Original Research

A retrospective study to evaluate the pattern of antibiotics prescribed in female patients with urinary tract infection (UTI): A tertiary care centre study

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Abstract
Background:A common and painful condition that accounts for 1-3% of consultations in general practice, urinary tract infections (UTIs) are typically treated with antibiotics. The present study was conducted to evaluate the pattern of antibiotics prescribed in female patients with urinary tract infection (UTI).
Materials & Methods:128 females with urinary tract infections (UTIs) were enrolled. Clinical presentation, associated risk factors, co-morbid conditions, the prescription pattern of antimicrobials and its duration of administration etc. were recorded.
Results: Age group 20-30 years had 30 patients, 30-40 years had 59, 40-50 years had 22, 50-60 years had 12 patients and 60-70 years had 5 patients. The difference was significant (P< 0.05). Clinical features were fever in 25, hematuria in 4, dysuria in 75, increased urinary frequency in 46, nausea/vomiting in 58, abdominal pain in 12, urinary incontinence in 3 and generalised weakness in 5 patients. The difference was significant (P< 0.05). Commonly prescribed antimicrobials were Amikacin in 9, Amoxicillin-clavulanate in 4, Ceftriaxone in 6, Ciprofloxacin in 72, Cotrimoxazole in 21, Cefoperazone + sulbactam in 8, Levofloxacin in 10, Nitrofurantoin in 32, Metronidazole in 12 and Piperacillin +tazobactamin 27 patients. The difference was significant (P< 0.05).
Conclusion: A common ailment that frequently presents is a urinary tract infection.Commonlyprescribed antimicrobials were Amikacin, Amoxicillin-clavulanate, Ceftriaxone, Ciprofloxacin, Cotrimoxazole, Cefoperazone + sulbactam, Levofloxacin, Nitrofurantoin, Metronidazole and Piperacillin +tazobactam.
Key words:antimicrobials, Amoxicillin-clavulanate, urinary tract infections

Introduction
A common and painful condition that accounts for 1-3% of consultations in general practice, urinary tract infections (UTIs) are typically treated with antibiotics. It includes a range of clinical conditions, including prostatitis, cystitis, pyelonephritis, and asymptomatic bacteriuria (ABU).[1] While UTI is symptomatic and the patient visits the clinician for antimicrobial therapy, ABU is characterized by the lack of symptoms related to the presence of bacteria in the urinary tract, and the patient typically does not seek treatment for it. Women are more likely than men to get a UTI. A UTI can affect as many as 50–80% of women in the general population at least once in their lifetime because to the narrow urethra and its close proximity to the vagina, which serves as a microbe reserve.[2]E. Coli (80%–85%) is the most common uropathogen in acute, uncomplicated UTIs, followed by Staphylococcus saprophyticus (10%–15%). UTIs are made more difficult by conditions like diabetes, advanced age, spinal cord injuries, and catheterization. When compared to uncomplicated UTI, the microorganisms causing difficult UTI are more diverse. Active care of UTI is therefore essential since it can occasionally result in irreversible kidney damage (renal scarring).[3]Recurrent UTI prevention ensures that additional testing is necessary to identify any complicating causes. Patients should have a urinalysis performed in addition to a culture and sensitivity test when they are suspected of having a complex UTI since the aetiology and susceptibility of the causative uropathogen are uncertain in these

situations.[4,5]Treatment with antibiotics is required for any UTI with symptoms.The site of infection, the existence or absence of concomitant diseases, and the pattern of local resistance all influence the choice of antimicrobial drug, dosage, and length of therapy.[6]Trimethoprim-sulfamethoxazole and nitrofurantoin are first-line medications that are mostly used for simple UTIs. β-lactam drugs and fluoroquinolones are examples of second-line agents.[7]The present study was conducted to evaluate the pattern of antibiotics prescribed in female patients with urinary tract infection (UTI).

Materials & Methods
The present study consisted of 128 females with urinary tract infections (UTIs). All gave their written consent to participate in the study.Data such as name, age, etc. was recorded. Clinical presentation, associated risk factors, co-morbid conditions, the prescription pattern of antimicrobials and its duration of administration etc. were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table: I Age-wise distribution of patients

| Age group (years)	Number	P value
20-30	30	0.05
30-40	59	
40-50	22	
50-60	12	
60-70	5	

Table I shows that age group 20-30 years had 30 patients, 30-40 years had 59, 40-50 years had 22, 50-60 years had 12 patients and 60-70 years had 5 patients. The difference was significant (P< 0.05).

Table: IIClinical presentation

Clinical presentation	Number	P value
Fever	25	
Hematuria	4	
Dysuria	75	
Increased urinary frequency	46	
Nausea/vomiting	58	
Abdominal pain	12	
Urinary incontinence	3	
Generalised weakness	5	

Table II, graph I show that clinical features were fever in 25, hematuria in 4, dysuria in 75, increased urinary frequency in 46, nausea/vomiting in 58, abdominal pain in 12, urinary incontinence in 3 and generalised weakness in 5 patients. The difference was significant (P< 0.05).

Graph: IClinical presentation
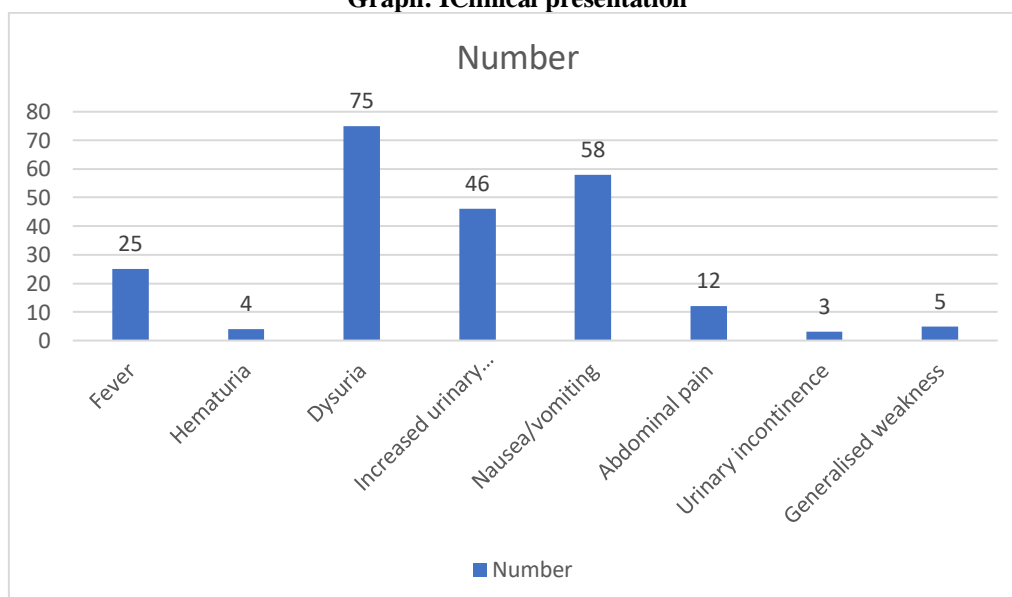
Table: III Prescription pattern of antimicrobials

Antimicrobials	Number	P value
Amikacin	9	0.01
Amoxicillin-clavulanate	4	
Ceftriaxone	6	
Ciprofloxacin	72	
Cotrimoxazole	21	
Cefoperazone + sulbactam	8	
Levofloxacin	10	
Nitrofurantoin	32	
Metronidazole	12	
Piperacillin +tazobactam	27	

Table III, graph II show that commonly prescribed antimicrobialswereAmikacin in9, Amoxicillin-clavulanate in 4, Ceftriaxone in 6, Ciprofloxacin in 72, Cotrimoxazole in 21, Cefoperazone + sulbactam in 8, Levofloxacin in 10, Nitrofurantoin in 32, Metronidazole in 12 and Piperacillin +tazobactam   in 27 patients. The difference was significant (P< 0.05).

Graph II: Prescription pattern of antimicrobials
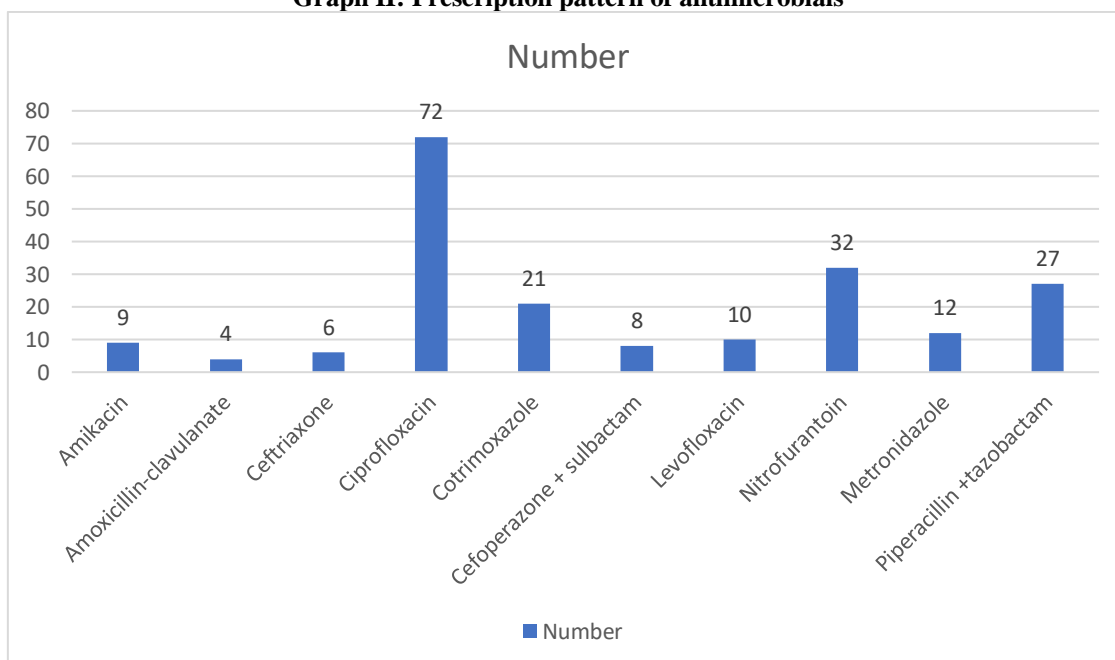
Discussion

Urinalysis, culture, and sensitivity tests should be performed on patients suspected of having a complex UTI since the aetiology and susceptibility of the underlying urinary pathogen are uncertain in these circumstances.[8] Treatment of complex UTIs can be particularly difficult because there aren't enough well-designed clinical studies and antibiotic resistance is becoming more common. An essential part of treating UTIs is the use of antibiotics.[9] However, the overuse of antibiotics has resulted in a concerning rise in the quantity of bacterial resistance strains, raising the morbidity and treatment costs of the illness.When choosing a treatment plan, doctors should consider things such in vitro susceptibility, cost-effectiveness, choosing resistant strains, and side effects.[10,11] The present study was conducted to evaluate the pattern of antibiotics prescribed in female patients with urinary

tract infection (UTI).We found that age group 20-30 years had 30 patients, 30-40 years had 59, 40-50 years had 22, 50-60 years had 12 patients and 60-70 years had 5 patients. Tanya et al[12]assessed the prescription pattern of antimicrobials among in-patients admitted with urinary tract infection. The most frequently prescribed antimicrobials were cephalosporins (70.4%) and fluoroquinolones (54.6%). Among the cephalosporins, ceftriaxone was the most commonly prescribed antibiotic, accounting for 36.1% of prescriptions, followed by cefixime (16.5%) and cefoperazone (7.7%). Among the fluoroquinolones, ciprofloxacin was the most frequently prescribed, accounting for 40.8% of prescriptions. In pregnant women, the most common antibiotic prescribed was amoxicillin

We found thatclinical features were fever in 25, hematuria in 4, dysuria in 75, increased urinary

frequency in 46, nausea/vomiting in 58, abdominal pain in 12, urinary incontinence in 3 and generalised weakness in 5 patients. Naik et al[13] found that Escherichia coli was the most common organism to be isolated in urine culture followed by Staphylococcus aureus. Cephalosporin group was the most prescribed antibiotic in all age groups. Although nitrofurantoin and cotrimoxazole showed good sensitivity patterns when compared with other antimicrobial groups, these were least prescribed.We observed that commonly prescribed antimicrobials were Amikacinin 9, Amoxicillin-clavulanate in 4, Ceftriaxone in 6, Ciprofloxacin in 72, Cotrimoxazole in 21, Cefoperazone + sulbactam in 8, Levofloxacin in 10, Nitrofurantoinin 32, Metronidazole in 12 and Piperacillin +tazobactamin 27 patients.Kalal et al[14] found that of the 5592 urine specimens received, 28.2% showed significant growth. A total of 1673 identified pathogens were used in the analysis. Escherichia coli (54.6%) was the most common Gram-negative bacillus, followed by Klebsiella species (9.7%) and Pseudomonas species (7.5%). The most common Gram-positive coccus was Enterococcus (8.8%). Most of the Gram-negative isolates were resistant to ampicillin (79.3%) and cephalosporins (60%). Resistance to cephalosporins and fluoroquinolones was higher in isolates from inpatients. Other than Klebsiella spp., all other Enterobacteriaceae were susceptible to carbapenems (93%) and aminoglycosides (85%), whilst fluoroquinolones were effective for all Gram-positive bacteria.

The limitation of the study is the small sample size.

Conclusion

Authors found that a common ailment that frequently presents is a urinary tract infection.Commonly prescribed antimicrobials were Amikacin, Amoxicillin-clavulanate, Ceftriaxone, Ciprofloxacin, Cotrimoxazole, Cefoperazone + sulbactam, Levofloxacin, Nitrofurantoin, Metronidazole and Piperacillin +tazobactam.

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