UROTHELIAL CARCINOMA

A novel nomogram for post-nephroureterectomy prognosis

Nephroureterectomy with bladder cuff removal is the gold standard surgical treatment for localized urothelial carcinoma of the upper urinary tract. Long-term follow-up of patients is important because outcomes are very variable and the risk of recurrence is high. To date, however, no tool for prediction of post-nephroureterectomy disease-specific survival has integrated all of the major risk factors.

Claudio Jeldres and colleagues have addressed this issue by developing a new nomogram. The researchers used the Surveillance, Epidemiology and End Results (SEER) database to identify 5,918 people with upper tract urothelial carcinoma who had undergone nephroureterectomy. Patients were assigned to either a development or external validation cohort.

In the development cohort, multivariate Cox regression models were fitted using eight variables: age at surgery, sex, ethnicity, tumor stage, grade and location, nodal status, and type of surgery (that is, with or without excision of the bladder cuff). The most streamlined and informative model—generated by backward elimination—was used to produce a cancer-specific mortality prediction nomogram incorporating age, tumor grade, and pathological T and N stages.

The nomogram was found to be 75% accurate when calibrated in the external validation cohort (actual 5-year freedom from cancer-specific death rates were 77% in both cohorts). The new nomogram performed significantly better than the International Union Against Cancer staging system, which was 65% accurate.

> **❝ ...survival estimates generated using [the] nomogram will help ... determine ... optimal follow-up... ❞**

This nomogram is unique in that it includes both patient and tumor characteristics. It shows that a patient aged 55 years with pT2, grade 3, pN0 upper tract urothelial carcinoma has an almost 90% chance of surviving their cancer in the 5-year period after nephroureterectomy. By contrast, a patient of the same age who has undergone the same procedure for pT3, grade 3, pN1–pN3 disease has a 5-year cancer-specific mortality-free survival rate of 59%.

Jeldres et al. assert that survival estimates generated using their nomogram will help clinicians determine the optimal follow-up regimen, in terms of both monitoring and adjuvant therapy. Interestingly, their findings—published in *Cancer*—lend weight to the importance of bladder cuff excision. Unfortunately, this crucial step was not performed during one-third of the surgeries studied, which compromised patient outcomes.

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Original article Jeldres, C. *et al.* Highly predictive survival nomogram after upper urinary tract urothelial carcinoma. *Cancer* **116**, 3774–3784 (2010)