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Country Data

Urinary tract infection in renal transplant recipients

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Abstract

Introduction: Urinary tract infection (UTI) is the commonest bacterial infection occurring in renal transplant recipients, and it is associated with significant morbidity. This study aimed to assess the characteristics of all UTI episodes diagnosed in renal transplant patients who attended regularly for follow up in the nephrology department of National Heart Center, Tripoli, Libya.

Methods: Data were collected by retrospective review of patients' medical records. UTI was defined as a urine culture containing more than 10^5 colonies/ml and pyuria (10 leukocytes /HPF).

Results: Out of a total of 112 kidney transplant patients, UTI was diagnosed in 33 patients (29.5%). The mean age of affected patients was 43±20 years with a range of 20-63 years. Most of the episodes (72%) occurred during the first 3 months after transplantation, and 60.6% of affected patients had more than one episode of infection. A larger proportion of females were affected than males (40.8% versus 20.6% respectively, P=0.02). No significant difference was detected in the proportion of affected patients whether the donor was live-unrelated or live-related (32.3% versus 28.4% respectively, P=0.43). The commonest causative microorganism was *E. coli* (38.7%), followed by *klebsiella* (25.8%), *Staphylococcus* (25.8%), and others (9.7%). The commonest drug used for treatment was ciprofloxacin (51.6%), followed by amoxicillin-clavulinic acid (22.6%), meropenem (12.9%), and others (12.9%).

Conclusion: The prevalence of UTI in our cohort of patients is similar to that reported by others. The commonest causative agent was *E. coli*, and ciprofloxacin was the most commonly used drug.

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Introduction

Urinary tract infection (UTI) is the most common infection seen after kidney transplantation, it is seen in 30-40% of recipients during the first four months after transplantation [1, 2]. Although different studies reported widely varying incidence rates, the majority of organisms cultured were Gram-negative (76%) with approximately 33% being caused by *E. coli* and 20% by *Enterococcus* and *Klebsiella enterobacter*. Gram-positive organisms are involved less frequently [3]. Reported isk factors for UTI include advanced age, female gender, reflux kidney disease, cadaveric donor, pre-transplantation UTI, prolonged period of hemodialysis, polycystic kidney disease, diabetes mellitus, prolonged postoperative bladder catheterization, immunosuppression, allograft trauma, and technical complications associated with ureteral anastomosis [3, 4]. Recurrence or re-infection is a common occurrence. The impact of UTI on graft survival and patient mortality was variable, Memikoğlu *et al* [5] study showed that there was a tendency towards graft loss among patients with UTI, but there was no increased risk of death, while Chuang *et al* [4] study showed the opposite effects. A recent large data analysis of the United States Renal Data System (USRDS) has shown that late UTI in adult renal transplant recipients is associated with a higher risk of both graft loss and patient death [6]. In adults, UTI after transplantation has been associated with significant morbidity that appears to be related to the time of occurrence of the infection after transplantation [7].

This study aimed to identify the prevalence, the causative microorganisms, and the drugs used for the treatment of UTI in renal transplant patients in the nephrology department of National Heart Center, Tripoli, Libya.

Table 1: Gender and type of kidney donor of kidney transplant patients affected by urinary tract infections (UTI), compared to patients not affected with UTI

Patient characteristics		No UTI (N=79)	UTI (N=33)	P value
Gender	Male	50 (79.4%)	13 (20.6%)	0.02*
	Female	29 (59.2%)	20 (40.8%)	
Donor relation	Live-related	58 (71.6%)	23 (28.4%)	0.43
	Live-unrelated	21 (67.7%)	10 (32.3%)	

* Statistically significant

Methods

The medical records of transplanted patients were studied retrospectively. According to local protocols, transplant patients are followed up weekly for the first 3 months after transplantation, then twice monthly for the next three months, then monthly for the rest of their lives. During follow up visits, patients are asked about symptoms of UTI, and routine laboratory investigations include urine analysis. Urine culture and abdominal ultrasound scans are requested if symptoms or signs of UTI are noticed. UTI is defined as a urine culture containing more than 10^5 colonies/ml and pyuria (10 leukocytes /HPF).

Treatment of UTI was modified according to culture and sensitivity results. Evaluation of treatment results was done after one week by further clinical evaluation and by repeating urinalysis and culture.

Minitab (Version 15) was used for statistical analysis and percentages were compared using Chi square test.

Results

The total number of patients under regular follow up in the center was 112 patients. There were 63 males and 49 females. Transplants were from live-related donors in 31 patients and from live-unrelated donors in 81 patients.

UTI was diagnosed in 33 patients (29.5%); their mean age was 43±20 years with a range of 20-63 years. Some clinical criteria of affected patients are outlined (Table 1). Most of UTI cases (72%) occurred during the first 3 months after transplantation, and 60.6% of affected patients had more than one episode of infection. Gram-negative bacteria were the commonest isolated microorganisms; *E. coli* was isolated in 38.7% of cases, followed by *klebsiella* (25.8%), *Staphylococcus* (25.8%), and other organisms (9.7%). The commonest drug used for treatment was ciprofloxacin (51.6%), followed by amoxicillin-clavulinic acid (22.6%), meropenem (12.9%) and others (12.9%).

Discussion

In our patients' population the prevalence rate of UTI was 29.5%. Female recipients were reported to be at a greater risk for development of UTI than males [3, 5, 7], although Nazemian *et al* [8] found no correlation between prevalence of UTI and the gender of the recipient. In our patients, the proportion of affected females was higher than the proportion of males (40.8% versus 20.6%, P=0.02). Gram-negative bacteria were reported as the commonest causative organisms [3, 8]. In our study Gram-negative bacteria were isolated in 65% of cases. *E. coli* was involved in 38.7% of the cases which is slightly higher than the prevalence reported by Taki *et al* [3] but less than the prevalence reported by others [5, 9]. In our results *klesiella* was involved in 25.8% of cases which is more than the prevalence reported by Memikoğlu *et al* [5] but less than the prevalence reported by others [9]. The commonest drug used for the treatment was ciprofloxacin which gave a good response in most of the cases; the same response was reported by Grekas *et al* [10]. However, high resistance rates of *E. coli* strains against ciprofloxacin were described by Senger *et al* [11].

Conclusions

The prevalence of urinary tract infection in our group of renal transplant recipients is similar to that reported by others and is commoner in females. The commonest causative agent was *E. coli*, and ciprofloxacin was the most commonly used drug.

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