Multimodal response assessment to neoadjuvant treatment

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Neoadjuvant therapy (NAT) is the standard of care for patients with locally advanced and large, resectable breast cancer. Neoadjuvant chemotherapy (NAC) should also be considered for patients with a smaller tumor burden but with a clear chemotherapy indication at diagnosis, especially patients with triple-negative or HER2-positive breast cancer. One aim of NAT is to reduce the extent of surgery, including the possibility of mastectomy or axillary lymph node dissection.

Patients who respond to NAT and have a pathological complete response show improved survival, particularly patients with aggressive tumor subtypes (eg, those with triple-negative or HER2-positive breast cancer). Improved outcomes have also been shown after NAT escalation in patients with aggressive subtypes who do not have a pathological complete response. Ongoing trials are testing whether this approach is also beneficial in patients with luminal B-like tumors and in patients with triple-negative breast cancer who have a high residual disease burden. In addition to tumor stage and biology, response to NAT has become a third factor in tailoring systemic treatment and postoperative radiotherapy. To date less than 30% of patients generally achieve a pathological complete response and approximately 5% of patients show disease progression while receiving NAC. Accurate assessment of the response to NAC is crucial for subsequent surgical planning and early prediction of tumor response could aid in avoiding overtreatment. This presentation reviews the current available for modalities for assessment of treatment response, summarizes the accuracy of conventional and advanced imaging techniques and discuss emerging techniques for response assessment.