

Original Article

Prescribing Pattern of Antimicrobials in Urinary Tract Infection at Outpatient Department in a Tertiary Care Hospital in Dhaka

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Abstract

Background: Urinary tract infection (UTI) is the most common illness affecting both males and females in almost all age groups. Hence, continuous analysis of prescribing pattern in UTI is vital. **Objective:** The study was designed to determine the prescribing pattern of antibiotics in UTI patients at a tertiary care hospital. **Materials and Methods:** A prospective observational study was carried out on 180 patients in Dhaka National Medical College Hospital from January to March 2012 by collecting data from outpatient department of Surgery, Medicine and Gynaecology & Obstetrics. **Results:** Analysis of prescribed drugs revealed that use of antibiotics such as nitrofurantoin (30.55%), cefuroxime (22.22%) and ciprofloxacin (16.66%) were significantly higher compared to other drugs. The most common isolated organisms were *Escherichia coli* (60%), *Proteus* (20%), *Klebsiella* (13.33%), and *Pseudomonas* (6.66%). **Conclusion:** Present findings are suggestive of the need for periodic monitoring of antibiotic sensitivity pattern to provide effective treatment.

Key words: Urinary tract infection; Antimicrobials; Outpatient department

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Introduction

Urinary tract infection (UTI) is one of the most common bacterial infections seen in clinical practice, particularly in developing countries with a high rate of morbidity and financial cost. It is the second most common infection in community practice with approximately 150 million diagnosed cases each year.¹

UTI affects patients in all age groups and both sexes. Neonates, girls, young women and older men are most susceptible to UTI. In women, bacterial cystitis is the most common bacterial infection. Every woman has a 60% lifetime risk of developing bacterial cystitis which develops mostly before the age of 24 years.^{2,3} A variety of uropathogens are involved, mainly aerobic Gram-negative bacilli such as *Escherichia coli*, *Klebsiella*, *Proteus*, *Citrobacter*, *Acinetobacter*, *Morganella* and *Pseudomonas aeruginosa*.⁴ Culture

sensitivity tests are also important in case of UTI to go for a specific antibiotic treatment rather than the empirical treatment for the patients.⁵

The resistance pattern of uropathogens is changing drastically, specially in developing countries, such as Bangladesh because of uncontrolled and widespread use of antibiotics. Antibiotics are usually given empirically before the laboratory results of urine culture are available. To ensure appropriate therapy, current knowledge of the organisms causing UTI and their antibiotic susceptibility is mandatory.⁶ Due to rising antibiotic resistance of uropathogens, it is important to have local hospital-based knowledge of the organisms causing UTI and their antibiotic sensitivity patterns. The spectrums of etiologic agents causing UTI and their antimicrobial resistance pattern

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have been continuously changing over the years, both in community and in hospitals.⁷

Increasing multidrug resistance in bacterial uropathogens is an important and evolving public health challenge. The prevalence of antimicrobial resistance in urinary pathogens is increasing worldwide.⁸ Accurate bacteriological records of culture results provide guidance on empirical therapy before sensitivity patterns are available. Since most UTIs are treated empirically, the criteria for the selection of antimicrobial agents should be determined on the basis of the most likely pathogens and its expected resistance pattern in a geographic area.⁹ Thus there is a need for periodic monitoring of causative agents of UTI and their resistance pattern in a given locality.

This study is, therefore, designed to determine the drug prescribing pattern, specially antibiotics among patients with complaints of UTI in Dhaka city, Bangladesh.

Materials and Methods

This prospective observational study was conducted in the outpatient department of Surgery, Medicine and Gynaecology & Obstetrics in Dhaka National Medical College Hospital, Dhaka from January 2012 to March 2012. Patients diagnosed with UTI (both recently diagnosed and recurrent) and treated with antibiotic were selected. Both male and female patients of 18–60 years were included in this study. Patients below 18 years of age were excluded. A suitable data collection form was prepared and used to collect the required data. The demographic data and prescription pattern of each prescription were thoroughly evaluated. Different antibiotics used to treat the UTI along with their doses, frequency and duration of treatment were recorded. All the laboratory investigations were also evaluated. Statistical analyses were done using SPSS windows version 11.0.

Results

Study on prescribing pattern of antibiotics in UTI patients in a tertiary care hospital was conducted. The study indicates that the female patients (66.67%) were more prone to UTI when compared to male patients

(33.33%). This study also shows that subjects up to 39 years were mostly affected with UTI (Table I).

Analysis of prescribed drugs revealed that use of antibiotics such as nitrofurantoin (30.55%), cefuroxime (22.22%) were significantly higher than other drugs prescribed such as ciprofloxacin (16.66%), azithromycin (13.88%), cefixime (11.1%), levofloxacin (7.22%), and cephradine (3.88%) (Table II). Culture sensitivity test was done only in 30% of the total cases for which empirical treatment had to be applied rather than specific antibiotic treatment. The most common isolated organisms were *Escherichia coli* (60%), *Proteus* (20%), *Klebsiella* (13.33%) and *Pseudomonas* (6.66%) (Table III).

Table I: Distribution of the study subjects according to age (N=180)

Age in years	Number	Percentage
<20	40	22
20–29	70	38.89
30–39	50	27.78
40–49	10	5.56
50–59	6	3.33
60–69	4	2.22

Table II: Most commonly prescribed antibiotics per prescription (N=197)

Antibiotics	Number	Percentage
Ciprofloxacin	30	16.66
Cefuroxime	40	22.22
Cefixime	20	11.11
Nitrofurantoin	55	30.55
Azithromycin	25	13.88
Levofloxacin	10	7.22
Cephradine	7	3.88
Metronidazole	10	5.55
Cotrimoxazole	0	0

Table III: Different organisms isolated from urine culture

Organisms	Male N (%)		Female N (%)		Total N (%)	
	E. coli	9	17	23	43	32
Proteus	4	7	7	13	11	20
Klebsiella	2	3.33	5	10	7	13.33
Pseudomonas	1	1.42	3	5.24	4	6.66

Discussion

The present study was conducted in Dhaka National Medical College to observe the prescribing pattern of UTI. Urinary tract infection (UTI) is commonly experienced by women of various age groups, especially the youngs. They are mostly treated empirically and the criteria for the selection of antimicrobial agents should be determined on the basis of the most likely pathogen and its expected resistance pattern in the locality.¹⁰⁻¹² We assessed the pattern of drugs prescribed, age and gender distribution and the most common antibiotics used.

A total of 150 prescriptions were analysed, among which female were 66.67% and male were 33.33%. This female preponderance was also seen in a study conducted by Dhodi et al¹⁰. The reason behind this high prevalence of UTI in females is due to close proximity of the urethral meatus to the anus, shorter urethra, sexual intercourse, incontinence and bad toilet.¹⁰ Majority of the patients belonged to an age group 20–29 years, which was in accordance to a study by Ahamad et al¹¹ where maximum patients were in the age group of 21–30 years which is the child bearing age and sexually active period.

Antibiotics were the most frequently prescribed groups of drugs in UTI. Most common antibiotics are ciprofloxacin, third generation cephalosporins, cotrimoxazole etc.¹² A study conducted by Orchada et al¹³ showed that antibiotics were the first line therapy in the management of UTI. Besides antibiotics miscellaneous drugs like proton pump inhibitors, antidiabetics, antihypertensives, antipyretics were also used. Nitrofurantoin and cephalosporins were the commonly used antibiotics in UTI in our study subjects. Similar antibiotic profiles were seen in a study by Gupta et al.¹⁴ According to this study nitrofurantoin is a well-tolerated drug and has good efficacy when

given twice daily for five days and it has less adverse effects. The study demonstrates that E. coli remain the leading uropathogen being responsible for UTI. This is in consistence with findings of other studies in which E. coli was the most frequently reported isolate from patients with UTI. Our study shows that following E. coli, Proteus and Klebsiella are the other common uropathogens. Our findings are in accordance with a study by Pargavi et al¹⁵ and Mohan et al¹⁶.

This study is not intended to speak about the decision of appropriateness in the treatment with antimicrobials against any known guidelines. Rather the purpose is to notice the antimicrobial prescription practices in a tertiary care hospital with known incidence of culture sensitivity to microorganisms. So, present study throws light for the development of guidelines for the treatment of UTI in accordance with changing susceptibility of microorganisms to the antimicrobials and changes in the empirical treatment.

The continuous monitoring and reporting of prescribing pattern of antibiotics will surely help the physicians for effective treatment. Periodic review of antimicrobial sensitivity should be done to change the empirical treatment of urinary tract infection.

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