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Correlation between magnetic resonance imaging and histopathological tumor response after neoadjuvant chemotherapy in breast cancer

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ABSTRACT

Aim. To evaluate the accuracy of magnetic resonance imaging in assessing tumor response following neoadjuvant chemotherapy in patients with locally advanced breast cancer.

Materials and methods. Twenty-six patients entered a phase II study of neoadjuvant chemotherapy, undergoing bilateral breast magnetic resonance imaging before therapy and before surgery. Tumor response was classified using RECIST criteria, using tumor size at magnetic resonance imaging. The latter was then compared to residue found at histopathological examination.

Results. Magnetic resonance imaging showed 6 (23%) complete responses, 17 (65%) partial responses, 3 (11.5%) disease stabilizations and no disease progressions. Twenty-three tumors (88.5%) were considered responsive and 3 (11.5%) unresponsive. Pathological tumor response was: 6 complete responses (23%), 17 partial responses (65%), 2 stable disease (8%), 1 progression (4%). When results of the preoperative magnetic resonance imaging were compared to pathological tumor response, magnetic resonance imaging overestimated tumor size in 12 cases (46%) and underestimated it in 9 (35%). However, preoperative magnetic resonance imaging failed to detect invasive tumor in 2 false-negative cases (8%), 1 of which was multifocal. Mastectomy was performed in 12 cases: 1 case of disease progression even though the neoplasm appeared smaller at magnetic resonance imaging, 3 cases with stable disease, and 4 cases with T3 or T4 disease. The 9th patient was T2N2 with initial retroareolar disease and negative magnetic resonance imaging after chemotherapy. The 10th patient, affected by lobular cancer, was in partial remission but was T3N1. The 11th patient was 57 years old but was not interested in conservative surgery. The 12th patient requested bilateral prophylactic mastectomy due to her positive family history of breast cancer.

Conclusions. Magnetic resonance imaging of the breast allowed conservative surgery in 54% of the patients. This low value is primarily due to overestimation of tumor size, with a negative predictive value of 67% in our population. However, surgeons were able to choose conservative surgery with relative safety in cases of small residual disease.

Key words: *breast cancer, chemotherapy, magnetic resonance imaging, neoadjuvant, predictive value, tumor response.*

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