



A STUDY OF PATHOGENESIS, CLINICAL AND RESISTANT PATTERNS IN UTI. A RETROSPECTIVE CROSS SECTIONAL STUDY

Nephrology

Dr. N Prasanna

Associate Professor Department of General Medicine Al Azhar Medical College and Super Speciality Hospital, Ezhalloor, Kerala

ABSTRACT

Urinary Tract Infections are quiet common and hence very frequently across all OPD's and this disease has the tendency to present itself in different ways. Usually when the case lands in the Department of General Medicine, it would be associated with complications and hence the morbidity of the patients increases. It's a drawback to the economy of the patient's family as well as the nation as the number of working hours is reduced. This paper is an effort to study the Pathogenesis, Clinical and Resistant Patterns in UTI so as to help the clinicians understand the patterns well and take necessary actions so as to bring down the burden of the society.

KEYWORDS

Pathogenesis, Clinical, UTI, Microbiology, Sensitivity

INTRODUCTION:

Most of the cases of Urinary tract infections land up first in a general practitioners office as the signs and symptoms are very plethoric^{1,2}. Urinary tract infections (UTIs) results in patient morbidity³. The effectiveness of antimicrobial treatment in reducing UTI s is well established⁴. But Studies have demonstrated wide variation in utilization of antimicrobial treatment, including inappropriate selection of agents, improper timing of administration, and excessive duration of treatment.

For UTI's the most preferred antibiotic treatment are either Cephalosporin or Aminoglycoside or Clindamycin or Ampicillin-Sulbactam or Fluoroquinolones. But in Indian scenario, the general trend is to give 5 days of oral antibiotics due to long standing and complications to prevent pyelonephritis, sepsis, and septicemia^{4,5}. The injudicious use of antibiotics may result in the emergence of Extended Spectrum Beta Lactamases (ESBL) resistant strains⁶.

The purpose of this study is to evaluate and establish an antibiotic protocol for UTI's in our hospital setting. We would be performing a culture analysis of urine to identify the presence of infection in the renal unit, which will guide us for antibiotic usage. Hence, we are trying to establish an antibiotic protocol for UTI without compromising on treatment, and to avoid excessive duration of antibiotic treatment.

AIMS and OBJECTIVES:

To study the Pathogenesis, Clinical and Resistant Patterns in UTI.

METHODOLOGY:

Study design: A retrospective study.

Study period: February 2017 – August 2018.

Study setting: Department of General Medicine

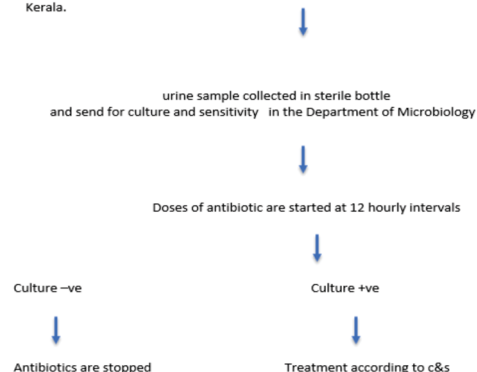
Study population: All patients presented to our centre Al Azhar Medical College and Super Speciality Hospital, Ezhalloor, Kerala.

Sample size: 205 patients

Study group: Patients clinically diagnosed with UTI

Study Protocol:

Patient with clinical UTI at Al Azhar Medical College and Super Speciality Hospital, Ezhalloor, Kerala.



RESULTS:

Graph 1: Gender Distribution

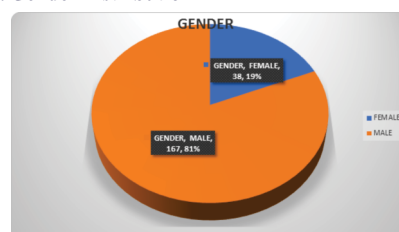


Table 1: Age Distribution:

AGE		Valid Percent
<20	3	1.5
21-30	10	4.9
31-40	46	22.4
41-50	64	31.2
51-60	54	26.3
61-70	21	10.2
>70	7	3.4
Total	205	100

Table 2: Co-Morbidity

Co-Morbidity		Valid Percent
DM	12	5.9
DM, HTN	12	5.9
DM, HTN, IHD	4	2
HTN	21	10.2
NO	156	76.1
Total	205	100

Table 3: Fever and Pain

	FEVER	Pain (Burning)
NO	196	Nil
Yes	09	205
Total	205	205

Table 4: renal urine culture

INTRA OPERATIVE RENAL URINE Culture		Valid Percent
growth present	41	20
No growth	164	80
Total	205	100

Graph 2: Culture

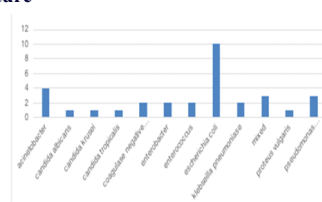


Table 5: Sensitivity:

Antibiotics	Organism											
	P	C	E	EC	PV	AB	EA	K	A	CK	CNS	ECS
Amikacin	5		4	10	1		1	4				
Gentamycin	5		3	11	1	2		4	1		2	
Colistin	3											
Ceftazidime	3											
Cefepime	3											
Flucytosine		2										
Fluconazole		2										
Voriconazole		2								1		
Amphotericin B		2								1		
Caspofungin		2								1		
Micafungin		2								1		
Nalidixic Acid			1					2				
Ciprofloxacin	2		2		1	1		3			1	
Norfloxacin			2		1			3				
Levofloxacin	4					1	1				1	
Nitrofurantoin			4	8				1			1	1
Fosfomycin			4	9	2			2				1

DISCUSSION:**Gender Distribution:**

In this study a total of 205 patients were selected out of which 38 were females who accounted for 18.5 percent of the study population and 167 were males who accounted for 81.5 percent of the study population. Males clearly dominate the scenario in our study.

Age Distribution:

In this study three patients were aged below twenty years who accounted for 1.5 percent of the study population. Ten patients were aged between 21 to 30 years who accounted for 4.9 percent. Forty six patients belonged to the age group of 31 to 40 years who accounted for 22.4 percent. 64 people belonged to the age group of 41 to 50 years who accounted for 31.2 percent. Fifty four people belonged to the age group of 51 to 60 years who accounted for 26.3 percent. Twenty one patients belonged to the age groups of 61 to 70 years who accounted for 10.2 percent. Seven patients belonged to the age group of more than seventy years who accounted for 3.4 percent. Highest number of patients belonged to the age group of 41-50 years. The mean age of the population was found to be 47.94 years. The median age of the population was found to be 47.00 years. The standard deviation was found to be 11.692 years. The range of the population under study was from 14 to 75 years.

Co-Morbidity:

76 patients had no co-morbidities. 12 patients were known to have diabetes mellitus who accounted for 5.9 percent of the study population. 12 patients were known to have diabetes mellitus and hypertension who accounted for 5.9 percent of the study population. 4 patients were known to have diabetes mellitus, hypertension and ischaemic heart disease who accounted for 2 percent of the study population. 21 patients were known to have hypertension who accounted for 10.2 percent of the study population. The highest group consisted of hypertensive patients.

FEVER:

Among all 9 patient who had fever 3 patient had positive stone culture and 1 patient had positive urine culture.

MICROBIOLOGICAL PROFILE AND RESISTANCE PATTERN IN URINE CULTURE:

We found 41 urine culture which turned positive. In this study actinobacter was isolated in 4 cases, candida albicans was found in 1 case, candida krusei was isolated in one case, candida tropicalis was isolated in one case, coagulase negative staphylococcus aureus were isolated in 2 cases, Enterobacter and enterococcus were isolated in 2 cases each, E-Coli were isolated in ten cases and was by far the most common isolated organism. Klebsiella pneumoniae were isolated in 2 cases, Proteas vulgaris were isolated in one case, Pseudomonas was isolated in three cases. Mixed variety were reported in 3 cases. The most common organisms that were found in urine culture is pseudomonas aeruginosa. Majority were sensitive to Amikacin followed by gentamicin. They were also sensitive to cephalosporins.

Candida species were also recovered and were seen sensitive to fluconazole. Proteas vulgaris were also recovered and were

extensively resistant to Amikacin and gentamycin.

The study is in agreement with other studies conducted by Patterson JE et al⁷, Meiland R et al⁸ and Boyko EJ et al⁹. Co-Morbidities especially a state of immune-suppression can have its affects. The UTI and resistance patterns are especially reported in a risk ratio and rate ratio association pattern.

CONCLUSION:

In our study of total 205 cases we found 140 cases were sterile and were managed with only 3 doses of 3rd Generation cephalosporins. Our result recommend 3rd Generation cephalosporins for the antibiotic therapy being least nephrotoxic among all mostly sensitive antibiotics.

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