

## Urinary Tract Infection and Antibiotic Susceptibility at Nepalgunj Medical College and Teaching Hospital, Kohalpur

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### ABSTRACT

**INTRODUCTION:** In developing countries, urinary tract infections (UTIs) are one of the most commonly diagnosed diseases among the patient seeking medical service and are treated with empirical antibiotics which does not provides cure and causes resistance. **Objective:** To find out the incidence of urinary tract infections and antibiotics sensitivity pattern among bacterial pathogens isolated in patients attending Nepalgunj Medical College and Teaching Hospital, Kohalpur. **Methodology:** All patients (both male and female) were included in the study with the clinical suspicion of UTI . They had their urine culture done. Incidence of UTI and spectrum of pathogens with their sensitivity were recorded . **Result:** A total number of 1445 patients were clinically suspected for UT. they had their urine cultura and sensitivity done Total number of patients with culture positive was 391(27.05%). The majority of isolates were from female patients comprising of 314(80.3%) patients. The most common pathogenic microorganism isolated was E.coli (73.65%). Second most common organism was Klebsiella (19.9%), it was followed by Acinetobacter (3.5%), Enterobacter (3.06%),Pseudomonas and Proteus (0.76%) each, Staphylococcus (0.05%) salmonella (0.02%). The isolated microorganisms showed maximum sensitivity to Nitrofurantin and Amikacin. The isolated microorganism demonstrated resistance to cefpodoxime and Cefotaxime. **Conclusion:** Urinary tract infections is a commonly encountered case in general practice Females are more commonly affected than men. The microbial profile and the antibiotic sensitivity pattern must be taken into account while planning for the management. Regular supervision of the sensitivity pattern of pathogenic microorganism is mandatory for effective treatment.

**Key words:** Susceptibility, urinary tract infection, uropathogens

### INTRODUCTION

In developing countries urinary tract infections (UTIs) are one of the most commonly diagnosed diseases among the patient seeking medical service ( frequency 180 per10, 000)<sup>1,2</sup>. Females are more commonly affected compared to males. UTIs can be categorized as acquired or nosocomial. E.coli is the most common organism responsible for UTI in both sexes. Klebsiella and Proteus are responsible pathogens in community acquired infection and in nosocomial group are Pseudomonas, Proteus, and Enterobacter<sup>3</sup>.

Increasing resistance to antibiotics and frequent change in the sensitivity pattern of the bacteria are great problems in UTI. General practitioner should take into account about the microbial profile and the antibiotics sensitivity pattern during the management<sup>4</sup>. So, it is necessary to look for the most sensitive antibiotics for proper treatment for the UTIs in general practice<sup>5</sup>. This study was carried out to find out the

incidence of urinary tract infection and antibiotics susceptibility pattern among bacterial pathogens isolated in patients attending Nepalgunj Medical College Teaching Hospital, Kohalpur.

### MATERIAL AND METHODS

This is a cross-sectional study carried out at Nepalgunj Medical College Teaching Hospital, Kohalpur. All patient seeking health services in different departments of Nepalgunj Medical College Teaching Hospital, Kohalpur. This study included male and female patients suspected clinically having UTI symptoms viz history of burning micturition, increased frequency, lower abdominal pain, and frequent fever. Their urine was collected and sent for culture and sensitivity and results were analysed. This study included 191708 both males and females attending NGMC from May 2015 to May 2016.

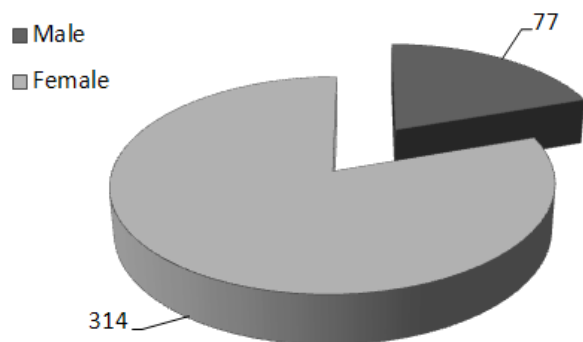
### RESULTS

out of 191708 patients, clinically 1445 patients were suspected to have UTI. Out of 1445 patients the number of males were 266 (18.04%) and the number of females was 1179(77.96%). Out of these 1445, 391 samples grew positive culture. the number of males was 77 (19.69%) and number of females 314(80.31%) (figure 1).

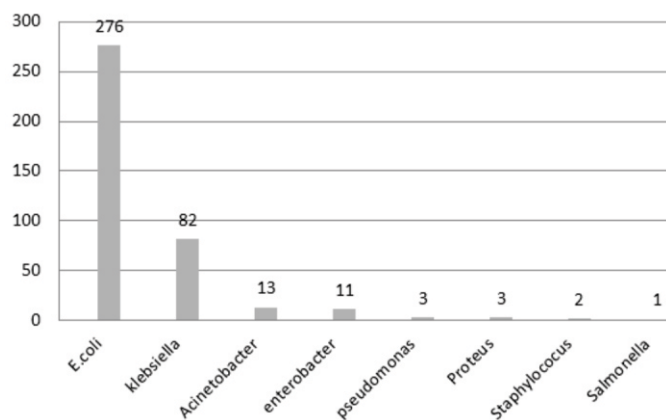
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**Figure 1: Gender distribution of positive urine culture isolated in Male 77, 19.6% and in Female 314, 80.3%**



**Figure 2: Microorganism growth in urine culture**

Microorganism	Number	%
E. coli	276	70.58
Klebsiella	80	20.97
Acinetobacter	13	3.32
Enterobacter	11	2.81
Pseudomonas	3	0.76
Proteus	3	0.76
Staphylococcus	2	0.05
Salmonella	1	0.02

**Table I: Spectrum of microorganism in urine culture (n=391)**

The culture report showed that E. coli is the commonest offender 276(70.58%). Second most common organism was Klebsiella 82(20.97%) cases. It was followed by Acinetobacter 13 (3.32%), Enterobacter 11 (2.8%), Pseudomonas and Proteus 3 (0.76%) each, Staphylococcus 2(0.05%) salmonella 1(0.02%).

Table II shows that the maximum sensitivity is with microorganism Nitrofurantoin (175, 49.1%) followed by Amikacin (157, 40.1%). The most common pathogenic microorganism E. coli isolated in our study demonstrated resistance with Cefpodoxime (90, 23.01% and Cefotaxime (89, 22.76%)(Table II).

Isolated microorganism showed maximum number of sensitivity with the antibiotics Nitrofurantoin and Amikacin. The most common pathogenic microorganism isolated in our study demonstrated resistance with Cefpodoxime and Cefotaxime.

**DISCUSSION**

In the present study of 1445 clinically suspected UTI cases uropathogens were isolated in 391 (27.05%) cases. Female patients comprised of 80.3% positive culture, and in males 77 19.7%.

Subedi N et al and Raza S et al<sup>5,6</sup> have reported culture positive in 17.4% cases and 19.7% cases respectively. In our study the culture was found to be positive in 27.05%. the rate is considerably higher in this part of Nepal showing that UTI is commoner. In the present study the rate of UTI in males was 19.7% and in females 80.31%.

Khan G et al<sup>7</sup> showed the infection rate in females to the tune of 77% and in males 22.8%. In the present study E. coli was the commonest bacteria grown in culture (n=276, 70.5%).

Other workers have also reported that E. coli was the most frequently isolated<sup>3,7,10,11,12</sup>.

The antibiotic susceptibility in our study showed that the highest percentage of sensitivity was with Nitrofurantoin (93.65%), and with Amikacin (88.6%). Raza S et al<sup>5</sup> showed that Amikacin is the most sensitive antibiotic. Subedi N et al<sup>6</sup> in a study showed highest number of susceptibility with Piperacillin-Tazobactam and Ceftriaxone. In our study Cefpodoxime and Cefotaxime showed a poor effectiveness.

Shaifali et al<sup>3</sup> in a study showed that highest susceptibility with Nitrofurantoin 86.9%.

**CONCLUSION**

Urinary tract infection is a commonly encountered problem in the hospital patients. Females are more commonly affected than males. E. coli is the commonest uropathogen and Klebsiella is the next. Nitrofurantoin and Amikacin were the most effective drug in our study for UTI. The physicians treating such cases in this area should bear this fact in mind. Regular sensitivity patterns are needed as the sensitivity of the bacteria keeps on changing.

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Antibiotic	Intermediate	Resistant	Sensitive
NIT	30	13	162
PB	39	43	15
GEN	7	22	24
CXM	29	89	12
CAZ	2	35	
CTR	4	79	65
CPD	11	90	8
MRP	5	32	30
LE	22	55	70
NX	20	39	46
GAT	4	3	6
CLR	13	77	13
CIP	9	64	75
C	1	29	37
OF	5	10	6
CTX	3	75	40
AK	23	20	134
TOB	41	13	49
AZM		3	1
VA	2	17	
AMX	1	19	
CFM	9	59	33
AMC	1	19	
PIT	28	33	34
COX		14	
COT	1	20	10
DO	35	35	43
CZ	1	2	2
CPM	3	21	7
NA	3	40	11

**Table II: Antibiotic sensitivity pattern of isolated pathogenic microorganism**

Abbreviations: AK=Amikacin; AMC=Amoxyclyav; AMP=Ampicillin; AZM=Azithromycin, CB=Carbenicillin; CFM=Cefixime; CTX=Cephotaxime; Cx=Cephoxitine; CAZ=Ceftazidime; CTR=Ceftriaxone; CIP=Ciprofloxacin; COT=Co-Trimoxazole; GEN=Gentamycin; NA=Nalidixic Acid; OF=Ofloxacin; NX=Norfloxacin; PI=Piperacillin; TOB=Tobramycin, Nit-nitrofurantoin; PB=Polymyxin B, CXM =Cefotaxime, CPD =Cefpodoxime, MRP= Meropenam, LEV= Levofloxacin, GAT= Gatifloxacin, CLR= Clarithromycin, C=Chloramphenicol, DO=doxycycline, VA=vancomycin

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