32 Comparative study of 1-day versus multiple-day administration of antimicrobial prophylaxis in radical cystectomy

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Introduction & Objectives: Appropriate protocol for antimicrobial prophylaxis (AMP) in radical cystectomy (RC) with intestinal urinary diversion (IUD) remain to be established. Although the discontinuation of AMP within 24 h of the operation is generally recommended, few studies have compared the ability to prevent infectious complication (IC) between 1-day and multiple-day AMP administration. Here, we prospectively compared the rate of IC between 1-day and multiple-day AMP. Clinical and perioperative risk factors for IC were also investigated.

Materials & Methods: Between January 2015 and April 2018, a total of 140 consecutive patients underwent RC with IUD for bladder cancer in our hospital. Patients with intestinal injury/resection during surgery (n=13), immune deficiency (n=1) and AMP protocol violation (n=3), were excluded from the analysis. A total of 123 patients were included in the analysis. Between 2015 and 2016, AMP was performed using second-generation cephalosporin intravenously once before the operation, every 3 h during the operation, and twice daily until postoperative day 2 (n=54), day 3 - 6 (n=11) (multiple-day AMP group, n=65). After 2017, AMP after operative day was omitted (1-day AMP group, n=58). In all patients, 500mg of levofloxacin every 24 h for 2-3 days was administered orally at the removal of ureteral stents. The patients were monitored for postoperative ICs during the first 90 days. The rate of IC, including urinary tract infection (UTI), surgical site infection (SSI), and other infection (OI), was analyzed between groups. Clinical and perioperative factors included age, smoking, diabetes mellitus, body mass index, American society of anesthesiology physical status classification, estimated glomerular filtration rate (eGFR), serum albumin/hemoglobin/C-reactive protein, neoadjuvant chemotherapy, types of urinary diversion, operative time, blood loss/transfusion, AMP (1-day or multiple-day) and enhanced recovery after surgery. Using multivariate analysis, risk factors for IC were investigated.

Results: There was no significant difference in the rate of IC between the 1-day AMP group (45%: 26/58) and the multiple-day AMP group (43%: 28/65) (p = 0.85). UTI/SSI/OI occurred in 34/12/2% of the 1-day AMP group and in 25/20/5% of the multiple-day AMP group. Also, regarding the rate of UTI/SSI/OI, no significant difference was found between groups. Multivariate analysis found that eGFR was the only significant risk factor for IC. The rate of IC in patients with less than 45, 45-60, and more than 60 mL/min/1.73m^2 eGFR was 88%, 52% and 38%, respectively.

Conclusions: Our results suggest that 1-day AMP is more feasible for preventing infection after RC with IUD compared to multiple-day AMP. Considering the high IC rate, however, a more effective AMP for RC with IUD should be explored, particularly for patients with lower eGFR.