Analysis of Risk Factors Associated with Urinary Tract Infection in Renal Transplant Recipients: Single Center Experience

Alparslan Ersoy[1], Nimet Aktas[1], Ayşegul Oruc[1], Bulent Gul[1], Abdulmecit Yildiz[1], Emel Isiktas Sayilar[1], Yavuz Ayar[1], Halis Akalin[2]

1 Uludag University Faculty of Medicine, Department of Nephrology, Bursa, TURKEY
2 Uludag University Faculty of Medicine, Department of Clinical Microbiology and Infectious Diseases , Bursa, TURKEY

INTRODUCTION AND AIMS

Urinary tract infection (UTI) is the most common cause of bacterial infection in kidney transplant recipients. It occurs frequently in the early period and is associated with graft dysfunction. Factors that might contribute to the development of UTIs are related to the renal allograft, delayed graft dysfunction, duration of catheterization, anatomical features of the recipient and allograft, high dose immunosupression and diabetes mellitus. The epidemiology and specific risk factors for recurrent UTI after kidney transplantation have not been well studied. We evaluated frequency, risk factors and recurrence rate of UTI of renal transplant recipients at our center.

METHODS

This observational, cross-sectional study included 213 consecutive patients underwent transplantation in our center between January 2006 and December 2011. A UTI was diagnosed based on the presence of one of the following signs or symptoms: fever, urgency, frequency, dysuria, or suprapubic tenderness, together with a positive urine culture (>10,0000 colony forming units of a pathogenic microorganism per mL of urine). Recurring UTI was defined as ≥ 2 UTIs in 6 months or ≥ 3 UTIs in 12 months.

RESULTS

The 106 patients were diagnosed with 171 episodes of UTI, with recurrent UTI among 36.8% of cases (n=39). In this cohort UTI frequency was 49.2%. Among patients with recurrent UTI, 1 patient had 5 episodes, 4 patients had 4, 15 patients had 3, 19 patients had 2 UTI episodes. The mean age and duration of transplantation in the recipients were 39.8±11 years and 38.3±39 months in the UTI group; 36.8±11 years and 44.3±34 months in the non-UTI group, respectively (p>0.05). Recipients with UTI had higher female gender (60.4% vs. 21.5%, p<0.001), ureteral catheterization (48.1% vs. 28%, p<0.01) and co-morbidity (43.4% vs. 27.1%, p<0.003) ratios when compared with those of non-UTI group. There was no significant difference between UTI and non-UTI groups in terms of donor type, primer disease, diabetes mellitus, acute rejection and surgical complications. There was significant difference between immunosupresive agents among patients with UTI. Cyclosporine A (CsA) or tacrolimus (Tac) was used as calcineurin inhibitor. The ratio of CsA (60.6%) usage was higher than the ratio of Tac usage (38.7%) in UTI group (p=0.004). Of 44 patients using mTOR inhibitors, 11 (%25) had UTI, while 33 (75%) had not UTI (p<0.001). In UTI group serum creatinin levels significantly reduced after treatment (1.52±0.8 vs. 1.42±0.7 mg/dL, p=0.055). The rate and duration of catheterization were significantly higher in the UTI group (48.1% vs. 28%, p<0.01; 66.1±66.6 days vs 55.9±40.4 days, respectively). First UTI attack was seen at 13.7±26 months after transplantation. In cultures of urine samples E.coli is the most isolated microorganism (33.9%), and 44.4% of these was ESBL(+). In cultures of 23 (21.6%) recipients, more than one microorganism was isolated. In regression analysis female gender, co-morbidity and ureteral catheterization were independent risk factors for UTI (OR 6.8, %95 CI:3.45-13.4, p<0.001; OR 2.3, %95 CI:1.15-4.93, p<0.05; OR 2.8, %95 CI:1.35-5.81, p<0.01, respectively). In subgroup analysis the recurrence risk in UTI group was 4.2 times higher in diabetic recipients (p<0.05, %95 CI:1.15-15.29) according to non-diabetic ones.

CONCLUSIONS

In our study we revealed that female gender, ureteral catheterization and co-morbid diseases were risk factors for UTI. We showed an association of immunosupressive agents with UTI. In renal transplant recipients UTI might lead to graft dysfunction, so risk factors and immunosupressive agents have to be considered to minimize UTI risk. Further studies are needed to confirm the association of immunosupresive agents with UTI.

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