

The Limited Value of Upper-Tract Urine Cytology for the Diagnosis of Upper Tract Urothelial Carcinoma

Introduction and Objective: We evaluated the diagnostic efficacy of voided urine cytology (VC), retrograde pyelography (RP), upper-tract urine cytology (UTC), and multidetector computed tomography (MDCT) in the patients with upper tract urothelial carcinoma (UTUC) treated surgically.

Materials and Methods: Between January 2003 and April 2010, 99 patients (73 male, 26 female) underwent radical nephroureterectomy for UTUC. All of them received preoperative VC, RP, UTC, and MDCT examination. We retrospectively evaluated the diagnostic accuracy and detection rate of UTUC using these diagnostic tools.

Results: The patients with pelvic cancer were 56.5% and with ureteral cancer were 43.5%, respectively. On final pathology, 31.3% of patients had non-muscle invasive disease (pTa, pT1) and 68.7% had invasive disease (\geq pT2). Low-grade and high-grade cancers were present in 25.3% and 74.7% of patients, respectively. Sixteen patients (16.2%) had positive VC before RP. On RP, abnormal findings which were filling defects, ureteral strictures, and/or hydronephrosis were observed in 90 patients (90.9%), and positive UTC during RP examination was found in 48 patients (48.5%). On MDCT, tumor foci of UTUC could be detected in 90 patients (90.1%) and 7 patients (7.7%) had only abnormal signs of wall thickening and/or hydronephrosis. On MDCT, 2 patients had no remarkable finding on upper urinary tract which proved to be non-papillary tumor and carcinoma *in situ* in postoperative pathological examination, but they had positive VC. We then evaluated the performance of diagnostic accuracy using VC, RP, UTC, and MDCT examination. The false negative rate for the detection of UTUC was 6.1% using VC, RP, and UTC examination. In contrast no false negative case was observed using VC in combination with MDCT examination.

Conclusion: Our results indicated UTC had limited value of diagnosis of UTUC because only half of the cases had positive UTC. The combination examination of VC and MDCT is essential to identify UTUC preoperatively.