Original Research Paper

General Medicine

A STUDY EVALUATING CURRENT PATTERNS OF PATHOGEN INVOLVEMENT AND RELATED ANTIBIOTIC RESISTANCE IN URINARY TRACT INFECTION PATIENTS AT TERTIARY HEALTH CARE INSTITUTE OF RAJASTHAN.

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ABSTRACT   **BACKGROUND:** Antibiotic resistance is hidden factor contributing in morbidity and mortality. Knowledge about current pattern of involved pathogen with antibiotic sensitivity and resistance may improve patient's outcome. **METHODOLOGY:** This retrograde study was conducted for period of 6 months (January to June, 2018). Only positive cultured samples reports of urine were included in the study. Pathogens involved and antibiotic sensitivity, resistance was observed. Statistical analysis was done inform of percentage and tabulation. **RESULTS:** Total 129 urine culture samples were found positive and included in the study. E. Coli was most common organism (60%) followed by Klebsiella, staphylococcus aureus, candida, proteus. These pathogens were resistant to many first line antibiotics. **CONCLUSION:** Antibiotic resistance to first line antibiotics is alarming and contributing morbidity and mortality. Awareness among medical health care givers is needed about rational antibiotic use for right indication, in right dose, duration along with promotion of hygiene habits.

KEYWORDS : Antibiotic, Culture, Resistance, Sensitivity.

INTRODUCTION

Antibiotic resistance is an alarming situation. It is contributing significantly to morbidity and mortality. The O'Neill Report by the United Kingdom government estimated that deaths because of antimicrobial resistance could rise from approximately 700,000 deaths a year to close to 10 million deaths per year by 2050[1]. It is important to look current pattern of involved pathogens for urinary tract infection (UTI) and magnitude of antibiotic resistance. This knowledge is very useful as UTI is very common infection and it well help to minimize morbidity and mortality.

METHODOLOGY

This retrograde study was conducted for period of 6 months (January to June, 2018) at a tertiary health care institute. Culture and sensitivity reports of urine samples were reviewed. Only positive cultured samples reports of urine sample were included in the study. Pathogens involved and antibiotic sensitivity, resistance was observed. Statistical analysis was done inform of percentage, tabulation.

RESULTS

Among 129 positive urine culture & sensitivity reports E. Coli was most common organism (60%) followed by Klebsiella, staphylococcus aureus, candida, proteus. (Figure 1)
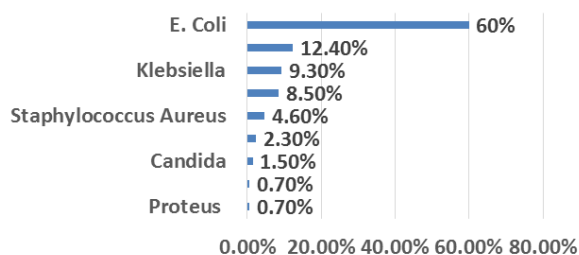

Figure 1. Showing distribution of organism found in positive urine culture and sensitivity report.

Sensitivity and resistance was observed for E. Coli as it was most common organism and has highest importance. No

antibiotic showed 100% sensitivity. Maximum sensitivity was found against Nitrofurantoin (96%) and Merupenam (95%) and resistant was in 4% and 5% samples respectively. E. Coli was found resistant to many first line antibiotics like fluoroquinolones (ciprofloxacin and levofloxacin) in 82% cases, cotromoxazole in 60% cases, ceftriaxone in 85% cases, cefoperazone salbactum in 25% cases, Piperacillin tazobactum in 18% cases etc. (Figure 2)
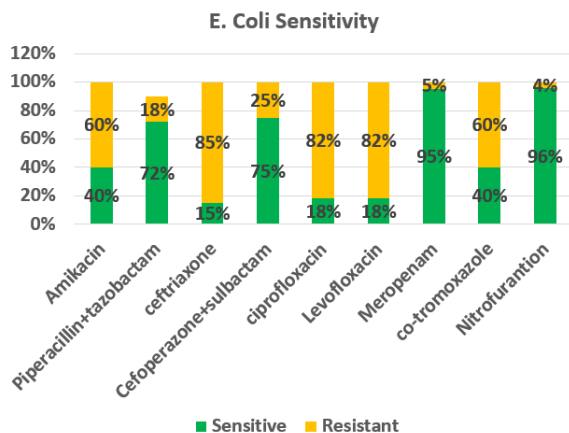

Figure 2. Showing distribution of antibiotic sensitivity and resistance in UTI patients

DISCUSSION

Urinary tract infection (UTI) is very common entity. It can be treated by proper antibiotic medication. Antibiotic resistance is an alarming situation. Despite of use of first line antibiotic, UTI may complicate and may contribute to increase morbidity and mortality.

In current study among 129 positive urine culture & sensitivity reports E. Coli was most common organism (60%) followed by Klebsiella, staphylococcus aureus, candida, proteus. Sensitivity and resistance was observed for E. Coli and maximum sensitivity was found against Nitrofurantoin (96%) and Merupenam (95%), but these antibiotics were not shown 100% sensitivity. E. Coli was found resistant to many first line

antibiotics like fluoroquinolones (ciprofloxacin and levofloxacin) in 82% cases, cotromoxazole in 60% cases, ceftriaxone in 85% cases, cefoperazone salbactum in 25% cases.

In study by Ahmed SS et al[2] the commonly isolated microorganisms were Escherichia coli (27%), Klebsiella pneumoniae (12.4%), Proteus mirabilis (4.5%), Pseudomonas aeruginosa (4.5%), Enterobacter cloacae (5.6%), Enterococcus faecalis (5.6%), and Staphylococcus saprophyticus (3.4%) among 89 positive culture. Overall, drug resistance was found in 92% (n = 82/89) of samples, with most (80%) being resistant to at least two drugs. Antibiotic resistance was commonly observed in ampicillin (88.3%), piperacillin (72.7%), clindamycin (66.7%), amoxicillin/ clavulanic acid (66.2%), and trimethoprim/ sulfamethoxazole (50%).

In the study Gupta V et al[3], E.coli predominated amongst the indoor as well as outdoor patients, followed by K. pneumoniae , P.aeruginosa, Acinetobacter and Enterococcus faecalis. Among indoor patients, high percentage of strains showed resistance to cotrimoxazole. First generation cephalosporins were effective for E.coli. Amongst the outdoor patients, more than 50% patients showed E.coli as the commonest isolate which was 70%-80% resistant to cotrimoxazole and aminopencillin, however, first generation cephalosporins, nitrofurantoin and norfloxacin were effective. Other studies also found significant antibiotic resistance[4,5].

To overcome antibiotic resistance medical practioners must sensitize and encourage for appropriate treatment patterns . The right antibiotic, for right indication, for right duration, in right dose should be given to avoid emerging antibiotic resistance. Beside medical practioners, general population must also educated for proper hygiene practices like hand washing to avoid spread of infection and unnecessary antibiotic use.

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