Change in Ki67 Between Pre- and Post-neoadjuvant Chemotherapy as a Prognostic Marker in Localized Triple-negative Breast Cancer Patients

Concord Wongkraisri, Norasate Samarnthai and Nopadol Soparattanapaisarn

Purpose: Patients with triple-negative breast cancer (TNBC) have the worst treatment outcome among all breast cancers and a poor survival rate. Neoadjuvant chemotherapy (NAC) is the standard treatment for patients with localized breast cancer. The proliferative index using Ki67 as a prognostic and predictive factor has been previously well studied; however, changes in Ki67 and its correlation between pre- and post- Ki67 have shown conflicting data in various studies. Consequently, we performed a retrospective analysis to find the correlation between Ki67, especially changes in Ki67 between pre- and post-NAC, and disease-free survival (DFS) in localized TNBC patients who received NAC and who had surgery performed in our institute.

Methods: Patients with localized TNBC who received NAC were enrolled in this study. Pre- and post-NAC Ki67 scores were assessed from core needle biopsy and surgical resection specimens, respectively. The primary endpoint was DFS correlated to changes in the Ki67 score. The secondary endpoint was the correlation between DFS and pre-NAC and post-NAC Ki67.

Results: In total, 50 patients were retrospectively included in this study. The median follow- up duration was 36.0 months. The 3-year DFS rate of all the patients was 55%. Changes in Ki67 between pre- and post-NAC did not show any correlation with DFS. Neither the pre-NAC Ki67 nor post-NAC Ki67 scores showed any correlation with DFS. The average post- NAC Ki67 was significantly lower than the average pre- NAC Ki67 (43.2% vs. 64.6%, p=0.00001). A low post-NAC Ki67 tended to be associated with longer DFS than a higher post-NAC Ki67, but this was not statistically significant [p=0.460; HR 0.57 (0.13–2.52)]. The 3-year DFS rate in the low post-NAC Ki67 group was 69% and it was 49% in the high post-NAC Ki67 group.

Conclusions: Changes in Ki67 did not correlate with the DFS, but a low post- NAC Ki67 tended to be associated with better DFS, although not statistically significant. Further study is needed to find a proper biomarker to predict the treatment outcome of TNBC patients.