Controversies on perioperative prophylaxis

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Inappropriate antibiotic use increases environmental pressure favoring the emergence of antimicrobial-resistant bacteria that may cause surgical site infections (SSIs), resulting in the administration of more antibiotics, an increase in the cost of care, and a prolongation of hospital stay. There have been many reports and a comprehensive review on the prevention of SSI and the use of antimicrobial prophylaxis (AMP) in general surgeries. In the CDC guidelines published in 1999, surgical wounds are classified into clean (class I), cean-contaminated (class II), contaminated (class III) and dirty/infected (class IV). Although, in this classification, operative wound including urinary tracts belongs to cean-contaminated (class II), little description are available to various procedures in urologic surgery. On the other hand, the EAU guidelines published in 2001, showed that protocols for AMP administration in open and laparoscopic operations with/without bowel segments. In urologic surgery, however, only a few papers demonstrating evidences have been reported to support these guidelines, except for those on transurethral prostatectomy.

In order to assess the ability of our protocol for AMP to prevent perioperative infections in urologic surgery, 1,353 operations of open and laparoscopic urologic surgery conducted in 21 hospitals between September 2002 and August 2003 were subjected to analyses. We classified surgical procedures into three categories by invasiveness and contamination levels: Category A; clean less invasive surgery, Category B; clean invasive or clean-contaminated surgery, Category C; surgery with urinary tract diversion using the intestine. Prophylactic antibiotics were administrated intravenously according to our protocol, such as Category A; first or second generation cephems or penicillins in the operative day only, Category B; first and second generation cephems or penicillins for 3 days, and Category C; first, second or third generation cephems or penicillins for 4 days. The wound conditions and general conditions were evaluated in terms of SSI as well as remote infection (RI) up to postoperative day (POD) 30.

The SSI rate in surgery with intestinal urinary diversion was the highest as

23.3 □, followed by 10.0 □ in surgery for lower urinary tract, and 8.9□ in nephroureterctomy, 6.0 □ in radical prostatectomy. The SSI rates in open and laparoscopic nephrectomy/adrenalectomy were 0.7 % and 1.4 □, respectively. Similarly, the RI rate in surgery using intestinal urinary diversion was the highest as 35.2 □, followed by 16.7 □ in surgery for lower urinary tract, and 11.4□ in nephroureterctomy, 7.6 □ in radical prostatectomy, while RI rates in clean surgery were less than 5 □. Age, obesity, nutritional status (low proteinemia), diabetes mellitus, lung disease, duration of operation, and blood loss volume were recognized as risk factors for SSI or RI in several operative procedures. According to these results, our conclusions are:

1) Genital/scrotal surgery and nephrectomy belong to clean procedures.
2) Operations including lower urinary tract as well as nephroureterctomy are clean-contaminated procedures.
3) With regard to AMP, little are differences between open and laparoscopic procedures.
4) Urinary diversion using bowel segments is a contaminated procedure.

Thus, our new recommendations in Japan are:

□Clean (Penicillin, Cephalosporin 1º for 1 day)
Scrotal/genital operations
Clean abdominal surgery (RPLND, Laparoscopic and open adrenalectomy/nephrectomy, etc.)
Endoscopic surgery (TUR-Bt, TUR-P, TUL, etc.)

□Clean-contaminated (Penicillin+ BLI, Cephalosporin 1º/2º for 2-3 day)
Nephroureterectomy
Procedures including lower urinary tract (Total and partial cystectomy, Subcapsular and radical prostatectomy, etc.)

□Contaminated (Penicillin+BLI, Cephalosporin/Cefazolin 2º for 3-4 days)
Procedures including urinary diversion with bowel segments