The use of magnetic resonance imaging (MRI) in the detection and management of breast cancer is increasing. Breast MRI is highly sensitive in detecting breast cancer (1, 2), and can identify malignancy that is occult on physical examination, mammography and ultrasound (3-12).

One emerging application of breast MRI is the evaluation of patients undergoing neoadjuvant chemotherapy for locally advanced breast cancer. Multiple studies in this patient population have shown that lesion size measured on MRI after neoadjuvant chemotherapy correlates well with residual malignancy at pathology, with correlation coefficients ranging from 0.70 to 0.98 (15-23). In addition, MRI has been demonstrated to be superior to clinical examination, mammography, and ultrasound in assessing the size of residual malignancy in these patients (17, 19-22). Studies have also found that decreases in MRI tumor size (15, 16) and in MRI early contrast uptake (16) may be useful in predicting response to neoadjuvant chemotherapy. Some results suggest that MRI phenotype or pattern of enhancement may predict therapy response (24).

The potential for falsely negative MRI examinations following neoadjuvant chemotherapy has been demonstrated in multiple studies (17, 18, 22, 25-27) and several studies have shown a significant reduction in the peak contrast enhancement of tumors following chemotherapy (1, 17, 18, 21, 27, 28). In addition, the degree of washout has also been shown to decrease following chemotherapy (21, 25). A study by Partridge et al suggested that the accuracy of breast MRI for evaluating residual disease is improved if interpreted relative to the disease extent at baseline and using relaxed enhancement criteria for detecting residual tumor. (21)

The ACRIN 6666 study led by Dr. Nola Hylton is a multi-center study to clarify the potential role of MRI in assessing tumor response. The preliminary results from this work will be summarized.

References:


25. DeMartini W, Lehman CD, Peacock S, Russel M.

