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Risk factors and prognosis of intravesical recurrence after surgical management of upper tract urothelial carcinoma: A 30-year single centre experience



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ABBREVIATIONS

Abstract Objective: To review the incidence, predictors and prognosis of bladder cancer recurrence after management of upper tract urothelial carcinoma (UTUC).

Patients and methods: We retrospectively reviewed patients who were surgically treated for UTUC from 1983 to 2013. The tumours were categorised according to the 1997 Tumour-Node-Metastasis (TNM) staging and the three-tiered World Health Organization grading systems. The primary endpoint was the occurrence of any intravesical recurrence after treatment. We studied the possible risk factors that may contribute to development of intravesical recurrence, as well as the prognosis of the patients who had recurrence.

Results: In all, 297 patients were eligible for analysis. Recurrent bladder tumours occurred in 139 patients (46.8%). The mean (range) time to recurrence after surgery

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CIS, carcinoma *in situ*;
RNU, radical
nephroureterectomy;
UTUC, upper tract
urothelial carcinoma

was 33 (6–300) months. Neither sex, past history of bladder tumours, concomitant bladder tumour, the side of the tumour, UTUC stage, grade, presence of carcinoma *in situ* or multicentricity at the time of diagnosis of UTUC, were significant predictors of intravesical tumour recurrence. Ureteric tumour was the only identified risk factor ($P = 0.02$). Post-treatment bladder recurrence was a significant predictor of later urethral recurrence ($P = 0.002$).

Conclusions: In our present series, bladder cancer recurrence of urothelial malignancy occurred in nearly half of the patients after surgical management of UTUC. Ureteric tumour was the only identifiable risk factor, thus patients with ureteric tumours may benefit from prophylactic intravesical chemoimmunotherapy. Bladder recurrence does not appear to affect the cancer-specific survival after surgical management of UTUC.

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Introduction

Upper tract urothelial carcinoma (UTUC) arises from the urothelial lining of the urinary tract, i.e. from the renal calyces to the ureteric orifice. It comprises 10% of all renal tumours and 5% of all urothelial malignancies. Multiple anatomical locations in the urinary tract, being either synchronous or metachronous, is a common feature of UTUC [1].

Whilst synchronous bladder tumour can be identified at the time of evaluation of UTUC, recurrent bladder tumours remain a major concern, with a high incidence that varies considerably from 20% to 50% [2,3] and its detection requires long-term surveillance.

Although the risk factors for the development of bladder tumour after surgical management of UTUC have been previously studied, there is considerable variation in the published literature. A history of bladder tumour prior to UTUC [4,5], primary tumour location in the ureter [6], multifocality [5], tumour stage and surgical procedures [3], as well as sex and systemic chemotherapy [7], have all been reported as predictors of bladder cancer recurrence. Consequently, and because of a lack of consensus, all patients are still subjected to the same routine 3-monthly cystoscopy follow-up schedule.

In the present study, urologists reviewed their results from >300 consecutive patients treated over a 30-year period for UTUC, at one of the largest tertiary Urology centres in the region, and stratified patients with UTUC based on their risk factors. This was undertaken to determine whether low-risk patients could benefit from an extended follow-up schedule and whether those at high risk may benefit from prophylactic intravesical chemotherapy. The expectation being to decrease patient suffering, the overall cost of the treatment, and lower the incidence of progression, as well as tumour recurrence, thus improving patients' cancer survival and quality of life.

Patients and methods

After Institutional Review Board approval, we retrospectively reviewed our ongoing database for patients who were surgically treated for UTUC from 1983 to 2013.

The preoperative evaluation included complete history, physical examination and standard routine laboratory measurements, as well as radiological investigations (CT and/or MRI). In most patients, cystoscopy and retrograde ureteropyelography and/or diagnostic ureteroscopy were done in a separate session; any concomitant bladder tumours were resected, and when it was feasible, upper tract tumours were biopsied.

A standard radical nephroureterectomy (RNU) procedure was performed via an open approach in most of the patients; with one abdominal pararectal incision or two incisions, and a standard lumbar and lower abdominal incision. In all, 24 cases were done laparoscopically and 13 were managed by open renal-sparing surgeries for solitary functioning renal units (seven with ileal ureter, four for distal ureterectomy/Boari flap, and two with ureteroureterostomy).

The tumour was staged according to the 1997 TNM classification. The three-tiered WHO grading system was used to determine the pathological grade by different pathologists [8]. The tumour location was divided into three groups: pelvicalyceal, ureteric, or both pelvicalyceal and ureteric. Multifocality was defined as the presence of two tumour foci in non-contiguous locations within the ipsilateral renal unit. None of our patients received neoadjuvant or adjuvant systemic chemotherapy.

In the first 2 years, cystoscopy was performed every 3 months and contrast-enhanced CT every 6 months. From the third to fifth year, cystoscopy was performed every 6 months and CT annually. Thereafter, urine analysis and cytology were completed annually during the clinical examination.

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