

Original Article

Assessment of urinary tract infections among adult population

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ABSTRACT:

Background: Urinary tract infections (UTIs) are among the most common bacterial infections. The present study was conducted to assess urinary tract infections among adult population. **Materials & Methods:** 94 patients with urinary tract infection of both genders were included and complete haemogram, sugar (fasting and postprandial /HbA1c), serum urea creatinine, liver function test, urine for routine and microscopic examination, ultrasound whole abdomen & chest X-ray(P/A) view was obtained. **Results:** Out of 94 patients, males were 54 and females were 40. Pathogens isolated in UTI were E. coli in 72%, Klebsiella spp in 25%, Pseudomonas spp. In 12%, enterococcus in 11%, staphylococcus aureus in 5%, citrobacterfreundii in 2% and proteus mirabilis in 14%, The difference was significant ($P < 0.05$). Common symptoms were fever in 36%, dysuria in 72%, urgency in 60%, hematuria in 4%, increased frequency in 74%, loin pain in 12%, abdominal pain in 14%, altered sensorium in 14%, nausea in 30% and vomiting in 22%. The difference was significant ($P < 0.05$). **Conclusion:** Pathogens isolated in UTI were E. coli, Klebsiella spp, Pseudomonas spp., enterococcus, staphylococcus aureus, citrobacterfreundii and proteus mirabilis.

Key words: E. coli, Klebsiella spp, Pseudomonas spp.

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INTRODUCTION

Urinary tract infections (UTIs) are among the most common bacterial infections. It has been estimated that symptomatic UTIs result in as many as 7 million visits to outpatient clinics, 1 million visits to emergency departments, and 100,000 hospitalizations annually.¹ UTIs have become the most common hospital-acquired infection, accounting for as many as 35% of nosocomial infections, and they are the second most common cause of bacteremia in hospitalized patients.²

Virtually all healthcare-associated UTIs are caused by instrumentation of the urinary tract. Catheter-associated urinary tract infection has been associated with increased morbidity, mortality, hospital cost, and length of stay. Therefore, investigating epidemiology of UTIs (prevalence, risk factors, bacterial isolates and antibiotic sensitivity) is fundamental for care givers and health planners to guide the expected interventions.³

Some UTIs are asymptomatic or present with atypical signs and symptoms, and the diagnosis of UTIs in neutropenic patients (who do not typically have pyuria) may require different diagnostic criteria than

those used for the general patient population.⁴ The etiological agents of community-acquired and hospital-acquired UTIs differ. Only a limited amount of data has been published regarding changes in the frequency of causative agents among outpatients. Enteric bacteria (in particular, Escherichia coli) have been and remain the most frequent cause of UTI, although there is some evidence that the percentage of UTIs caused by E. coli is decreasing.⁵ The present study was conducted to assess urinary tract infections among adult population.

MATERIALS & METHODS

The present study comprised of 94 patients with urinary tract infection of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. A thorough detailed history was obtained and symptoms and signs were recorded. Complete haemogram, sugar (fasting and postprandial /HbA1c), serum urea creatinine, liver function test, urine for routine and microscopic examination, ultrasound whole abdomen & chest X-ray(P/A) view was obtained. Data thus obtained were subjected to

statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 94		
Gender	Males	Females
Number	54	40

Table I, graph I shows that out of 94 patients, males were 54 and females were 40.

Table II Pathogens found in UTI

Pathogens	Percentage	P value
E. coli	72%	0.02
Klebsiella spp	25%	
Pseudomonas spp.	12%	
Enterococcus	11%	
Staphylococcus aureus	5%	
Citrobacter freundii	2%	
Proteus mirabilis	14%	

Table II, graph I shows that pathogens isolated in UTI were E. coli in 72%, Klebsiella spp in 25%, Pseudomonas spp. in 12%, enterococcus in 11%, staphylococcus aureus in 5%, citrobacterfreundii in 2% and proteus mirabilis in 14%, The difference was significant (P< 0.05).

Graph I Pathogens found in UTI

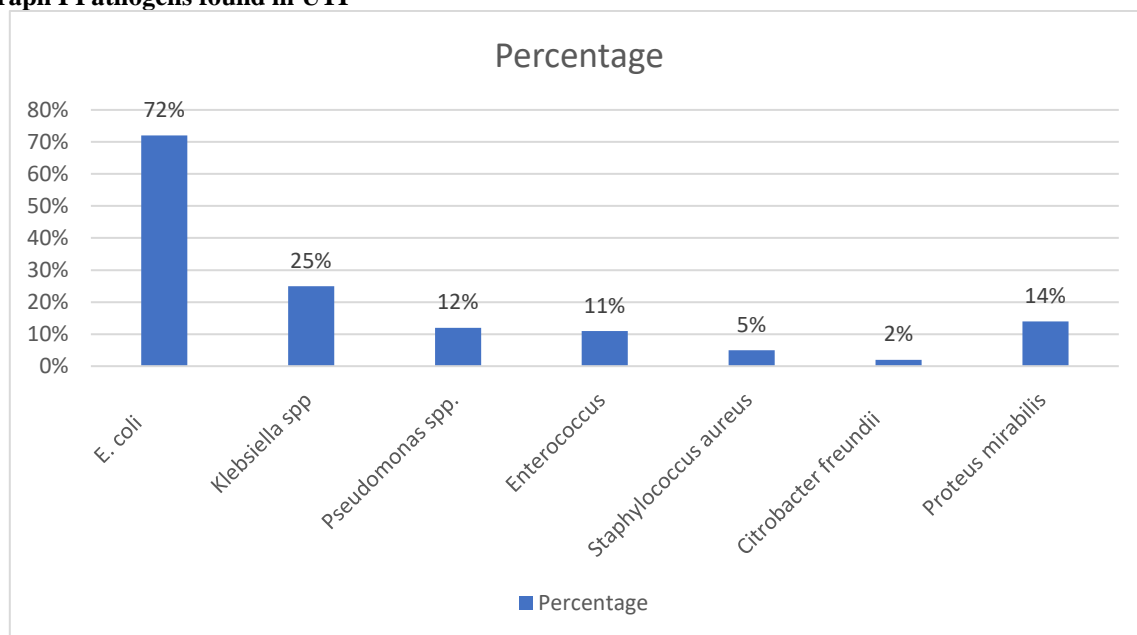
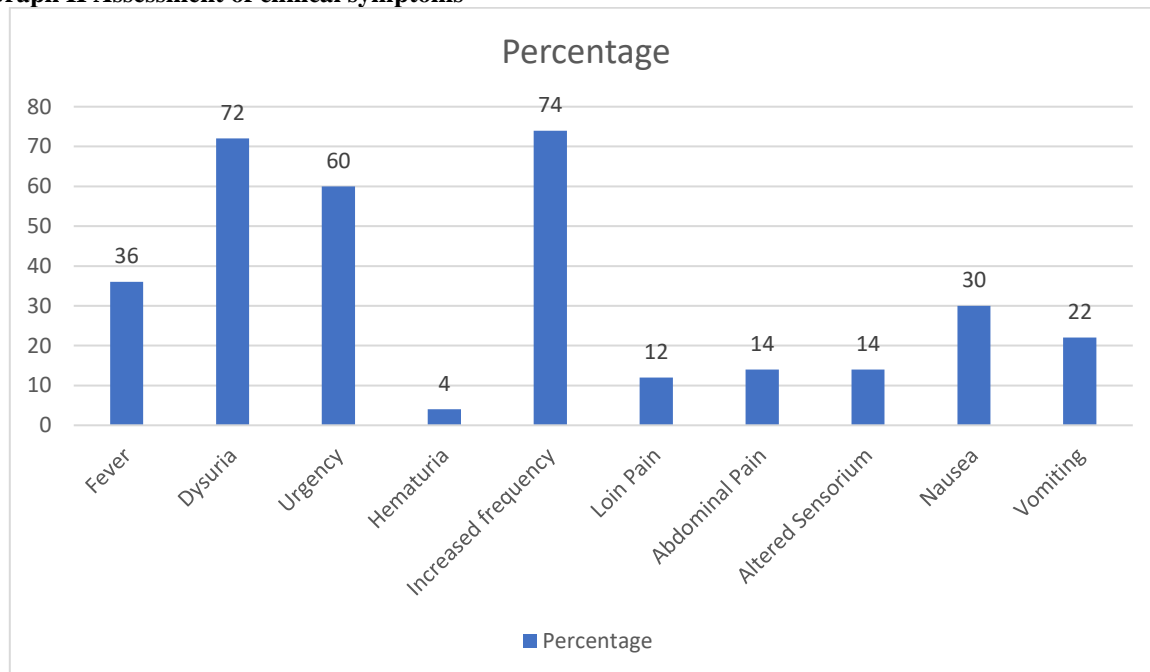


Table III Assessment of clinical symptoms

Clinical symptoms	Percentage	P value
Fever	36	0.01
Dysuria	72	
Urgency	60	
Hematuria	4	
Increased frequency	74	
Loin Pain	12	
Abdominal Pain	14	
Altered Sensorium	14	
Nausea	30	
Vomiting	22	

Table III, graph II shows that common symptoms were fever in 36%, dysuria in 72%, urgency in 60%, hematuria in 4%, increased frequency in 74%, loin pain in 12%, abdominal pain in 14%, altered sensorium in 14%, nausea in 30% and vomiting in 22%. The difference was significant (P< 0.05).

Graph II Assessment of clinical symptoms

DISCUSSION

According to literature sources, urinary tract infections result in about 7 million office visits, 1 million visits to the emergency department and 100,000 hospitalizations every year, altogether accounting for a quarter of all infections seen in the elderly.⁶ Amongst those >65 years, urinary tract infections account for 15.5% of all hospitalizations and 6.2% deaths. They make up the most common type of infection in adults who are institutionalized and constitute over a third of all infections encountered by this population.⁷ As per various estimates, UTIs in elderly have an incidence in the range of 1 infection per 14-20 person years (0.05-0.07 infections per person-year).⁸ The present study was conducted to assess urinary tract infections among adult population.

In present study, out of 94 patients, males were 54 and females were 40. Kauffman et al⁹ found that the prevalence of UTI (significant bacteriuria) was 23.4% (236 patients). Among the total 236 UTI patients, 134 were females (56.8%) and 102 were males (43.2%). Out of total 1008 patients, 236 (23.4%) had significant bacteriuria, in which 12 (5.1%) patients were aged less than 20 years, 51 (21.6%) patients were in the age group 21-40 years, 110 (46.6%) patients were in the age group 41-60 years were and 63 (26.7%) of patients were aged more than 60 years. In total 236 isolates from patient *Escherichia coli* was most frequently isolated microorganism from 104 (44%) patients of the total isolates, followed by *Klebsiella* 33 (14%) and then *Enterobacter* 23 (9.74%), *Citrobacter* (7.20%), *Enterococcus*, *Pseudomonas*, *Proteus*, *MRSA*, *Acinetobacter*, *Staph aureus* and least is *Coagulase negative staphylococcus*.

We found that pathogens isolated in UTI were *E. coli* in 72%, *Klebsiella* spp in 25%, *Pseudomonas* spp. In 12%, *enterococcus* in 11%, *staphylococcus aureus* in 5%, *citrobacterfreundii* in 2% and *proteus mirabilis* in 14%. Clarrige et al¹⁰ The prevalence of significant bacteriuria was 14%. Gram-negative bacteria were more prevalent (73%). *Escherichia coli* (34.6%), coagulase-negative staphylococci (19.2%), *Pseudomonas aeruginosa* (15.4%), and *Klebsiella* spp. (11.5%) were common bacterial isolates, where most of them were resistant against ampicillin, amoxicillin, tetracycline, trimethoprim-sulfamethoxazole, and chloramphenicol. Multidrug resistance was seen in 100% of the isolated bacteria. A majority of the bacterial isolates were sensitive to ciprofloxacin, ceftriaxone, erythromycin, and gentamicin.

It is evident that any condition that permits urinary stasis or obstruction predisposes the individual to UTI. Stones or urinary catheters provide an inert surface for bacterial colonization and formation of a persistent bio film.¹¹ Thus, vesicoureteral reflux, ureteral obstruction secondary to prostatic hypertrophy, neurogenic bladder, and urinary diversion surgery create an environment favourable to UTI. In persons with such conditions, *E. coli* strains lacking typical urinary virulence factors are often the cause of infection.¹² Inhibition of ureteral peristalsis and decreased ureteral tone leading to vesicoureteral reflux are important in the pathogenesis of pyelonephritis in pregnant women. Anatomic factors—specifically, the distance of the urethra from the anus—are considered to be the primary reason of UTI predominance in young females rather than young males.¹³

The genetic background of the host influences the individual's susceptibility to recurrent UTI, at least among women. Familial disposition to UTI and to pyelonephritis is well documented. Women with recurrent UTI are more likely to have had their first UTI before the age of 15 years and to have a maternal history of UTI.¹⁴ A component of the underlying pathogenesis of this familial predisposition to recurrent UTI may be persistent vaginal colonization with *E. coli*, even during asymptomatic periods. Vaginal and periurethral mucosal cells from women with recurrent UTI bind threefold more uropathogenic bacteria than do mucosal cells from women without recurrent infection.¹⁵

CONCLUSION

Authors found that pathogens isolated in UTI were *E. coli*, *Klebsiella* spp., *Pseudomonas* spp., enterococcus, staphylococcus aureus, citrobacterfreundii and proteus mirabilis.

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