

Role of 1 week of antibiotic prophylaxis before percutaneous nephrolithotomy

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Received: 31 August 2012 / Accepted: 11 September 2012 / Published online: 25 September 2012
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Dear Editor,

We read the paper by Kumar et al. “Risk factor for urosepsis following percutaneous nephrolithotomy: role of 1 week of nitrofurantoin in reducing the risk of urosepsis” [1], with great interest.

The authors of the study have addressed an important topic of urosepsis after percutaneous stone intervention. Infectious complications significantly increase the morbidity of percutaneous stone procedures and lead to significant health care costs [2]. The incidence of urosepsis after percutaneous nephrolithotomy (PCNL) has been reported to be 0.3–2.5 %. American Urological Association’s Best Practice Policy Panel recommends antibiotic prophylaxis for ≤ 24 h for PCNL in presence of sterile urine [3]. Patients with large stones and other risk factors (decreased immunity, pelvicalyceal dilation, diabetes, etc.) are prone to develop sepsis despite intake of prophylactic antibiotics. In 1986, Charton et al. addressed the risk of infection in patients without preoperative bacteriuria, finding 35 % postoperative urinary tract infection after percutaneous stone surgery [4]. In 1994, Darenkov et al. compared patients treated with 3–5 days of ciprofloxacin to patients who did not receive pre-PCNL antibiotics and found rate of infection reduced from 40 % in the untreated group to 17 % in the treated group [5]. But no prevalent guidelines as yet recommended treating patients pre-operatively in presence of sterile urine. In 2004, Mariappan et al. demonstrated that a positive stone and pelvic urine culture increases the risk of developing systemic inflammatory response syndrome (SIRS) following the

procedure by fourfold [6]. Bladder urine culture was not found to be a predictor of SIRS. Based on their findings, they treated their patients with stones >2 cm for 7 days with ciprofloxacin before PCNL irrespective of urine sterility [7]. They found the incidence of SIRS to be three times lower in the treated group, and decreased rates of positive pelvic urine and stone cultures.

Similarly, authors of the current study have verified the increase in SIRS following PCNL and a decreased risk of SIRS after 7 days of treatment with nitrofurantoin in patients with large stones (>2.5 cm). It is an interesting choice of antibiotic considering nitrofurantoin is only bacteriostatic not bacteriocidal. The authors chose nitrofurantoin because of decreased incidence of bacterial resistance in their community when compared to fluoroquinolones. The authors have shown lower positive pelvic urine and stone culture rates and incidence of endotoxemia in treated group. In view of this evidence, treating patients with risks factors of urosepsis (large stones, dilation of pelvicalyceal system and decreased immunity) with oral antibiotics for a week prior to percutaneous interventions should be strongly considered. Antibiotics should preferably be selected based on patient’s previous urine culture and resistance patterns in the community. Furthermore, the above evidence needs to be corroborated by a large multicenter randomized trial which might lead to change in current guidelines for antibiotic prophylaxis in PCNL patients to increase patient safety.

References

1. Kumar S, Bag S, Ganesamoni R, Mandal AK, Taneja N, Singh SK (2012) Risk factors for urosepsis following percutaneous nephrolithotomy: role of 1 week of nitrofurantoin in reducing the risk of urosepsis. *Urol Res* 40(1):79–86

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2. Bhanot N, Sahud AG, Sepkowitz D (2009) Best practice policy statement on urologic surgery antimicrobial prophylaxis. *Urology* 74(1):236–237
3. Wolf JS Jr, Bennett CJ, Dmochowski RR, Hollenbeck BK, Pearle MS, Schaeffer AJ (2008) Best practice policy statement on urologic surgery antimicrobial prophylaxis. *J Urol* 179(4):1379–1390
4. Charton M, Vallancien G, Veillon B, Brisset JM (1986) Urinary tract infection in percutaneous surgery for renal calculi. *J Urol* 135(1):15–17
5. Darenkov AF, Derevianko II, Martov AG, Kotliarova GA, Kondrat'eva EM, Siniukhin VN (1994) The prevention of infectious-inflammatory complications in the postoperative period in percutaneous surgical interventions in patients with urolithiasis. *Urol Nefrol* 2:24–26
6. Mariappan P, Smith G, Bariol SV, Moussa SA, Tolley DA (2005) Stone and pelvic urine culture and sensitivity are better than bladder urine as predictors of urosepsis following percutaneous nephrolithotomy: a prospective clinical study. *J Urol* 173(5):1610–1614
7. Mariappan P, Smith G, Moussa SA, Tolley DA (2006) One week of ciprofloxacin before percutaneous nephrolithotomy significantly reduces upper tract infection and urosepsis: a prospective controlled study. *BJU Int* 98(5):1075–1079