Patterns of failure and influence of potential prognostic factors after surgery in transitional cell carcinoma of the upper urinary tract

Introduction

Transitional cell carcinoma (TCC) of the upper urinary tract is relatively uncommon. It is estimated that renal pelvic TCC accounts for approximately 5% of all urothelial tumors in the United States.1,2 Ureteral TCC is even less common than renal pelvic TCC, by a ratio of 1:3 to 1:4.3,4 In Japan, in 2000, renal pelvic and ureteral carcinomas accounted for 0.2%–0.3% of all malignant neoplasms, respectively.5

The limited number of patients with upper urinary tract tumors makes the organization of randomized, prospective trials unlikely. There have been a few studies which have systematically analyzed patterns of relapse and the influence of potential prognostic factors such as extent of surgery, adjuvant chemotherapy, and pathological findings.6–10 Retrospective review of data is thus of the utmost importance to determine potential prognostic factors and the role of adjuvant therapy.

We reviewed our experience with patients surgically treated for upper urinary tract TCC to define patterns of failure and prognostic factors, as well as the role of adjuvant chemotherapy.

Patients and methods

Patients

The study population comprised 114 surgically treated patients with upper urinary tract TCC treated at Jikei University Hospital between March 1990 and December 2004. All these patients underwent radical surgery without any type of neoadjuvant therapy.

Preoperative evaluation and treatment

All patients underwent pretreatment evaluation with urine cytology, chest X-ray, intravenous pyelography, retrograde
pyelography, computerized tomography or magnetic resonance imaging scan of the abdomen, and bone scanning. Clinical stage was determined according to the 2002 version of the unified tumor node metastasis (TNM) system. Tumor extent and grade was determined histologically by board certified pathologists according to the General rule for clinical and pathological studies on renal pelvic and ureteral cancer.

Initial treatment of all patients was surgery. Nephroureterectomy with removal of a bladder cuff was conducted in 110 patients. Lymph node dissection of the hilar and regional nodes adjacent to the ipsilateral great vessel or sampling biopsy was implemented in patients who had enlarged nodes on preoperative examination or were suspected of having enlarged nodes on intraoperative examination. The remaining 4 patients underwent radical nephrectomy under the diagnosis of renal cell carcinoma without lymph node dissection. But their final pathology revealed TCC.

Adjuvant therapy was conducted postoperatively in 44 patients (38.6%). The therapy was implemented at the discretion of the attending physician based on the pathological findings; cisplatinum-based systemic chemotherapy was used in 29 patients, fluorouracil-based chemotherapy in 13, and chemo (cisplatinum-based, systemic) -radiation therapy in 2 patients.

Follow up and endpoints

After surgery, patients were evaluated at 3- to 6-month intervals, by urine cytology, cystoscopy, and imaging studies, including chest X-ray, abdominal ultrasonography, computed tomography scans, and bone scanning. Recurrence was defined clinically as the appearance of new lesions on any of these studies. Causes of death were determined based on hospital records and/or death certificates. Patterns of failure and patient survival were compared with clinicopathological parameters.

Statistical analysis

The χ² test was used to evaluate the relationship between comparisons of variables, with P < 0.05 as significant. Survival curves of the patients were compared using the Kaplan-Meier method and analyzed by the log-rank test; the level of significance was again set at 5%. Cox proportional hazards models were used to assess the hazard ratio (HR) with the 95% confidence interval (95% CI) in univariate or multivariate analysis. All statistical analyses were conducted using StatView 5.0 (SAS Institute, Cary, NC, USA).

Results

Patient characteristics

The mean (± SD) follow-up period of the 114 patients was 47.9 ± 36.5 months after surgery (Table 1). The male-to-female ratio was 4:1, with the mean age being 64.4 ± 9.0 years.

Clinicopathological findings

The primary tumor was located in the renal pelvis, ureter, or both in 58 (50.9%), 46 (40.4%), and 10 patients (8.8%), respectively. No bilateral tumors were found, with left-side predominance in 61 patients (53.5%) and right in 53 (46.5%).

Pathological stage was distributed as pTis in 1 patient (0.9%), pTa in 13 (11.4%), pT1 in 28 (24.6%), pT2 in 22 (19.3%), pT3 in 45 (39.5%), and pT4 in 5 patients (4.4%). Pathological grade was distributed as G1 in 4 patients (3.5%), G2 in 53 (46.5%), and G3 in 57 (50.0%). LVI was more frequent in pelvic tumors (48.9% vs 24.3%; P = 0.02)