INTRODUCTION

A study of prescription pattern is an important tool to determine rational drug therapy, maximize utilization of resources and to reduce prescription errors. Prescription pattern monitoring studies (PPMS) are drug utilization studies with the main focus on prescribing, dispensing and administering of drugs. They promote appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs.

Antibiotics are one of the most important discoveries in the field of medical science and are widely used against infectious agents. Monitoring the antibiotic utilization pattern is of growing concern due to increase in antibiotic resistance, lack of adherence to standard treatment guidelines and rise in health care expenditure. Antibiotic resistance is a growing concern due to increase in antibiotic resistance. The most prevalent pattern monitoring studies (PPMS) are drug utilization studies with the main focus on prescribing, dispensing and administering of drugs. They promote appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs.

Urinary tract infection (UTI) is one of the most common bacterial infections in the world. It affects both males and females in all age groups. The prevalence is more common among females. The females are affected during their childhood, adult and child-bearing age. Women are most commonly affected with UTI once in their lifetime because of their shorter urethra. Urinary tract infections are primarily caused by gram-negative bacteria, but gram-positive pathogens may also be involved. More than 95% of uncomplicated UTIs are nonbacterial. The most common pathogen for uncomplicated UTIs is Escherichia coli (75%-95%); followed by Klebsiella pneumoniae, Staphylococcus saprophyticus, Enterococcus faecalis, group B streptococci, and Proteus mirabilis. Pain or burning (discomfort) when urinating, the need to urinate more often than usual, a feeling of urgency when you urinate, blood or mucus in the urine, cramps or pain in the lower abdomen, chills, fever, sweats, leaking of urine (incontinence), change in the amount of urine, either more or less, urine that looks cloudy, smells foul or unusually strong are the symptoms.

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Levofloxacin and ciprofloxacin are the commonly used fluoroquiolones. It is commonly used for the treatment of uncomplicated pyelonephritis and complicated UTIs, including urosepsis. They are act by inhibiting enzyme bacterial DNA gyrase, which nicks double stranded DNA, introduces negative supercoils and then resels the nicked ends. Co-amoxiclav has a broader spectrum of action than amoxicillin alone but is considerably more expensive and should be used as a second line agent. It has been used during pregnancy and is probably safe but experience is limited. Cephalosporins are useful for UTIs which do not respond to other drugs. Characteristics of individual cephalosporin’s may vary. Cephalexin, cephradine, cefaclor and cefadroxil may be used with caution during pregnancy and lactation. Hypersensitivity is the main adverse effect.

MATERIALS AND METHODS

Study Site
The study is conducted in the Government District Headquarters Hospital, Trippur, and a 500 bedded hospital.

Study Population
A study of 100 cases of Female inpatients with urinary tract infection in the department of pediatrics, gynecology and general medicine in Tirupur district headquarters

Study Design
This is a prospective observational study and is to be carried out in female patients of pediatrics, gynecology and general medicine departments

Study Period
The study is conducting over a period of 6 months from February 2019 to August 2019

Study Procedure

- A prospective study was carried out to analyze the 100 cases of female inpatients with urinary tract infection in the department of pediatrics, gynecology and general medicine departments
- Patient demographic details, treatment profile and culture and sensitivity reports were analyzed and the data’s were recorded
- The statistical analysis was used to identify the effective antibiotic and the resistance rate of antibiotic in UTI.

Data Collection Method
Patient case sheet, culture sensitivity reports, proforma, patient case history taking form, case report form, prescriptions standard database references

Inclusion Criteria
Female inpatients who were diagnosed with urinary tract infection in paediatric, gynecology and general medicine departments.

- Female patients who were interested to participate in this study
- Female patients who were treated with single or multiple antibiotics with culture sensitivity reports
- The patients diagnosed with UTIs without other co morbid disease or disorders

Exclusion Criteria

- All male patients who were diagnosed with urinary tract infection
- The UTI Patients having other co-morbid illness
- Neonates with UTI
- All female outpatients who were diagnosed with UTI.
- Female patients without culture sensitivity reports.

Statistical Analysis

- Data were entered and analysed with the help of Microsoft Excel.
- Graphical representation is used for visual representation of the analysed data.

RESULTS

Age wise classification
Out of 100 patients the age group of 20-30 years were mostly affected with the disease. Majority of 43% is belong to this age group.

Department wise classification
Out of 100 patients enrolled in the study 41% belong to the gynecology department

Most Common Presenting Symptoms of Uti
Out of 100 patients enrolled in the study, it was observed that abdominal pain (61%), polyuria and dysuria (39%)
Isolated Organisms in Urine Culture
Out of 100 patients enrolled in the study E.Coli (35%) and followed by staphylococcus aureus (30%), Enterococcus faecalis (17%)

Antimicrobial Sensitivity of E.Coli
In 21 patients of paediatric 7 patients show sensitivity to piperacillin tazobactum, 38 patients of general medicines 15 patients show sensitivity to amikacin, and in 41 patients of gynecology 10 patients show sensitivity to amikacin

Antimicrobial Resistance E.Coli
In 21 patients of paediatric 6 patients show resistance to ampicillin, 38 patients of general medicines 11 patients show resistance to ampicillin, and in 41 patients of gynecology 10 patients show resistance to erythromycin.
**Most Common Prescribing Antibiotics**

Out of 100 patients 47 number of patients were prescribed with Cefotaxime, 20 patients were prescribed with Ampicillin. The presence of bacteria in the urine was identified by the culture and sensitivity test. The test was carried out in the 100 population in that the most common isolating organism was E.coli 30% and followed by that Staphylococcus aureus 30%, Enterococcus faecalis 17%, Enterococcus faecalis 17%, Klebsiella pneumoniae 12%, Pseudomonas aeruginosa 4%, Enterococcus mirabilis 2%, which was in accordance with the study of (Panayappan et al 2017)\(^{13}\) states that Culture sensitivity test was done only in 30% of the total cases for which empirical treatment had to be applied rather than specific antibiotic treatment and the most common isolated organisms were Escherichia coli (60%), Proteus (20%), Klebsiella (13.33%), and Pseudomonas (6.66%).

E. coli was found to be the most common microorganism in the study and the antibiotic that showed more sensitive to this microorganism was found to be Amikacin 73% and next to that Piperacillin tazobactam 72%. In case of paediatrics Piperacillin tazobactam 33%, general medicine and gynaecology departments Amikacin of 39% and 24% had a highest sensitivity rates. (Gidamudi et al 2015)\(^{14}\) states that E. coli was more sensitive to Amikacin.

In antimicrobial resistance of E.coli, ampicillin 63% had a highest incidence of resistance and followed by that erythromycin 62% had a highest incidence of resistance and it was corroborate with the study of (Gidamudi et al 2015)\(^{14}\) and it states that ampicillin was more resistant towards the E.coli microorganism. In the present study it was observed that more resistant antibiotic for E.coli in paediatric and general medicine departments were Ampicillin 29% and 27% and in gynaecology department erythromycin 24%.

The second most common causative organism in the present study was found to be Staphylococcus aureus and the highest sensitive rate of antibiotic was Amikacin 60% and next to that Ampicillin 44% especially in paediatric Amikacin 14%, general medicine Amikacin 21% and Cefotaxime 21% and in gynaecology Amikacin 39% had highest sensitive rates. (Naik et al 2017)\(^{15}\) states that the study showed good sensitivity to gentamicin, Amikacin, nitrofurantoin, and cotrimoxazole.

In resistance rates of Staphylococcus aureus erythromycin in 60% had highest rates and next to that Co-trimoxazole 38% had highest rates. In department wise Erythromycin 9%, 15% and 36% in paediatrics, general medicine and gynaecology respectively. The study was similar to that of (Sibi et al 2014)\(^{16}\) and it states that erythromycin had a highest resistant rate in overall assessment of antimicrobial susceptibility test.

In that 12 antibiotics cephalosporin 3rd generation cefotaxime 47% was most commonly prescribed and the second most common drugs were ampicillin 20% a penicillin derivative followed by that Amikacin 19%, ciprofloxacin 16%, ceftaxime 15%, gentamycin and Norfloxacin were 14%, amoxicillin 3%, cephalaxin and amoxiclav 2%, Piperacillin tazobactam and erythromycin 1% were prescribed.

The study was similar to (Maheswari et al 2017)\(^{17}\) shows the prescribing frequency of different classes of antibiotics.

**DISCUSSION**

This study was conducted to assess the prescribing pattern of antibiotics in female patient with urinary tract infection. Patient demographic details, signs and symptoms, resistance and sensitivity of antibiotics, treatment profile were considered. Also the dosage form of drugs, numbers of antibiotics prescribed were considered. The main objective of this study was to analyse the antibiotics used for the treatment of UTI and to determine the effective antibiotic for the each microorganism that causes UTI. Various forms of reports were obtained and are discussed below.

In out of 100 patients 21% from paediatrics, 38% from general medicine and 41% from gynaecology departments and it showed that the pregnant women are mostly affected with UTI. (Mahadevamma L et al 2012)\(^{10}\) prospective study was carried out in Basaveshwara Medical College Hospital and Research Center, stated that the pregnant women are mostly affected in their study compared to children and non-pregnant women.

Among these 100 patients involved in the study the age groups of 20-30 years were mostly affected. After that the age group of 0-10 is affected with UTI infection. These results were in accordance with the study of (Pratibaomkar et al 2017)\(^{11}\) where maximum patients were seen in the age group of 21-30 years which are the child bearing age as well as sexually active period.

In this study the common symptoms of the patients were abdominal pain 60%, poltyuria 39%, dysuria 39% followed by vomiting 37%, fever 37%, burning micturition 30% and it was correlated with the study of (Rajat Mishra et al 2014)\(^{12}\) it observed that the most common symptoms were dysuria, loin pain, fever, chills, suprabaptic pain, incontinence and urinary urgency. The symptoms were mostly related to the lower urinary tract infection.
CONCLUSION

The present study highlights the disease pattern in pediatric, pregnant and non-pregnant women along with prescribing pattern of antibiotics in uncomplicated UTI. It also gives us some idea about common organisms responsible for UTI, along with their drug sensitivity and resistance. Prescribing pattern of antibiotics and rationality of the medications used for treating patients with UTIs was appropriate and according to the standard guidelines.

From our study it was revealed that,

- Female patient of 20-30 years were commonly affected due to their child-bearing age and sexually active age.
- The symptoms of the patients were considered and the common symptoms were abdominal pain, polyuria and burning micturition. These symptoms occurred due to the infection in the urinary bladder and urethra.
- Both single and multiple therapies were considered according to the patient condition and clinical outcome. The patient condition was categorized as mild, moderate and severe infections and according to that the numbers of antibiotics were selected.
- Third generation Cephalosporins (Cefotaxime) was the most commonly used as it covers both Gram-positive and Gram-negative organisms and it has better availability, safety and efficacy with minimal cost. The least prescribed drugs were Macrolide (Erythromycin) and Penicillin derivative (Piperacillin/Tazobactam) because of their resistivity, narrow spectrum and bacteriostatic action.
- The culture and sensitivity reports were considered and according to that the antibiotics resistance and sensitivity were detected for all the bacteria. E.coli was the commonest microorganism. With the help of that reports antibiotics were selected. So, the patients were easily recovered from the disease.
- The most sensitivity antibiotic was Amikacin and resistance was shown by Erythromycin.
- In paediatric patients parenteral route was considered because of its easy administration and other patients both oral and parenteral administrations were preferred. The non-pharmacological therapy of treatment was considered and the counseling was given to the patient.

Reference

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