



# Can Longer Antibiotic Therapy Prevent Recurrent Uti In Immunocompetent Premenopausal Females ?

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## ABSTRACT:

objective :

To study the effectiveness of longer duration of antibiotic therapy in prevention of recurrence of urinary tract infection(UTI) in patients with history of recurrent UTI and compare the results with conventionally recommended shorter course of antibiotic therapy.

Method:

A observational study was conducted in patna medical college and hospital patna from November 2018 to August 2020 . 100 culture confirmed cases of acute uncomplicated urinary tract infection were selected from opd patients coming to patna medical and hospital based on pre-decided inclusion and exclusion criteria . These patients were randomly divided in group A , B AND C (30 in each at the end of study ). antibiotic therapy as per sensitivity report was given for 5 , 10 and 15 days to these patients respectively and results were compared .

Results and conclusion :

- A) Increasing the duration of antibiotic therapy for treatment of acute uncomplicated UTI marginally reduces the incidence of primary failure and secondary failure.
- B) The use of longer duration of therapy -10 to 15 days can reduce the incidence of primary failure in cases where causative organism is multi- drugresistant.
- C) the use of longer duration of antibiotic therapy has not been found to significantly reduce the incidence of secondary failure or recurrence of UTI in patients with history of recurrent UTI.
- D) conventionally recommended short course antibiotic therapy for 5-7 days is the effective and most economical therapy for management of UTI when causative organisms are sensitive and not multi -drugresistant.

**keywords:** recurrent UTI , immunocompetent adult females .

## I. INTRODUCTION

Urinary tract infection(UTI) connotes the presence of bacteria in urinary tract.Urinary tract infection encompasses a variety of clinical entities ,

including symptomatic bacteriuria (ASB) , cystitis , prostatitis and pyelonephritis . ASB occurs in the absence of symptoms attributable to the bacteria in the urinary tract and usually does not require treatment while UTI has more typically been assumed to imply symptomatic disease that warrants antimicrobial therapy. UNCOMPLICATED URINARY TRACT refers to acute cystitis or pyelonephritis in non-pregnant outpatient women without anatomic abnormalities or instrumentation of the urinary tract. RECURRENT UTI is defined as two or more episodes of UTI in a year(a). Recurrent UTI is not necessarily complicated and treated assuch.(1)

The current guidelines for treatment of acute uncomplicated urinary tract infection recommend 3 to 7 days of antibiotic therapy. for empirical therapy of acute uncomplicated UTI cotrimoxazole and nitrofurantoin in standard doses are considered first line therapies and fosfomycin , fluoroquinolones and B-lactams are considered second line therapies.(2) . Antibiotic therapy guided by urine culture and sensitivity report is always preferred . the various methods used to prevent recurrent acute uncomplicated UTI in premenopausal females include long term low dose prophylactic antimicrobial therapy and post-coital antibiotic therapy.(3)

The current study aims to study the effectiveness of longer course of antibiotic therapy for prevention of recurrent UTI in premenopausal immunocompetent females in comparison to the standard course of antibiotic therapy.

## II. MATERIAL AND METHODS

An **Observational study of 100 confirmed cases of acute uncomplicated UTI** were selected from OPD patients coming to medicine OPD of PMCH during the period of November 2018 to August 2020 . The following **inclusion criteria** was used for inclusion in the study a) culture confirmed cases i.e urine culture positive. b) absence of any anatomical or structural abnormality of urinary tract c) absence of primary or secondary immunodeficiency or diabetes -



congenital/acquired/ d) no prior history of hospitalisation in last 12 months e) no history of instrumentation of catheterisation of urinary tract. The **Exclusion criteria** were a) symptoms suggestive of urinary tract infection but urine culture negative b) history of hospitalisation or urinary tract instrumentation in last 12 months c) presence of structural abnormality of urinary tract d) known cases of immunodeficiency -primary or secondary (including diabetes) e) pre menarche and postmenopausal females f) male gender.

**The patients were divided in 3 groups for easy compilation of data and comparison.**

- A) GROUP A: antibiotic therapy was given for 5days
- B) GROUP B: antibiotic therapy was given for

- 10days
- C) GROUP C: antibiotic therapy was given for 15days

nitrofurantoin was used for treatment of sensitive cases and for nitrofurantoin resistant cases antibiotic therapy was guided by sensitivity report . **PRIMARY FAILURE** was defined as culture positivity after completion of therapy while **SECONDARY FAILURE** was defined as recurrence of culture proven UTI in next 1 year. all cases were followed for 1 year by telephone or opd follow up. 10 cases were lost to follow up in the end of the study . There was neither incidence of any serious complications like pyelonephritis , sepsis nor any mortality in the study.

**OUTCOMES:**

FOLLOWING RESULTS WERE OBTAINED :

| GROUP                                 | ORGANISMS DETECTED:  | PRIMARY FAILURE | SECONDARY FAILURE | REPORTED SYMPTOMS:  |
|---------------------------------------|--|-----------------|-------------------|---|
| A<br>(ANTIBIOTIC THERAPY FOR 5 DAYS)  | 25- E .COLI<br>3 - KLEBSIELLA<br>2 - STAPHYLOCOCCUS AUREUS<br>LOST TO FOLLOW UP -6 | 2               | 10                | 5- FEVER<br>28- INCREASED FREQUENCY 20- DYSURIA<br>5- SUPRAPUBIC<br><br>HEAVINESS/<br>DISCOMFORT<br>4-NAUSEA/<br>ANOREXIA |
| B<br>(ANTIBIOTIC THERAPY FOR 10 DAYS) | 28- E.COLI<br>2 - KLEBSIELLA<br><br>LOST TO FOLLOW UP - 2                          | 1               | 8                 | 5- FEVER<br>28- INCREASED FREQUENCY 20- DYSURIA<br>5- SUPRAPUBIC<br>HEAVINESS/<br>DISCOMFORT<br>4-NAUSEA/<br>ANOREXIA     |



|   |   |   |   |   |
|---|---|---|---|---|
| C<br>(ANTIBIOTIC<br>THERAPY<br>FOR 15<br>DAYS ) | 23- E.COLI<br>3- KLEBSIELLA<br>2- PSUDOMONAS<br>AERUGINOSA<br>1-<br>STAPHYLOCOCCUS<br>AUREUS<br>1-<br>ENTEROCOCCUS<br>FECALIS<br><br>LOST TO<br>FOLLOW UP - 2 | 0 | 8 | 5- FEVER<br>28- INCREASED<br>FREQUENCY 20-<br>DYSURIA<br>5- SUPRAPUBIC<br>HEAVINESS/<br>DISCOMFORT<br>4-NAUSEA/<br>ANOREXIA |
|---|---|---|---|---|

### III. REVIEW OF LITERATURE AND DISCUSSION:

- a) Type of organism : ESCHERICHIA COLI was the most common organism in the study . it was responsible for 84.44% (76 of 90)of the cases while KLEBSIELLA PNEUMONIAE was second most common organism responsible for 8.8 (8 of 90)% of the cases PSEUDOMONAS was responsible 2.22 % cases(2 of 90) , STAPHYLOCOCCUS AUREUS was responsible for 3.33%(3 of 90) and ENTEROCOCCUS FAECALIS was responsible for 1.11% case (1 of90).
- b) Primary failure was highest in group a in which 5 days therapy of sensitive antibiotic was used while there was only 1 case of primary failure in group b where 10 days of antibiotic therapy was used . Group c has no case of primary failure.
- c) Secondary failure : the incidence of secondary failure was 33.33 %(10 of 30) ,26.67 % ( 8 of 30) and 26.67% ( 8 of 30 ) for group A , B and C respectively.
- d) Symptoms : increased frequency and or urgency was most common reported symptom ( 93.33%) . in addition to this dysuria( 66.67%) , fever (16.67%) , supra- pubic heaviness (16.67% ) and anorexia/nausea (13.34%) were other significant reported symptoms.
- e) type of organisms associated with primary failure : all cases of primary failure were caused by multi-drug resistant organism. ESCHERICHIA COLI , KLEBSIELLA PNEUMONIAEandSTAPHYLOCOCCUS AUREUSwerecausativeorganismincases of primary failure(1 each ).**no study similar to the current study has been conducted before hence the results of the current study can not be compared with other related studies.**

### IV. CONCLUSION:

- A) Increasing the duration of antibiotic therapy for treatment of acute uncomplicated UTI marginally reduces the incidence of primary failure and secondary failure.
- B) The use of longer duration of therapy -10 to 15 days can reduce the incidence of primary failure in cases where causative organism is multi- drugresistant.
- C) The use of longer duration of antibiotic therapy has not been found to significantly reduce the incidence of secondary failure or recurrence of UTI in patients with history of recurrent UTI.
- D) Conventionally recommended short course antibiotic therapy for 5-7 days is the effective and most economical therapy for management of UTI when causative organisms are sensitive and not multi -drugresistant.

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