (range: 0.1 – 5.2cm).
- ❖ Of the 86 tumors, 19.8% underwent both post-NCT MRI and axillary US assessment. Sensitivity was 100% and specificity was 75% respectively for this cohort.

Mode	Total No.	Sensitivity (%)	Specificity (%)
MRI during neoadjuvant chemo	7	100.0	50.0
Ultrasound during neoadjuvant chemo	31	80.0	33.3
CT scan during neoadjuvant chemo	1	---	---
MRI after neoadjuvant chemo	52	88.2	54.3
Ultrasound after neoadjuvant chemo	28	88.9	52.6
CT scan after neoadjuvant chemo	7	100.0	50.0

Conclusions

- ❖ Both MRI and axillary ultrasound have an acceptably high sensitivity for detecting nodal positivity after completion of NCT for invasive breast cancer.
- ❖ In the absence of clinical concern for non-response, there is little value for mid-treatment imaging due to its low specificity.
- ❖ Performing both post-NCT axillary ultrasound and MRI increases specificity by approximately 22%.
- ❖ Using both MRI and axillary ultrasound post-NCT may allow for more patients to be considered for post-NCT sentinel lymph node biopsy and avoid unnecessary axillary dissection.
- ❖ Limitation of this study is that it is a small, retrospective review from a single institution.

Disclosures & Acknowledgements

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