ORIGINAL ARTICLE

Urinary Tract Infection Causative Bacterias and Antibiotic Sensitivity Pattern in Emergency Department of Fatima Memorial Hospital, Lahore

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ABSTRACT

Background: Urinary tract infections are common presentation and frequently encountered serious morbidity in the emergency department. It not only affects all segments of human population but also results in increasing antibiotic resistance due to persistence and mismanagement of ailment.
Aim: To obtain varied pattern of antibiotic sensitivity and resistance warranting judicious use of antibiotic in emergency treatment of UTI to prevent the recurrence of resistant strains.
Methods: This study was a retrospective study done in Fatima Memorial hospital and Samples were obtained from Adult Emergency Department from Jan 2016 to Dec 2016. A total of 77 urine samples were obtained for this study.
Results: The samples obtained were 50 from females and 27 from males. The most common organisms cultured were E.Coli 50(64.9%) and Klebsiella 14(18.18%). Imipenem and Meropenem were the most sensitive drugs to all the organisms while Ciprofloxacin and Cefixime showed highest resistance.
Keywords: Urinary tract infection, resistance, antibiotic sensitivity

INTRODUCTION AND OBJECTIVES

One of the most common causes of presentation of patients seeking medical care is Urinary tract infections.[1]For clinicians, it's a commonly encountered disease in patients especially in females in developing countries[1]. In related studies from our region it was found that in general population urinary tract infection (UTI) is one of the most important causes of morbidity, and is the second most common cause of hospital visits.[1] The most common causative organisms of UTI are Escherichia coli, Staphylococcus saprophyticus and less common are organisms are Proteus sp, Klebsiellapneumonia, Pseudomonas aeruginosa, Enterococci and Candidaalbicans. The rate of resistance to antibiotics has increased due to new increasing antibiotic sensitivity of bacterias.[1]In clinical practice, evidence based approach is to commence empirical therapy in light of available treatment guidelines based on local antimicrobial culture sensitivity reports before patient's culture sensitivity report is available.

This study will be based to find out the common bacteria causing UTI and to determine the antibiotic susceptibility pattern of the urinary pathogens. We will report the prevalence of UTIs over one year period from ER of FMH, Lahore[6].

MATERIAL AND METHODS

This retrospective observational study was carried out in the Emergency Department and Laboratory, Fatima Memorial Hospital Lahore from January, 2016 to December, 2016. Records of total patients presenting to emergency with suspected UTI coming in ER of FMH will be collected. Sampling will be done retrospectively through records of patients presenting to ER and treated on lines of UTI. Sampling will be done based on following criteria:

Inclusion Criteria: Patients of age above 18yrs, presenting with urinary symptoms of dysuria, frequency, polyuria and fever.
Exclusion Criteria: None of the above, patients age <18years, pregnant patients.
Data collection procedure: Research questionnaire has been formulated and patient data has been collected accordingly as per attached questionnaire.Patients included in the study were from Fatima Memorial Hospital Emergency department. FMH laboratory provided the required antimicrobial and culture sensitivity data following standard laboratory protocol. A growth of $\geq 10^5$ CFU/ml is considered as significant bacteuria. Antimicrobial sensitivity of the confirmed micro-organisms was done by disc diffusion method onagar. The antibiotics to be tested areAmikacin, Cotrimaxazole, Gentamycin, Ciprofloxacin, Ampicillin and Impinem.
Data analysis procedure: SPSS 17.0 was used for data analysis. The result is presented in terms of frequencies and percentages.
Limitation: Study has been conducted in Emergency department of Fatima memorial hospital in adult emergency and is not representative of pediatric population and pregnant patients as these were excluded.

RESULTS

A total of 77 samples were collected in the study period of which 50(64.9%) were from females and rest 27(35.1%) samples were from male population. The most common organisms cultured from these samples included E.Coli 50(64.9%), Klebsiella 14(18.18%) and Group D streptococci 9(11.68%). Less common organisms include Non group streptococci, Pseudomonas and Staph Aureus.

E.coli was the most commonly isolated organism in this study 50 (64.9%) followed by Klebsiella 14(18.18%). Data of sensitivity and resistance to other organisms are shown in the table.

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E.coli was highly sensitive to Imipenem (100%), Fosfomycin (98%) and Meropenem (49%) and highly resistant to Ciprofloxacin (24%), Cefaclor (32%) and Cefixime (36%). Sensitivities of other drugs is given in the table.

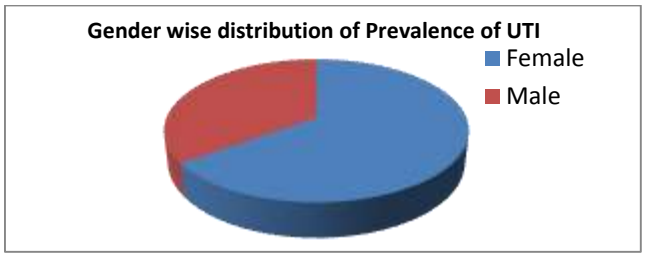

Table 1: Most common organism cultured

Organism	n	%age
E.Coli	50	64.9
Klebsiella	14	18.8
Strep D	9	11.68
Strep Non Group	1	1.28
Pseudomonas	2	2.5
Staph Aureus	1	1.28
TOTAL	77	100

Table 2: Antibiotic sensitivity and resistance pattern to E.Coli

Antibiotic	Sensitive	Resistant	Total
Amikacin	48(96%)	2(4%)	50
Cefixime	18(36%)	32(64%)	50
Ceftriaxone	20(40%)	30(60%)	50
Cefaclor	16(32%)	34(68%)	50
Meropenem	49(98%)	1(2%)	50
Augmentin	24(48%)	26(52%)	50
Fosfomycin	49(98%)	1(2%)	50
Imipenem	50(100%)	0(0 %)	50
Cefoperazone + Sulbactam	47(94%)	3(6%)	50
Ciprofloxacin	12(24%)	38(74%)	50
Piperacillin+Tazobactam	46(92%)	4(8%)	50

Table 3: Drugs sensitivity and resistance in Klebsiella

Antibiotic	Sensitive	Resistant
Amikacin	13	1
Cefixime	2	12
Ceftriaxone	3	11
Cefaclor	2	12
Meropenem	14	0
Augmentin	3	11
Fosfomycin	13	1
Imipenem	14	0
Cefoperazone + Sulbactam	8	6
Ciprofloxacin	3	11
Piperacillin+Tazobactam	8	6

Table 4: Drugs Sensitivity and Resistance in Strep D

Drug	Sensitive	Resistance	Total
Cefixime	3	6	9
Ceftriaxone	6	3	9
Cefaclor	5	4	9
Meropenem	8	1	9
Augmentin	8	1	9
Gentamycin	6	3	9
Ciprofloxacin	4	5	9
Penicillin	8	1	9
Vancomycin	8	1	9

Klebsiella was isolated in 14 of the samples and showed high sensitivity to Meropenem and Imipenem with 100% sensitivities to these drugs while lowest sensitivity was showed to Cefixime and Cefaclor with 85% resistance.

Meropenem, Augmentin, Penicillin and Vancomycin showedmost sensitivity to group D streptococci with 88.9% while Cefixime (3 out of 9) and Ciprofloxacin (4 out of 9) showed least sensitivity.

DISCUSSION

In clinical practice management of UTI patients can be done accurately through identification of the causative organism and selection of effective antibiotic based on culture sensitivity reports. UTI is most common presentation in ER department. Most common organism found in our study is E.coli and Klebsiella.

There is increasing resistance to first line agent commonly used in our setups. The major cause of this resistance is over use antibiotics like Ciprofloxacin and Cefixime in rural areas by quacks, self medication by our population and use of these drugs without any proper prescription. All these factors lead to increased trend of antibiotic resistance in our community. Due to increase in resistance to first line antibiotics, clinicians have no other alternative but to prescribe broad spectrum antibiotics. This further highlights concern of increase of antimicrobial resistance. Also in low economic setups antibiotics of poor efficacy are commonly available at lower cost however such medication prolongs the course of need of antibiotics and alsosubsequent need to switch to more expensive broad spectrum antibiotics in case of failure of low efficacious first line medications.

Antibiotic resistance is a major concern for upcoming generation of doctors and Microbiologists. Increasing resistance leaves human populations susceptible to fatal outcomes from simple infections in the future.

This situation can be tackled by judicious use of broad spectrum antibiotics and stopping over the counter availability of such drugs.

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