Neoadjuvant aromatase inhibitor therapy decreases radiographic tumor size: initial results from the NAOMI trial

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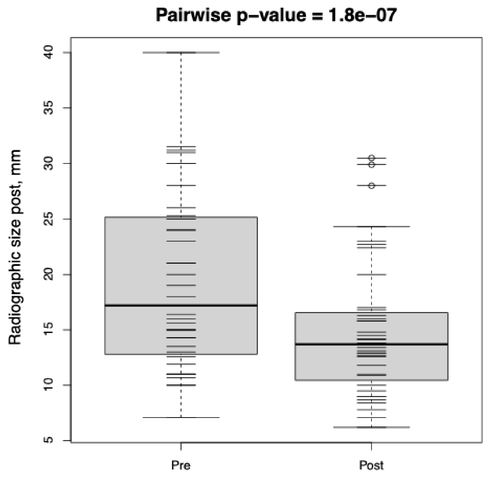
Introduction

- Nearly 70% of breast cancers are ER positive, and anti-estrogen therapy, such as tamoxifen and aromatase inhibitors (AI), are a mainstay of treatment.
- Neoadjuvant AI therapy is effective at reducing tumor burden, and may be used to improve surgical outcomes.
- Non-invasive assessment of response may be helpful in treatment planning; there has been limited evaluation of radiographic treatment response.
- **Objective: Determine the ability of tumor imaging to detect the effect of neoadjuvant aromatase inhibitor (AI) therapy on tumor size.**

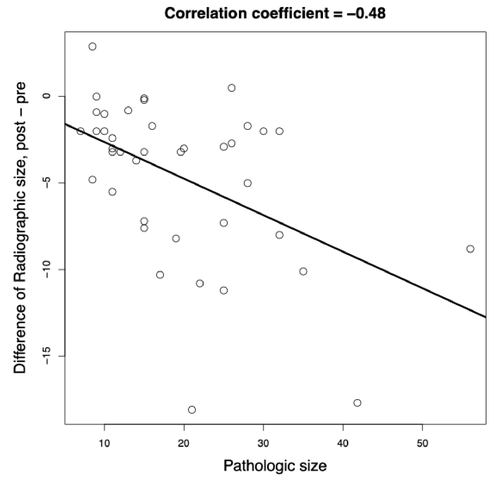
Methods

- 52 post-menopausal women with Stage I-III ER+, HER2- breast cancer were treated with an aromatase inhibitor for 1-24 weeks (mean 6.7 weeks) prior to surgery and had pre-neoadjuvant imaging available for analysis.
- 12 patients did not have an imaging exam after neoadjuvant endocrine therapy and prior to surgery, or it was not possible to assess tumor size on pre-operative imaging, resulting in 40 patients for final analysis.
- Tumor measurements prior to neoadjuvant endocrine therapy were compared to tumor measurements after neo-endocrine therapy at the time of surgery using mammography or ultrasound to determine response to treatment.
- Post-neoadjuvant endocrine treatment measurements were also compared with pathologic tumor size.

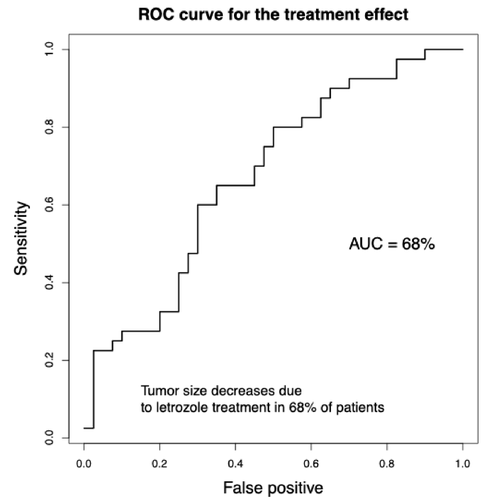
Results



- **Neoadjuvant aromatase inhibitor** therapy decreased tumor size evaluated by imaging (mean pre-treatment size 19.4 mm, mean post-treatment 14.8 mm, p<.001)



Tumor size was reduced in 68% of patients who underwent neoadjuvant letrozole treatment (AUC=.68).



The correlation coefficient between pathologic tumor size and post neoadjuvant AI therapy tumor size determined by imaging (with mammography or ultrasound) was 0.69.

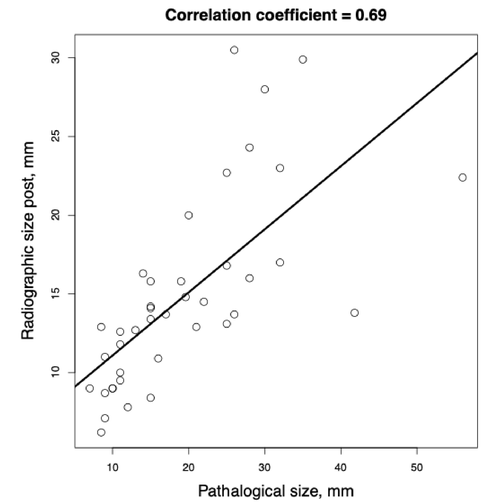


Figure A

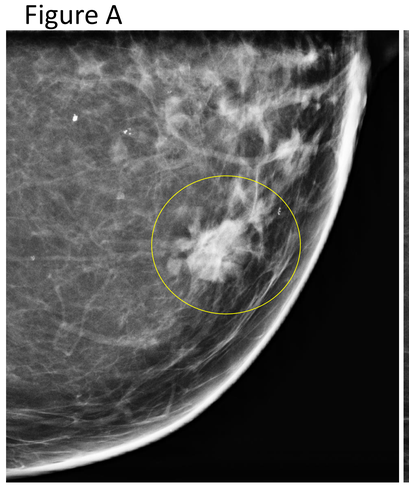
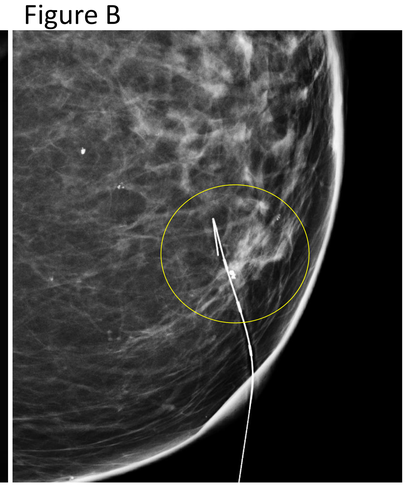


Figure B



57 y/o female with ER+HER2- breast cancer
A)Diagnostic Left cranio-caudad mammogram before biopsy and neoadjuvant letrozole shows 1.6 x 1.5 cm mass
B)Diagnostic Left cranio-caudad mammogram obtained at the time of wore localization prior to surgery after 9.5 weeks of letrozole shows the biopsy clip within 1.2 x 0.7 cm mass

Discussion

- AI therapy in the neoadjuvant setting could improve overall response to therapy and may improve long-term adherence.
- Response to neoadjuvant therapy may be a prognostic marker of outcomes
- It may be possible to evaluate response with pre and post neoadjuvant imaging. Analysis with a control group is ongoing.
- Further work is needed to evaluate pathologic response and clinical outcomes with neoadjuvant endocrine therapy.