

ISOLATION AND IDENTIFICATION OF MICROBIAL FAUNA IN UTI PATIENTS

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ABSTRACT

Urinary tract infection caused by bacteria leads to inflammation. It is an important infection which can cause a highly morbidity rates in both males and females. The aim of the present study was determine the percentage prevalence of the UTI among the general population and the percentage of the bacterial isolates in the Urine samples. Among 150 samples bacterial isolates were obtained which included *Escherichia coli*, *Klebsiella pneumonia*, *Proteus vulgaris*, *Pseudomonas aeruginosa*. The highest prevalence of specific bacteria was found to be *Escherichia coli* recorded among all the UTI patients to be (55.55%) the least percentage among the bacteria were *Klebsiella pneumonia*, *Proteus vulgaris*, *Pseudomonas aeruginosa* and *Enterobacter aerogenes* which recorded 16.66%, 5.55%, 11.11% and 11.11% respectively. Results of the study showed that of females had UTI more than the males.

Keywords: Bacteria, *Escherichia coli*, UTI.

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INTRODUCTION

Urinary tract infections (UTIs) one of the most contagious and infectious disease caused by the abnormal growth of pathogens are the inflammatory disorders of the urinary tract.^{1,2} Pyelonephritis and cystitis encompass ranges of morbidity in urinary tract infections are characterized by the existence of microorganism in urinary tract.^{3,4} When it affects the lower urinary tract cause dysuria and lower abdominal pain (LAP) and may result in permanent scarring of the kidney, ureters, bladder and urethra and symptoms are frequent urination, and feeling the need to urinate despite having an empty bladder.⁵ Renal scarring may lead to complications in adulthood including hypertension, proteinuria, renal damage and even chronic renal failure, which requires dialysis treatment.⁶ UTIs depend the clinical manifestations of the etiologic organisms, the portion of the urinary tract involved, the severity of the infection and may be asymptomatic, acute, chronic, and complicated or uncomplicated. Both asymptomatic and symptomatic UTIs pose a serious threat to public health care, hence differentiated into lower UTIs (cystitis) and upper UTIs (pyelonephritis).^{7,8}

Asymptomatic bacteriuria is a condition in which the bacteria present in the urine but symptoms do not result. In Uncomplicated UTI patient have no severe complications and history of anatomical or functional

abnormality of the urinary tract, but complicated UTI include immunosuppressed patients and patients with comorbidities of the urinary tract. Urinary Tract Infections are caused by both Gram-negative and Gram-positive bacteria, as well as by certain fungi the most common causative agent for both uncomplicated and complicated Urinary Tract Infections are uropathogenic *Escherichia coli*.⁹

The epidemiology and the characteristics of urinary tract infections in children, frequency of urinary tract infection causing agents in pregnant women and their antimicrobial susceptibility patterns was studied.¹⁰

METHODOLOGY

Demographic Data

Demographic data i.e., name of the patient, age, gender, locality and duration of the infection was collected on the designed questionnaire.

Urine Specimen Collection

A clean catch midstream urine samples were collected in sterile clean leak proof bottles from each patient. Urine samples were collected from both male and female, of all age groups from CMH Lahore.

Physical Examination of Urine

Urine specimen (n=150) were collected from CMH Lahore. The physical parameters of collected urine specimens were analyzed such as the volume, pH, and colour, pus cells, RBC's, Protein, Epithelial cells and blood by Urine test strips (Healthy Wiser, Lot no. 031-101,USA).

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RESULTS

Demographic Data of UTI Patients

Total 150 patients of UTI of either gender (both male and female) between age group of 12-80 years were studied (Table-I). Demographic features of Urinary Tract Infected patients are shown in. Data shows the highest prevalence of UTI is found in the age group of 51-60 in females and in males with age group of 21-30.

Urinalysis of Urine Samples of UTI Patients

Urine specimen (n=150) were collected from CMH Lahore. The Physical parameters of all the urine samples were determined. Parameters such as pH, Color, RBCs, epithelial cells and pus cells were noted.

patients in the range of 0-4 and 14% concentration of epithelial cells present in the range of 0-1, 65% in 1-2, 21% in 2-3 and 2% concentration of epithelial cells present in the range of 3-4 as shown in Figure.

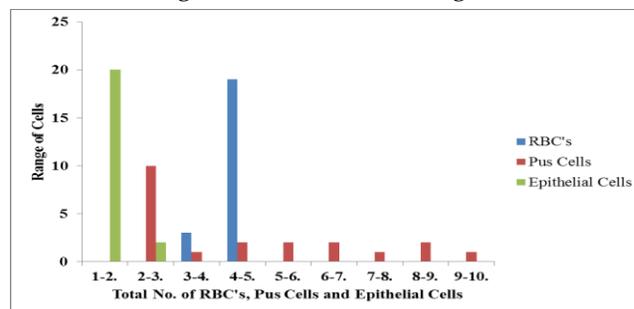


Figure: The numbers of RBC's, Pus cells and epithelial cells in the urine samples of UTI patients.

Table-I: UTI infection among different age group of the population visited CMH Lahore.

Age Groups (Years)	No. of UTI Males, n=55	No. of UTI Females, n=95	Mean Value		S.D ± S.E		df	F	Sig.
			Male	Female	Male	Female			
12-20	6 (4%)	8 (5.3%)	4.7	4.3	2.006 ± 0.27	1.88 ± 0.19	1	1.018	0.315
21-30	4 (2.6%)	11 (7.3%)							
31-40	6 (4%)	14 (9.3%)							
41-50	5 (3.3%)	12 (8%)							
51-60	9 (6%)	19 (12.6%)							
61-70	13 (8.6%)	16 (10.6%)							
71-80	12 (8%)	15 (10%)							

DISCUSSION

In this study prevalence of UTI was much higher in age group of 21-30 in males and in the age group 51-30 in females. Although the infection rate was higher in married females patients as compared to unmarried females which is in accordance with the previous study 10E. coli was observed as the most common etiologic agent of UTI alone account for 70-90% of the UTI infections.¹¹ UTIs caused by antibiotic resistant and multiple drug resistant bacteria have been increased in recent times. In the present study we analyzed their antibiotic sensitivity pattern determined by Antibiotic susceptibility test.

Similar results showed that females had UTI more than the males which accounted for 55.23% compared to 44.79% and results of this study showed that the rate of girls with UTI were higher 62.74% in comparison with boys 37.25%.¹²⁻¹⁴

Through results of urinalysis the percentage population of 77% proteins and 60% blood is detected in urine samples of UTI patients and the percentage population of pus cells detected in urine samples of UTI patients in 0-20 range.¹⁵⁻¹⁷ Percentage population of epithelial cells also detected in urine samples of UTI

About 95% of urinary tract infection caused by many types of bacteria.^{18,19} The results of the current study because the prevalence in the present study groups of various bacteria was 60.78%, because the reasons for the emergence of the outcome of these few due to an error occurred during the sampling, may be an error occurred during the preparation of culture media, or media inappropriate appearance of sort's isolation of different bacteria. Distribution of isolated bacteria among study groups was shown in Table-II. The highest prevalence of specific bacteria was found to be Escherichia coli recorded among all the paediatric UTI to be (55.55%) the least percentage among the bacteria were Klebsiella pneumonia, Proteus vulgaris, Pseudomonas aeruginosa and Enterobacter aerogenes which recorded 16.66%, 5.55%, 11.11% and 11.11% respectively.

Table-II: Distribution of isolated bacteria among study groups.

Isolated Bacteria	Bacterial isolates in positive UTI cases (%)
Escherichia coli	55.55%
Klebsiella pneumonia	16.66%
Proteus vulgaris	5.55%
Pseudomonas aeruginosa	11.11%
Enterobacter aerogenes	11.11%

The highest prevalence of specific bacteria was found to be *E.coli* recorded among all the pediatric UTI to be (35%) the least percentage among the bacteria were *Klebsiella pneumonia*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Staphylococcus epidermidis* which recorded 30%, 7.5%, 5%, 15% and 7.5% respectively.²⁰

CONCLUSION

The appropriate treatment for UTI has been a subject of recent research. The study found that *E. coli* is the principal etiological agent of UTI. The occurrence of UTI is significantly related to age in female patients, that is, the disease incidence increases with increasing age and vice versa for male patients. Identification of the causative organisms and its susceptibility to antimicrobials is important, so that proper drug is chosen to treat the patient in early stages of UTI. It is therefore recommended that routine microbiological analysis and antibiotic sensitivity test of mid-stream urine samples of patients be carried out before the treatment in the management of UTIs. Over and above for prevention of UTIs implementation of strict infection control guidelines, effective hand washing and judicious use of antimicrobials is mandatory which goes a long way to cope up, with the emergence of drug resistance among uropathogens.

Conflict of Interest: None.

Authors' Contribution

MI: Conception of design, SR: Analysis interpretation of data and, Drafting the article, AH: Acquisition of data.

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