Background

- Neoadjuvant chemotherapy (NAC) has significantly changed the management of breast cancer.
  - Pathologic complete response (pCR) identified in up to 50-60% of primary tumors and in 40-49% of axillary lymph nodes.
- Magnetic Resonance Imaging (MRI)
  - Most reliable imaging modality to assess response to NAC.

Methods

- Prospective database: June 2014-August 2015
  - 129 breast cancers in 128 patients.
- Correlated pre- and post-NAC MRI response of the primary tumor and axillary nodes to pathologic response on excision:
  - pCR: no enhancement at the site of previous abnormality compared with background tissue in both primary tumor and axilla.
  - MRI rCR and Surgical pCR in Breast Primary Tumor:
    - pCR in Breast
      - rCR: 24 (65%) (N=129)
      - No pCR: 13 (35%) (N=129)
      - Total: 37 (100%)
      - Positive predictive value: 24/37 (65%) (N=129)
    - Negative predictive value: 76/92 (83%) (N=129)

Objective

To determine the reliability of radiologic complete response (rCR) by MRI in predicting pathologic complete response (pCR) of the breast primary tumor and the presence of axillary nodal involvement following NAC.

Receptor Subtype rCR and pCR in the Primary Breast Tumor

- Total Study Population: 28.7 (N=37) / 31.0 (N=40)
- Receptor Status:
  - ER+ HER2+ (N=46): 8.7 (N=4) / 10.9 (N=5)
  - ER+/ HER2+ (N=52): 46.2 (N=24) / 50.0% (N=26)
  - ER- HER2- (N=31): 29.0 (N=9) / 29.0% (N=9)

MRI identified Abnormal Lymph Nodes with pre-NAC Biopsy Proven Malignancy and Surgical pCR

- MRI Axillary pCR Status
  - Normal pre-NAC
    - Post-NAC (N=52):
      - rCR: 21 (64%) (N=37)
      - No rCR: 13 (37%)
      - Total: 22 (63%)
      - Positive predictive value: 21/33 (64%) (N=37)

  - Negative predictive value: 22/33 (66%)

MRI Axillary Node Characteristics and Surgical pCR

- MRI Axillary pCR Status
  - Normal, pCR (N=84)
    - rCR: 29 (85%)
    - No rCR: 5 (15%)
    - Total: 34 (100%)
    - Positive predictive value: 29/34 (85%) (N=84)

  - Negative predictive value: 28/40 (70%)

Conclusions

- MRI currently does not predict pCR with high sensitivity in the breast primary or the axillary nodes.
- Histopathology of the tumor bed remains critical to evaluate response after NAC.
- Patients who have a normal axillary MRI pre-NAC have a low rate of tumor on final excisional pathology.

SELECTED REFERENCES