



A STUDY ON THE CLINICAL AND BACTERIOLOGICAL PROFILE OF URINARY TRACT INFECTION IN ELDERLY IN-PATIENTS AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA.

General Medicine

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ABSTRACT

Urinary tract infection (UTI) is one of the most common bacterial infection with considerable morbidity and mortality especially in elderly individuals. The study aimed to assess the clinical profile and to determine the bacteriological profile of UTI in elderly patients. This was a descriptive cross sectional study done on 100 patients of age 60 years and above with diagnosis of Urinary tract infection admitted to Amala Institute of Medical Sciences Thrissur. Data was collected using a structured performa. Results: In the study done in 100 patients 43% were male and 57% were females. Though the most common presentation was fever, patients also presented with generalized tiredness and altered sensorium, which are atypical presentations in UTI. The major risk factor was Diabetes mellitus followed by catheterization. E.coli was the major causative organism. The most common antimicrobial used was nitrofurantoin and intravenous ceftriaxone. Antibigram revealed 40.38% and 84.6% of isolated E.coli showed resistance to nitrofurantoin and ceftriaxone respectively. The major complication was Urosepsis (15%) followed by pyelonephritis (13%). The mortality rate was 7%. Conclusions: UTI in Geriatric population can have atypical presentation. Hence it is important to recognize this aspect at the earliest in order to prevent complications. Early treatment and appropriate antibiotic usage will help in preventing antibiotic resistance and improving geriatric health.

KEYWORDS

Urinary tract infection, Elderly, Antibigram, Drug resistance

1. INTRODUCTION:

Urinary tract infection is defined as presence of bacteria in urine along with urinary symptoms like dysuria, frequency, urgency and occasionally supra pubic tenderness.¹ It is one of the common infections worldwide and the elderly population comprises a subset of population more vulnerable to urinary tract infection. A considerable difference from typical clinical presentation of UTI marked by absent or reduced fever, change in mental status and nonspecific symptoms such as anorexia and increased lethargy is seen in elderly population.²

In elderly population there are concerns about increasing antimicrobial resistance in infecting organisms. Antibiotic resistance is a grave threat especially among the elderly population further compounding the problem leading to considerable morbidity and mortality.³

2. OBJECTIVES:

- 1) To assess the clinical profile of UTI in elderly in-patients.
- 2) To determine the bacteriological profile of UTI in elderly in-patients.

3. METHODOLOGY:

This was a cross sectional study done in the department of Medicine at Amala Institute of Medical Sciences, Thrissur, Kerala over a period of six months. The approval for the same was obtained from the Institutional ethics committee and written informed consent from the participants. All elderly in-patients from medicine wards of age 60 years and above with the diagnosis of Urinary tract infection were included. Patients who were discharged against medical advice were excluded.

The data was collected from the medical records of elderly in-patients coded as UTI in medical record database of the Institute using a structured performa. The performa had various sections which included demographic profile, clinical features, co morbidities, risk factors, investigations, culture, treatment, complications, length of stay and outcome.

All collected data was entered in Microsoft excel data sheet and analysed with appropriate statistical techniques using SPSS software Version 23.

4. RESULTS:

51% of study population were in age group of 60 to 70 and 37% were in the age group of 71 to 80 and 12% in the age group of 81 and above. 57% and 43% among the study population formed the male and female gender respectively.

In our study population, though the 43% of patients presented with low grade fever. About 1/3rd of patients presented with generalized weakness and altered sensorium. In comparison the typical symptoms like dysuria and lower abdominal pain were not that common.

Table 1. Clinical features of UTI in Elderly

Clinical features	Percentage
Low grade fever	43%
High grade fever with chills and rigor	30%
Vomiting	26%
Generalized Weakness	24%
Altered Sensorium	17%
Dysuria	16%
Lower abdominal pain	14%
Decreased urinary output	13%
Urinary Retention	10%

Type 2 Diabetes Mellitus was the most common risk factor (67%). 7% of patients had no risk factors for developing Urinary tract infection.

Table 2. Risk factors among elderly

Risk factor	Percentage
Type 2 Diabetes	67%
Catheterization	51%
Previous UTI	51%
No Risk factors	7%

The co morbidities were Type 2 Diabetes in 67%, Hypertension in 65% and 39.5% of males had benign prostatic hyperplasia.

Table 3. Co morbidities in elderly

Co morbidities	Percentage
Type 2 Diabetes	67%
Hypertension	65%
Chronic kidney Disease	34%
Coronary artery disease	19%
Cerebrovascular accident	19%
Benign prostatic hyperplasia	39.5% of Males

The Urine culture was positive in 81% of the study population. E.coli was isolated from culture in 64.19% patients, followed by Enterococcus group in 17.3%, followed by Klebisella in 13.9%.

Klebsiella	13.6%
Pseudomonas	7.4%
Citrobacter	4.9%
Acinetobacter	1.2%

In our study, more than 3/4th of *E.coli* were resistant to the first line cephalosporins while more than 1/4th of *E.coli* showed resistance to cefoperazone sulbactam and Piperacillin tazobactam Resistance was seen even in the reserved drugs such as carbapenems.

Table 5. Resistance Pattern

Antimicrobial	<i>E.coli</i> (n=52)	<i>Enterococcus</i> (n=14)	<i>Klebsiella</i> (n=11)
Ampicillin/ amoxicillin	40(76.9%)	8(57.1%)	9(82%)
Cephazolin/cephalexin	41(78.8%)	5(36%)	7(64%)
Cefuroxime	41(78.8%)	4(28.5%)	8(73%)
Cefotaxime/Ceftriaxone	41(78.8%)	4(28.5%)	8(73%)
Cefpirome	25(48%)	1(7.1%)	3(27.2%)
Cotrimoxazole	27(51.9%)	3(21.4%)	8(73%)
Nitrofurantoin	21(40.3%)	10(71.4%)	8(73%)
Norfloxacin	41(78.8%)	4(28.5%)	10(91%)
Ciprofloxacin	44(84.6%)	12(86%)	10(91%)
Cefoperazone Sulbactam	18(34.6%)	4(28.5%)	6(54.5%)
Piperacillin tazobactam	13(25%)	4(28.5%)	2(18.1%)
Amikacin	6(11.5%)	1(7.1%)	4(36.3%)
Imipenem	6(11.5%)	2(14.2%)	4(36.3%)
Meropenem	7(13.4%)	2(14.2%)	5(45.4%)
Gentamicin	27(52%)	7(50%)	6(54.5%)

Among the 100 patients, about 15% of the study population developed Urosepsis, while Pyelonephritis was seen in 13%. Acute kidney injury and Delirium was seen in 10% and 5% respectively.

Table 6. Complications

Complication	Percentage
Urosepsis	15%
Pyelonephritis	13%
Acute kidney injury	10%
Delirium	5%

Death occurred in 7 out of 100 patients. None of these patients who expired had typical symptoms such as dysuria and abdominal pain. But 4 out of these 7 patients had atypical presentations of generalized tiredness and altered sensorium. 5 of 7 patients gave a positive urine culture. Enterococcus was seen in 3 of these positive cultures.

5. DISCUSSION:

In this study, 100 patients of age 60 years and above with a diagnosis of Urinary tract infection were included. Their clinical features, causative organisms its resistance pattern and complications were analyzed. In the current study, the incidence of UTI was maximum in the age group 60 to 70 years (51%). 12% of the patients belonged to age of 81 years and above.

In the current study, low grade fever was the most common symptom seen in 43%. Atypical symptoms such as generalized weakness and altered sensorium were seen in 24% and 17% respectively. In study conducted by Swamy S et al, burning micturition (77.5% of 120) was the most common symptom⁴ and the study by Pranit Kakde et al, frequency of micturition was the main symptom seen in 65.26% out of 95 patients.⁵

Type 2 Diabetes Mellitus was the most common risk factor (67%) . This corresponds to the study by Swamy S et al where Diabetes mellitus was the most common predisposing factor found in 63.3% cases followed by Benign prostatic hyperplasia in male patients (23.8%)⁴. In our study benign prostatic hyperplasia was seen in 39.5% of male patients and 7% of all the patients had no risk factors for developing UTI.

The most common pathogenic organism was gram negative similar to the other studies. *E.coli* was found in 64.19% of patients and *Klebsiella* in 13.6%. But the gram positive *Enterococcus* was the the second most common isolate constituting about 17.3%.

In our study more than 75% of *E.coli* was resistant to the first line cephalosporins and more than 1/4th of *E.coli* was resistant to

cefoperazone sulbactam and piperacillin tazobactam. About 24.9% of *E.coli* showed resistant to reserved drugs such as the carbapenems.

Other gram negative isolate from our study group, *Klebsiella* showed resistance to piperacillin tazobactam, fluoroquinolones and even carbapenems showing shifting trend in resistance to higher antibiotics. The irrational usage of antibiotics for prophylaxis and treatment, usage of urinary catheters might be the culprit.

The outcome of our study was measured by patients either getting discharged or by death. Our retrospective study of 100 elderly patients panned over a period of 6 months as inpatients in the wards showed a low mortality rate of 7%. Mortality rate was high with Enterococcus

The complications of UTI in patients included Urosepsis (15%), Pyelonephritis (13%), Acute kidney injury (10%) and delirium in 5%. UTI may prove to be fatal drastically in elderly patients, so treating physicians should give utmost attention to early diagnosis and appropriate antibiotic therapy.

The strength of the study was the observational pattern of this retrospective study, collection of data in our tertiary hospital to observe the uropathogens and trend in its resistance pattern and also the strict antibiotic policy that we follow in our hospital.

The limitations are, our study being a single center study is not generalizable. The short duration and non assessment of source of UTI whether community or nosocomial infection were the other limitations. Patients with symptoms of UTI but no growth on urine culture were included in the study.

6. CONCLUSION:

In conclusion, this study focused on clinical features, risk factors, isolate and its resistance pattern, complication and on outcome of Urinary Tract Infection in elderly. It is important to recognize the atypical symptoms in elderly and hence the need for increased awareness about atypical presentation among Geriatric population is necessary for timely intervention. Antibiotic resistance is on the rise especially among the 3rd generation cephalosporin and even among the carpenems which is alarming. Need for antibiotic stewardship and antibiotic policy in hospitals to prevent resistance. Local resistance pattern of organism have to be identified to decide on the selection of initial antibiotic for UTI among elderly.