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LETTER TO THE EDITOR

Magnetic Resonance Imaging Evaluation of Noninflammatory Breast Cancer with Skin Involvement After Neoadjuvant Chemotherapy

TO THE EDITORS:

The tumor response of inflammatory breast cancer (IBC) after neoadjuvant chemotherapy (NAC) evaluated by magnetic resonance imaging (MRI) has been published in *Annals of Surgical Oncology*.[1] We have subsequently recently noticed a separate category of non-IBC with skin involvement. Non-IBC with skin involvement is different from IBC. The clinical course of non-IBC patients with histologically proven skin involvement showed a far better disease-free survival and prognosis than IBC.[2] Recent articles have paid attention to this clinically vague group of breast cancer, previously categorized as T4 tumor as a result of pathological involvement of the skin.[2–5] Clinically, non-IBC with skin involvement does not show the typical skin changes as in the IBC that could be evaluated visually or by palpation. Therefore, it is recommended that non-IBC with skin involvement, currently classified as T4a–c, should be eliminated from the T4 category.[3] By means of MRI, we have noted that both IBC and non-IBC show similar skin enhancements in the tumor-affected breast. We therefore conducted a comparative study to investigate the tumor response and the accuracy of MRI in evaluating these two categories of breast cancer after NAC.

Twelve non-IBC patients (32–52 years old, mean 43 years) with skin involvement were studied and compared with the historical control of previously published 24 IBC patients.[1] All 12 non-IBC patients had stage III to IV invasive ductal cancer without clinical evidence of IBC. The skin involvement was diagnosed on the basis of the findings of the baseline breast MRI before NAC, which showed enhancing breast cancer with associated ipsilateral skin enhancements. The NAC treatment protocol combining adriamycin and cyclophosphamide (AC) and taxane-based regimens, MRI examination, and MRI follow-up studies were the same as the IBC cohort.[1]

The non-IBC (1.6–6.1 cm, 3.6 ± 1.3 cm, mean ± SD) had smaller tumor size than IBC (2.5–16 cm, 6.6 ± 3.2 cm, mean ± SD, $P < 0.05$) and was more likely to manifest as a mass-type lesion (10 of 12, 83%, vs. 11 of 24, 46%, $P < 0.05$). Despite the different disease entity, IBC and non-IBC patients showed similar pathological responses, with 12 IBC patients (12 of 24, 50%) and 6 non-IBC patients (6 of 12, 50%) achieving pathological complete response (pCR). The clinical complete response was diagnosed in 67% (16 of 24) of IBC and 50% (6 of 12) of non-IBC patients (not statistically significantly different). Partial response was found in 29% (7 of 24) of IBC and 50% (6 of 12) of non-IBC patients. The overall accuracy of MRI was 75% in the IBC group and 84% in the non-IBC group. The accuracy of MRI in predicting pCR was higher in non-IBC (5 of 6, 83%) than in IBC (11 of 16, 69%), but this was not statistically significantly different. Twenty patients (13 IBC and 7 non-IBC patients) with residual cancer found by either MRI or pathological examination were included for the size correlation. The Pearson's correlation coefficient was $r = 0.80$ in the non-IBC group, which is slightly higher than $r = 0.61$ in the IBC group. All non-IBC cases had tumor size discrepancy between MRI and pathology of <10 mm (range, 1–9.5 mm), but 9 of 13 IBC had a discrepancy of >10 mm (up to 48 mm), which was significantly higher by Fisher's exact test ($P < 0.005$).

In conclusion, IBC and non-IBC with skin enhancement are two different disease entities, and they showed different imaging features on MRI. Although IBC was more aggressive, the response to the NAC combining AC and taxane-based regimens was not statistically significantly different from that of non-IBC. The accuracy of MRI in predicting pCR was similar for both cancer types. For predicting residual tumor size, MRI was more accurate for non-IBC than IBC with <10 mm of size discrepancy.

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