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Patterns of Progression in Metastatic Breast Cancer: Implications for Breast Oligometastases Management

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Abstract

Objectives:

The role of metastasis-directed therapy (MDT) for oligometastases remains controversial in breast cancer. We analyzed the patterns of progression after first-line systemic therapy in metastatic breast cancer (MBC) in the contemporary era.

Methods:

We reviewed a previously established prospective ctDNA cohort (Kim et al., JNCI 2023) of 207 patients with MBC who received first-line systemic therapy from 2017 to 2020 in Yonsei Cancer Center, using. None of these patients received MDT. Imaging studies at baseline and during each progression were retrospectively reviewed to count the number of lesions and assess patterns of progression. Progression was categorized as either the progression of pre-existing lesions identified prior to treatment or the development of new lesions.

Results:

An increase in disease burden (1-5 vs. 6-10 vs. >10 lesions) at baseline was significantly associated with decreased progression-free survival (PFS) and overall survival (OS). Patients with 1-5 lesions had a 5-year PFS and OS of 45.9% and 75.4%, respectively. With a median follow-up of 50 months, among MBC patients with 1-5 lesions at baseline, 49.2% showed no progression at the last follow-up, 30% had progression of 1-5 lesions, and 19% had progression of more than 5 lesions; among their progressions, 27% were progression of pre-existing lesions only, 43% were development of new lesions only, and 30% were mixed. These patterns varied by baseline number of lesions, mode of presentation (de novo vs. recurrent), and molecular subtype. A Sankey diagram was generated to identify the prevalence of progression of 1-5 lesions and PL progression through the fifth line of systemic therapy. A high ctDNA I-score was independently associated with a higher risk of widespread-metastasis (>10 lesions) progression (adjusted HR 3.25, 95% CI 1.54-6.85) in patients without widespread metastases at baseline.

Conclusion(s):

Progression of pre-existing lesions was not the predominant pattern; poly-metastasis progression was not uncommon in oligometastatic breast cancer patients, highlighting the challenges in selecting patients for MDT based solely on the number of metastases at diagnosis.