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A combination of Nottingham prognostic index and IHC4 score predicts pathological complete response of neo-adjuvant chemotherapy in estrogen receptor positive breast cancer

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Pathologic complete response (pCR) prediction after neo-adjuvant chemotherapy (NAC) is important for clinical decision-making in breast cancer. Nottingham prognostic index (NPI) and Immunohistochemical four (IHC4) score are cost-effective prognostic biomarkers. However, whether these factors can predict pCR remains unknown. A new NPI+IHC4 scoring system was built on the combination of NPI and IHC4 score by variable assignment method. A new predictive biomarker named NPI+IHC4 was developed to predict pCR in a study set (n=443) and validated in an external validation set (n=296). Multivariate analysis of variables for a pCR was performed via logistic regression analysis. The ROC curves were employed to test the sensitivity and specificity of variables in predicting pCR and disease-free survival (DFS). In the study set, a lower IHC4 score, NPI and NPI+IHC4 were significantly associated with a high pCR rate; multivariable analysis showed tumor size, TNM, NPI and IHC4 score were independent predictors. NPI+IHC4 showed a better sensitivity and specificity for pCR prediction (AUC 0.699, 95% CI 0.626-0.772) than IHC4 score, NPI, tumor size and TNM stage. In the validation set, NPI+IHC4 had a better predictive value for pCR (AUC 0.665, 95% CI 0.579-0.751) than IHC4 score or NPI alone. In addition, ER+ patients with lower IHC4, NPI and NPI+IHC4 scores had significantly better DFS in both study and validation sets. NPI+IHC4 can predict pCR following NAC and prognosis in ER+ breast cancer. This study provides evidence that incorporating macro-anatomic features and molecular information can improve pCR prediction following NAC.

Biography

Chang Gong has completed her PhD from Sun Yat Sen University and Post-doctoral studies from INSERM of France and Cardiff University of UK. She is a Breast Surgeon and an Associate Professor of Breast Tumor Center, Sun Yat Sen Memorial Hospital, Sun Yat Sen University. She has published more than 30 papers in cancer related journals.

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