A Clinicopathological Prediction Model for Recurrence in Patients with Early-staged Hormonal Receptor Positive, Her-2 Negative Breast Cancer at King Chulalongkorn Memorial Hospital

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Background: Genetic recurrent score (GRS) has been increasingly applied in combination with clinicopathology for predicting recurrence and guiding the potential role of adjuvant chemotherapy in patients with early breast cancer. However, lack of accessibility limits its use for clinical practice especially in developing countries. Our study aims to formulate model for predicting risk of recurrence in patients with hormonal receptor-positive, her-2 negative early breast cancer.

Method: Five hundred and twenty nine hormonal receptor-positive, her-2 negative early breast cancer patients who were diagnosed during 2005 to 2015 in King Chulalongkorn Memorial Hospital were retrospectively reviewed. All potentially clinicopathologic prognostic factors for recurrence were analyzed using multivariable logistic regression.

Results: Ninety-eight hormonal receptor-positive, her-2 negative early breast cancers developed both loco-regional and distant recurrences after a median follow-up of 65.7 months (IQR, 41.2 - 92.3). There is no difference among recurrent and non-recurrent groups in term of age and menopausal status. However, greater number of patients in non-recurrent group had earlier stage (stage I or II). Most of patients in both groups received hormonal therapy, while more patients in the recurrent group received adjuvant (82.7% vs. 70.8%; P = 0.017) and neoadjuvant chemotherapy (35.1% vs 11.2 %; P < 0.001). From multiple logistic regression using clinical and pathologic variables, lymphovascular invasion (LVI), percentage of Ki-67 and tumor size were independent predictors of recurrence (OR 3.04; P < 0.001, OR 1.02; P = 0.001 and OR 1.18; P = 0.05, respectively). The prediction model for 10-year recurrent risk appears as "Log (odds) = -2.744859+1.173178*(LVI)+0.3281315*(pStage2)+0.730650*(pStage3)-0.008061*(PercentageER) + 0.0221992*(PercentageKi67)". Probability of recurrence is defined as odd/(1+odd). This model yielded a C statistic above 0.7 on validation in independent population.

Conclusions: A new clinicopathologic prediction model provides comprehensive recurrent estimation for Thai patients with hormonal receptor-positive, her-2 negative early breast cancer. Further comparison between GRS and our model is needed to define the possibility in estimated risk of recurrence.