Cancer-Specific Survival After Nephroureterectomy for Upper Urinary Tract Urothelial Carcinoma: External Validation of a Predictive Nomogram Using a French Collaborative National Database

Introduction and Objectives: To externally validate the accuracy of predicting 5-yr CSS post radical nephrouretectomy (RNU) using a published postoperative nomogram applied to a French national database of upper urinary tract urothelial carcinoma (UUT-UC).
Material and Methods: We reviewed complete data for 904 patients treated by RNU for UUT-UC 1995 and 2010 at 20 institutions in France. The original nomogram was based on 4 predictive variables (age, T stage, N stage and grade) and had an accuracy of 75.4% of predicting 5-yr CSS. We have applied these variables to our cohort of patients and explored the relationship with actual 5-yr CSS by multivariate Cox' proportional hazards regression analysis. The discriminating ability of the nomogram was validated by the Harrell concordance index (c-index) followed by calibration. Bootstrapping was used for internal validation (confidence intervals).
Results: Median follow-up was 33.6 months (0-225). Mean age was 68.8 (28-97). Tumour stages T1, T2, T3 and T4 occurred in 51%, 10.4%, 31.1% and 7.5% , respectively. Of the 38.6% who had a lymph node dissection, 74.2% and 27.8% were N0 and N1+, respectively. Grades 1, 2 and 3 occurred in 9.1%, 32.9% and 58%, respectively. Overall, 213 (27.7%) patients have died. Overall, the predicted 5-year CSS rate was 71%. Of the 4 variables included in the nomogram, all were associated with decreased 5-yr CSS in multivariate analysis ($p<0.001$). Applied to our national database, the c-index of the postoperative nomogram was only 0.613 (>0.70 indicates accurate concordance) and in general it was not well calibrated.
Conclusions: There was a discrepancy between predicted 5-yr CSS as estimated by a postoperative nomogram and actual 5-yr CSS rates in our population of patients. This fact needs to be borne in mind when counselling patients but due to the rarity of such tumours the use of such predictive models may remain informative for clinicians until a more population specific nomogram model can be devised.