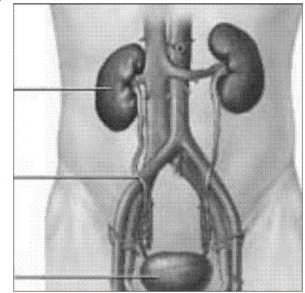


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URINARY TRACT INFECTION; AN OLD DISEASE IN THE NEW AGE



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ABSTRACT... pmrc@brain.net.pk **Objectives:** To document the common microorganisms causing UTI in human and their resistance to currently used antibiotics. **Data Source:** PMRC, Research Center Khyber Medical College Peshawar **Design:** Retrospective analytical study. **Period:** Jan 2000 to June 2003. **Material and Methods:** Evaluation results of 597 urine cultures performed during the period, on clinically suspected referred subjects. **Results:** Bacterial growth was obtained in 35% samples. Common micro organisms in decreasing order of yield are E. Coli, Klebsiella, Staph aureus, Proteus species and pseudomonas isolated from 80, 7.1, 5. & 1.5% samples respectively. 100% sensitivity is observed for imipenem. Efficacy next in decreasing order was for Amikacin, Tarivid, Ciproxin and Rocephin. **Conclusion:** Esch. Coli is the predominant etiological organism of UTI and imipenem is the drug of choice to which over 80% of all the different organisms are sensitive. **Recommendation:** Constantly changing sensitivity pattern of the organisms responsible for UTI demands a periodic check for better selection of drug and reduction of consequences of the disease.

Key Words: UTI, Etiological agent of UTI, Urine C/S, Antibiogram.

INTRODUCTION

Urinary tract infection is a common health problem in all over the world. More than 80 million people in the United

States develop UTI each year¹. In the developing countries, the disease has more prevalence due to poor personal hygiene, life style, mal-nutrition and environmental condition. The disease is caused by wide

variety of micro organisms and at different location of urinary tract system. The urethra and urinary bladder are most frequent sites of infection with in the urinary tract, with the resulting infections referred to as urethritis and cystitis, respectively. The kidney is also subject to microbial infections leading to pyelonephritis.

The UTI can not be diagnosed properly with basic routine examination of urine as pyuria is absent occasionally in the condition and the diagnosis is missed. The culture sensitivity test of urine in such cases is done for proper diagnosis and effective management of UTI.

The test is important because most of patient with UTI are treated blindly with different antibiotics and their progress is monitored just on routine testing or clinical symptoms. This could lead to a variety of complications in the patients and might promote the development of resistance in bacteria to these anti-microbial agents.

On the other hand untreated UTI may lead to progressive loss of renal function, chronic UTI, distortion and scarring of the kidneys². The present series of reported cases highlight the frequency of commonly encountered etiological agents of UTI and their sensitivity pattern to various commonly used antibiotics in Peshawar.

SUBJECTS AND METHODS

PMRC laboratory received 597 urine samples (Male=237 Females=360) for routine culture and sensitivity test from January 2000 to June 2003. They were all clinically suspected cases of UTI. Their samples were collected with due precautions in a sterile screw capped bottles and processed in the microbiology laboratory of the research Centre within two hours of the collection.

Each sample was streaked on blood agar and Macconkeyes agar with the standard loop. All the petri dishes were incubated at 37°C for 24 hours aerobically. The number of colonies developed were counted with Quebec colony counter model 560 suntex and calculated per ml of urine.

The bacterial count of more than 10^5 /ml of urine was considered significant for UTI whereas the counts of less than 10^4 /ml of urine were interpreted as negative. While the sample having counts in between the two (10^4 - 10^5 /ml) were recultured². The organism was identified visually by colonial morphology and by using standard biochemical tests.

The sensitivity was tested by the disc diffusion method with commercially available antibiotic discs³. All the test plates were read after 24 hours incubation at 37°C. The zone size of inhibition around an antibiotic disc was used as a measure of the susceptibility according to the manufacturer's instructions.

RESULTS

Urine samples of 597 subjects, irrespective of age were processed for culture sensitivity test. Out of total, 329 were hospital admitted and 268 OPD/private cases. Urine culture was positive in 210 cases (females and males ratio was 2.5:1) whereas, 387 samples yielded no growth of any micro organisms. The most common organism isolated was E. Coli followed by Klebsiella, Staph aureus, proteus and pseudomonas (Table-I).

Among positive cases, 78% subjects had provisional diagnosis of UTI with the remaining cases were suspected. It has been found out that culture positive yield was higher in indoor cases and children as compared to OPD cases and adult groups respectively.

The sensitivity pattern of micro organisms is shown in (Table-II). The table shows that Imipenem is the most effective antibiotic, to which almost all the organisms isolated were sensitive.

The drug next in order of efficacy are Amikacin, Tarivid, Ciproxin and Rocephin. Besides, the urine samples from indoor subjects have been found to exhibit a high degree of resistance to several of the applied antibiotics especially Urixin against E. Coli.

Micro organism	Year 2000	Year 2001	Year 2002	Year 2003	Total
E. Coli	39(81.2)*	45(78.9)	55(78.6)	29(82.8)	168(80)
Klebsiella Species	04(8.3)	06(10.5)	01(1.4)	04(11.4)	15(7.1)
Staph. Aureus	02(4.2)	03(5.3)	08(11.5)	-	13(6.2)
Proteus Species	02(4.2)	03(5.3)	05(7.1)	01(2.9)	11(5.2)
Pseudomonas Sp.	01(2.1)	-	01(1.4)	01(2.9)	03(1.5)
Total growth	48(100)	57(100)	70(100)	35(100)	210(100)

**Values in parenthesis refer to % age.*

Antibiotics	E. Coli	Pseudomonas	Proteus Sp	Staph. Aureus	Klebsiella	Total
Imipenem	90	88	91	88	100	457
Amikacin	78	86	64	73	67	368
Taravid	82	67	64	73	67	353
Ciproxin	80	56	70	64	78	348
Rocephin	55	67	64	45	76	307
Azactam	50	67	64	38	67	286
Cefpirome	40	38	55	71	50	254
Fortum	35	38	64	36	78	251
Gentamicin	56	44	45	50	38	233
Nebcin	58	50	37	43	38	226
Enoxobid	76	Not tested	45	67	38	226
Naladixic acid	35	33	56	23	57	224
Claforan	48	67	27	45	33	209
Cefizox	21	Not tested	34	20	Not tested	139
Ampicillin	36	11	09	55	0	111
Urxin	18	Not tested	Not tested	Not tested	Not tested	18

DISCUSSION

bacterial culture is important for diagnosis of UTI and

generally recommended /advised in cases of dysuria, frequency and burning of micturition and pyrexia of unknown origin. In the present series admitted patients

have been found to have more culture positive results as compared to outdoor patients. This may be due to properly selected cases by experienced clinicians, and the background of urinary tract disease requiring admission. Children also had more positive culture in the series and might be as a results of defective training and more susceptibility. Present data also highlighted that females had more bacterial growth as compared to males, might be due to improper use of tampons, duchess, vaginal swabs, menstruation, gynecological examination, sexual intercourse and short urethra. A study⁴ documented urinary tract infection in girls and boys in ratio of 3.5:0.5. while another study shows an increase in the incidence of UTI in females from 1% at school age to 10% at age over sixty years⁵. Some investigators demonstrated that behavioral and functional abnormalities are linked with urinary tract infection in the two sexes⁶.

E. Coli has been found to be the most common infective agent in this series, being grown in 168 (80%) of cases. This is in accordance with previously reported findings of Trienkens⁷ in 1990. Sensitivity pattern in this study has shown that Urxin, a commonly used drug in UTI, becoming less effective for urinary pathogens. It indicates that common organisms causing UTI, especially E. Coli has developed resistance against the particular antibiotic, which necessitates a constant check on the use of the common antibiotics.

In the present study Imipenum is found to be the most effective for E. Coli. But other study has showed that minocycline HCl is the drug of choice for E. Coli⁸. Hence the type of organisms in UTI and their sensitivity

pattern varies from patients to patient. Other antibiotics effective in the treatment of UTI are Amikacin, Tarivid, Ciproxin and Rocephin and should be chosen for the treatment of bacterial infection on the basis of sensitivity results. Cost and convenient dosage should be the other indicators for selection of antibiotics. It is suggested that such studies should be conducted on regular intervals to follow any change in the causative organisms and the sensitivity.

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