

## Brain Metastases in Breast Cancer: Prognostic Factors and Management

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**Background :** The purpose of this retrospective study is to analyze the overall survival of patients with brain metastases from breast cancer and to identify prognostic factors affecting clinical outcome. **Methods :** Of the 7872 breast cancer patients histologically diagnosed with breast cancer between January 1990 and July 2006 at Asan Medical Center, 198 patients with solitary or multiple brain metastases were included in this retrospective study. CNS lesions were diagnosed by computed tomography (CT) or magnetic resonance imaging (MRI). Patients with leptomeningeal metastasis or dural metastases without coexistent parenchymal metastatic lesions were excluded in this study. **Results :** The median age of the patients at the diagnosis of brain metastases was 45 years (range, 26-78). Fifty-five patients (28%) had a single brain metastasis, whereas 143 (72%) had more than two. Whole brain radiation was administered to 157 (79.2%) patients. Seven (3.6%) patients underwent resection of solitary brain metastases, 22 (11%) patients underwent gamma-knife, three patients underwent intrathecal chemotherapy (1.5%) and 9 (4.6%) received no treatment. The overall median survival time was 5.6 months (95% CI, 4.7-6.5 months) and 23.1% of the patients survived more than 1 year. The median overall survival time of patients treated with WBRT based group was 5.4 months, 14.9 months in patients treated with surgery or gamma-knife alone group, 2.1 months in no treatment group, respectively ( $p < 0.001$ ). Multivariate analysis demonstrated that ECOG performance status (RR=0.666, 95% CI 0.458-0.968,  $P=0.033$ ), number of brain metastasis (RR=0.672, 95% CI 0.451-1.001,  $P=0.05$ ), treatment modalities (RR=1.733, 95% CI 1.050-2.862,  $P=0.032$ ), and systemic chemotherapy after brain metastases (RR=1.796, 95% CI 1.301-2.480,  $P < 0.001$ ) were independent factors associated with survival. **Conclusion :** Performance status, number of brain metastases, treatment modalities and systemic chemotherapy after brain metastases were significantly associated with survival. The characteristics of initial primary breast lesions did not influence the survival after brain metastasis occurred.

## Metaplastic breast carcinoma: Clinical features and prognostic value of Triple-negativity

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**Background :** Metaplastic breast carcinomas (MBC) are a rare type of breast cancer comprising <1% of all invasive breast cancers and are generally characterized by hormone receptor and HER2 negativity. There is a paucity of information on prognosis according to hormone receptor and HER2 expression for these rare tumors. The aim of this study was to compare the clinical features and prognosis, between triple negative metaplastic carcinoma (TNMC) and non-triple negative metaplastic carcinoma (NTNMC). **Methods :** We retrospectively analyzed 46 cases of MBC treated at Seoul National University Hospital between 1996 and 2006. Pathologic, immunohistochemical and clinical outcome information was reviewed. **Results :** Forty-six patients were identified. The median age was 45.7 years. Median tumor size was 3.0 cm. 32 cases (69.6%) were node-negative, 13 (28.3%) node-positive, and 1 (2.1%) was missing. estrogen receptor (ER)/progesterone receptor (PR) yielded negative results in 44 cases (95.7%) and 43 cases (93.5%), respectively. HER2 overexpression by immunohistochemistry was negative in 38 of 46 (82.6%). Nodal involvement ( $p=0.032$ ) and non-triple negativity ( $p=0.023$ ) correlated significant with overall survival in multivariate analysis. Of the 46 patients, 36 (78.3%) were TNMC, and 10 (21.7%) were NTNMC. In TNMC and NTNMC group, median ages were 45.7 and 49.2 years and tumor sizes were 3.0 cm and 4.3 cm, respectively. There were 10 patients (27.8%) in TNMC and 3 patients (30%) in NTNMC for lymph node metastasis. Two groups did not differ significantly by age, tumor size, or nodal status. Positive rates for ER, PR, and HER2 was 20%, 30% and 80% in NTNMC. The 3-year overall survival rates in TNMC and NTNMC were 94.8% and 52.6%, respectively ( $p=0.0053$ ). As regards to 3-years disease-free survival, there was no statistically significant difference between TNMC and NTNMC ( $p=0.2116$ , 75.8% versus 66.7%). **Conclusion :** MBC mainly has triple negative features. However, in subgroup analysis of MBC, non-triple negative group displayed a poor prognosis compared with triple negative group, which is contrary to the case of invasive ductal carcinoma of breast. Further research exploring mechanism of this result would be needed.