THE 13th INTERNATIONAL CONGRESS ON MRI &
30th ANNUAL SCIENTIFIC MEETING OF KSMRM &
7th ANNUAL MEETING OF ASMRM

ICMRI & ASMRM 2025

Illuminating the Invisible: Advances in MRI
OCTOBER 31 - NOVEMBER 1, 2025
Grand Walkerhill Seoul, Seoul, Korea
https://icmri.ksmrm.org/2025m/

Breast 2

SY11-2

Imaging Biomarkers of Response Prediction (II): Insights from Qualitative Characteristics

Soo-Yeon Kim

Korea University Guro Hospital, Korea

There are several early studies that attempted to predict tumor response to neoadjuvant chemotherapy (NAC) using baseline MRI features. In these studies, non-mass enhancement (vs. mass), intratumoral T2-high signal intensity, and peritumoral edema showed some association with poor tumor response. Tumor response evaluation during the early or mid-phase of NAC is important because the chemotherapy regimen can be switched or discontinued in favor of upfront surgery, thereby contributing significantly to clinical management. Several studies have reported associations between MRI tumor shrinkage patterns and treatment response, which are also linked to tumor subtype. Non-suppression of background parenchymal enhancement may indicate inferior tumor response, particularly in hormone receptor–positive breast cancer.

Accurate evaluation of residual tumor size after completion of NAC is essential for determining surgical extent. Radiologic complete response (rCR) is typically defined as the absence of contrast enhancement in the tumor bed across all phases of dynamic contrast-enhanced MRI. Delayed-phase information should be considered when assessing residual tumor size, including ductal carcinoma in situ components, because the antiangiogenic effects of chemotherapy may delay tumor enhancement. Tumor subtype should also be taken into account, as MRI demonstrates lower sensitivity and positive predictive value for predicting pathologic complete response in hormone receptor–positive/HER2-negative breast cancer compared with HER2-positive or triple-negative subtypes. Recently, several clinical trials have investigated de-escalation strategies, such as shortening NAC duration or omitting surgery, in patients achieving rCR on MRI. In this context, accurate response evaluation with MRI will become increasingly important.

Keywords: *Neoadjuvant chemotherapy, MRI response evaluation, Shrinkage pattern, Background parenchymal Enhancement, Radiologic complete response*