RESEARCH ARTICLE

URINARY TRACT INFECTIONS CAUSED BY ESCHERICHIA COLI –ANTIBIOGRAM OF NITROFURANTOIN VERSUS CIPROFLOXACIN AT A TERTIARY CARE TEACHING HOSPITAL, TIRUPATI

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ARTICLE INFO

ABSTRACT

Objective: Urinary tract infection is one of the most common bacterial infection. Escherichia coli is one of the commnest organism causing Urinary tract infection .Ciprofloxacin (fluoroquinolones) are the most commonly used as first line agents for treatment of urinary tract infections caused by Escherichia coli. Inappropriately excessive use of Ciprofloxacin (fluoroquinolones) has detrimental impact . Present study is antibiogram between Nitrofurantoin Versus Ciprofloxacin as first line agents for treatment of Urinary tract infection caused by Escherichia coli. *Method:* A total of 1205 urine samples collected between MAY2019 to October 2019 for culture and pathogens identified by conventional methods. Antibiotic susceptibility pattern determined by Kirby-Bauer disc diffusion method. *Result:* Among 1205 urine samples 203 samples shown culture positive, in this 39 samples shown Escherichia coli. Among them 28(71.7%) shown resistance to Ciprofloxacin and about 6 (15.3%) shown resistance to Nitrofurantoin. *Conclusion:* This study concludes that Nitrofurantoin is a good Ciprofloxacin sparing drug. .It is suggested that Nitrofurantoin might be the first choice for treatment of urinary tract infection caused by Escherichia coli ,needs further studies regarding its side effects

INTRODUCTION

Urinary tract infection is one of the most common bacterial infection both in community and hospital settings. Escherichia coli is one of the commonest organism causing urinary tract infection. E coli was the causative pathogen in 70-95% of uncomplicated UTIs, Empirical treatment for UTI is often prescribed without urine culture or before urine culture results are available,according to treatment guidelines empirical treatment choices should be based on local or regional susceptibility data. Escherichia coli harbor genes conferring resistance to all antibiotics and also plasmids harboring resistance determinants ,such that acquisition of resistance to new antibiotics may only be amatter of time . so appropriate antibiotic should be prescribed to treat UTI. Ciprofloxacin (Fluoroquinolones) is the most commonly used as first line agents for treatment of UTI. Inappropriately excessive use of Ciprofloxacin has detrimental impact. Present study is comparison of antibiogram between Nitrofurantoin versus Ciprofloxacin as first line agents for treatment of Urinary tract infection**.**

AIM AND OBJECTIVES: This study was undertaken to compare antibiogram between Nitrofurantoin versus Ciprofloxacin as first line agents for treatment of UTI caused by Escherichia coli**.**

MATERIALS AND METHODS

Urine samples received from in patients and out patients from May 2019 to October 2019 were included in the study.

SAMPLE COLLECTION METHODS: Freshly voided midstream urine specimens were collected under strict aseptic precautions in a suitable sterile wide mouthed container. Samples were transported immediately to the laboratory for Culture and identification .Each urine sample was inoculated on MacConkey agar and blood agar. The culture plates were incubated at 37c for 24 hours and observed for growth colonies.

The plates showing significant growth as per Kass count were processed for further identification.Escherichia coli isolated was identified by conventional biochemical reactions.The antibiotic susceptibility testing was performed using Kirby-Bauer's disc diffusion technique as described by Clinical and Laboratory Standards Institute guidelines.

RESULTS

Out of the 1205 urine samples received from patients having clinically suspected urinary tract infections attending SVMC Tirupati subjected to culture. 203(17.2%) showed significant growth, 871(72.2%) were negative for culture, 101(8.4%) showed contamination and 30(2.4%) showed insignificant growth. Among 203 samples with significant growth 39 samples were shown Escherichia coli. Among them 28 samples (71.7 %)shown resistance to Ciprofloxacin only 11 samples are sensitive to it. Where as about 6 samples(15.3%) shown resistance to Nitrofurantoin and 33 samples are sensitive to Nitrofurantoin

REPRESENTATION OF GROWTH PATTERNS

ANTIBIOTIC SUSCEPTIBILITY PATTERN OF E.COLI
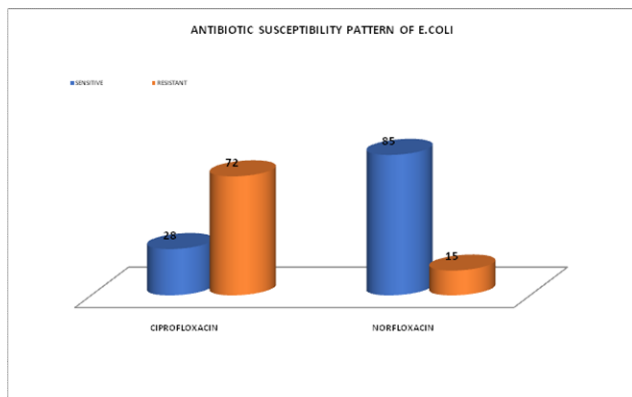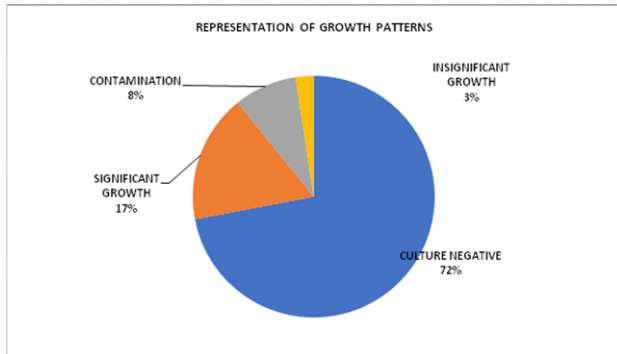
DISCUSSION

Although antibiotics shorten the duration of symptoms and cure >90% of UTIs.it is critical to choose the appropriate antibiotic. Due to the increasing use of antibiotics ,urinary pathogens have shown a slow but steady increase in resistance to several antibiotics with the increasing usage of quinolones as a primary treatment for UTI there has been increasing resistance as similar to KothariA study, and in this study the prevalence of Escherichia coli resistance to ciprofloxacin increased similar to study conducted by Iqbal J and Konar J.

The lower cure rates and the increasing resistance with ciprofloxacin no longer make quinolones the first choice for treatment of UTIs. The broad range of bactericidal action of Nitrofurantoin such as inhibiting protein and cell wall synthesis, DNA ,RNA synthesis, aerobic energy metabolism and relative lack of accumulated resistance to the drug over many years Nitrofurantoin might be extremely effective in treating UTIS caused by E.coli.

CONCLUSION

Nitrofurantoin is a good Ciprofloxacin sparing drug in the treatment of urinary tract infections caused by Escherichia coli, showing only 15.3% resistance compared to 71% resistance shown by Ciprofloxacin .IT is an acceptable first line agent for uncomplicated UTIs. A reconsideration of UTI treatment guidelines might now be appropriate.

Limitation: Comparative antibiogram of Escherichia coli causing UTI in males and females separately is not done Comparative antibiogram study in children acquiring UTI by Escherichia coli is not done. No separate comparative antibiogram study for UTI caused by Escherichia coli in pregnant women is not done in this study.

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