

Predictors for the Pathological Complete Response of Axillary Lymph Node Metastasis in Pathologically Proven Node Positive Breast Cancer Patients

Abstract

BACKGROUND: Mastectomy together with routine axillary lymph node (ALN) dissection used to be the standard type of surgery for pathologically proven ALN positive breast cancer patients after neoadjuvant chemotherapy (NCT). However, the dissection of the ALN can cause several physical and psychological morbidities. The use of sentinel lymph node biopsy (SLNB) in patients after receiving NCT is still in doubt because chemotherapy can cause lymphadenectomy, thus interfering with the accuracy of SLNB. Previous research demonstrated that the false negative rate (FNR) of biopsy proven node positive breast cancer patients who received SLNB post-NCT ranged from 5.1% to 25%. Therefore, performing SLNB post-NCT is controversial. We aimed to identify predictors for the pathologically complete response (pCR) of axillary lymph nodes (ALNs) after NCT in node positive breast cancer patients.

HYPOTHESIS: A certain group of ALN positive patients may be spared from ALN dissection after NCT.

METHODS: In total, 424 patients with pathologically proven ALN metastasis before NCT were enrolled. Relevant clinical information such as: age, menopausal status, tumor size, hormone receptor (HR) status, the human epithelial growth factor receptor 2 (HER2) status, the Ki67 index and NCT cycles were collected. Variables that were statistically significant ($P < 0.05$) in the univariate logistic analysis were included in the multivariate logistic regression analysis, which was performed to screen independent predictors for ALN pCR. The odds ratios (ORs) and 95% confidence intervals (CIs) were also calculated.

RESULTS: Predictors that were statistically significant ($P < 0.05$) in the univariate logistic analysis (tumor size, Ki67, HR and HER2 status) were included in the multivariate logistic regression analysis. According to the results, patients with a tumor size of T3 ($P = 0.007$, $OR = 0.134$ [95% CI: 0.032-0.572]) or T4 ($P = 0.047$, $OR = 0.276$ [95% CI: 0.077-0.982]) were less likely to show ALN pCR than those with T1 tumors, and HR positive patients ($P = 0.011$, $OR = 0.395$ [95% CI: 0.194-0.805]) were less likely to show ALN pCR than HR negative patients. In contrast, HER2 positive patients ($P = 0.005$, $OR = 2.863$ [95% CI: 1.371-5.980])

were more likely to show ALN pCR than HER2 negative patients, and patients with Ki67>20% (P=0.021, OR=2.427 [95% CI: 1.141-5.160]) were more likely to show ALN pCR than those with Ki67≤20%. In combination with SLNB, those predictors can improve risk stratification, accurately predict post-NCT ALN status and avoid unnecessary ALN dissection.

Keywords: Axillary lymph node metastasis; neoadjuvant chemotherapy; pathological complete response