External Validation of a Preoperative Prognostic Nomogram for Renal Cell Carcinoma in Two Patient Populations

Introduction and Objective: The aim of this study was to establish the discriminating accuracy of Kanao's preoperative nomogram for renal cell carcinoma in predicting cause-specific survival among representative patients who underwent nephrectomy.
Materials and Methods: Patients originated from two centers: Chiba University Hospital (CUH; n=151) and Chiba Cancer Center (CCC; n=91), Chiba, Japan. The following data were collected: age, gender, clinical presentation (incidental, local, and systemic), surgical technique, 2002 TNM classification, clinical tumor size as the greatest diameter in centimeters, disease recurrence, and progression. We used Kanao's nomogram to calculate the probability of cause-specific survival after 5 years of follow-up in this study, although the nomogram was originally developed and validated to predict 1-, 3-, and 5- year cause-specific survival.
Results: The c-index values describing the predictive accuracy of the nomogram were 0.692 in CUH and 0.834 in CCC. The c-index value of Kanao's nomogram in CCC was much higher than that in CHU. Differences were not statistically significant (P=0.191). Figure 1 shows the calibration plot of Kanao's nomogram in CUH and CCC. As a whole, the calibration plot of Kanao's nomogram in CUH gave an overestimation of the predicted probability of cause-specific survival after 5 years as compared with the actual probability. The calibration plot in CCC demonstrated that the predicted probability of cause-specific survival after 5 years is consistent with the actual probability.
Conclusions: Results of external validation were different at each cohort. We constructed calibration plots of Kanao's nomogram and confirmed the tendency at each institution. Inconsistency of results among two centers makes it difficult to reach a valid conclusion. Therefore, the predictive accuracy of Kanao's nomogram was not settled. Clinicians need to confirm the predictive accuracy of Kanao's nomogram and construct calibration plots when applying this nomogram to different patient populations.

Figure 1 : The calibration plot of Kanao's nomogram in CUH and CCC

(CUH) (CCC)