

Comparative Evaluation of Efficacy of Short Term and Standard Duration Of Antibiotic Therapy in Urinary Tract Infection

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ABSTRACT

Background: Urinary tract infections can be classified by anatomic site of involvement into lower and upper urinary tract infections. The goal of antimicrobial therapy is to eliminate the infecting organisms from the urinary tract and provide the resolution of symptoms. Hence; we planned the present study to assess and compare the efficacy of short duration and long duration antibiotic therapy in treating patients with urinary tract infection.

Materials & Methods: The present study included assessment of efficacy of short term and standard duration of antibiotic therapy in urinary tract infection. After meeting the inclusion criteria, a total of 34 patients were included in the present study. Group A: Patients who were treated with single dose of 600-mg dose of enoxacin, Group B: Patients who were treated days of therapy with 200 mg of enoxacin twice daily. Blood samples and urine samples were obtained in all the patients and were sent to laboratory for analysis. Culturing of the urine samples was done for bacteriological assessment. Microbiological assessment was repeated after one week of treatment therapy in both the study groups. All the results were recorded on Microsoft excel sheet and were analyzed by SPSS software.

Results: Complete cure was seen in 14 and 15 patients of group A and group B respectively. Headache was the most commonly observed adverse effect among patients of group A while nausea and vomiting were the most commonly observed adverse effect among patients of group B.

Conclusion: Both single dose and multiple doses of antibiotic appear to be equally effective in treating patients with urinary tract infection.

Key words: Antibiotic, Short Term, Standard, Urinary Tract Infection.

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INTRODUCTION

Urinary tract infections can be classified by anatomic site of involvement into lower and upper urinary tract infections.¹ Infections of the lower urinary tract include cystitis, urethritis, prostatitis, and epididymitis, and those of the upper urinary tract include pyelonephritis. Urinary tract infections may be further classified as complicated or uncomplicated. In women with a structurally and functionally normal urinary tract, cystitis and pyelonephritis are considered uncomplicated urinary tract infections.^{2,3} Urinary tract infections in men, elderly people, pregnant women, or patients who have an indwelling catheter or an anatomic or functional abnormality are considered complicated urinary tract infections.⁴

The goal of antimicrobial therapy is to eliminate the infecting organisms from the urinary tract and provide the resolution of symptoms. Clinicians should consider many factors when selecting an antibiotic for a urinary tract infection, such as the

patient's allergy history, the cost and tolerability of the treatment, previous antibiotic therapy, and most important, the prevalence of resistance in the community.^{5,6}

Hence; we planned the present study to assess and compare the efficacy of short duration and long duration antibiotic therapy in treating patients with urinary tract infection.

MATERIALS & METHODS

The present study was planned in the department of general medicine of the Government D.B. General Hospital, Churu, Rajasthan, and included assessment of efficacy of short term and standard duration of antibiotic therapy in urinary tract infection. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Complete demographic details of all the patients were noted.

Inclusion Criteria

- Patients between age group of 18 years and 50 years,
- Patients with negative history of any pre-existing urinary bladder pathology,
- Patients with negative history of any other systemic illness,
- Patients with negative history of any known drug allergy,
- Non- Pregnant women

After meeting the inclusion criteria, a total of 34 patients were included in the present study. All the patients were broadly divided into two study groups with 17 patients in each group as follows:

Group A: Patients who were treated with single dose of 600-mg dose of enoxacin.

Group B: Patients who were treated days of therapy with 200 mg of enoxacin twice daily.

Blood samples and urine samples were obtained in all the patients and were sent to laboratory for analysis. Complete hematological picture was also obtained in all the patients. Repeat testing was done in all the patients to assess the effect of enoxacin therapy. Culturing of the urine samples was done for bacteriological assessment. Microbiological assessment was repeated after one week of treatment therapy in both the study groups. All the results were recorded on Microsoft excel sheet and were analyzed by SPSS software. One way ANOVA were used for evaluation of level of significance. P- value <0.05 was taken as significant.

Graph 1: Demographic details of the patients of the two study groups

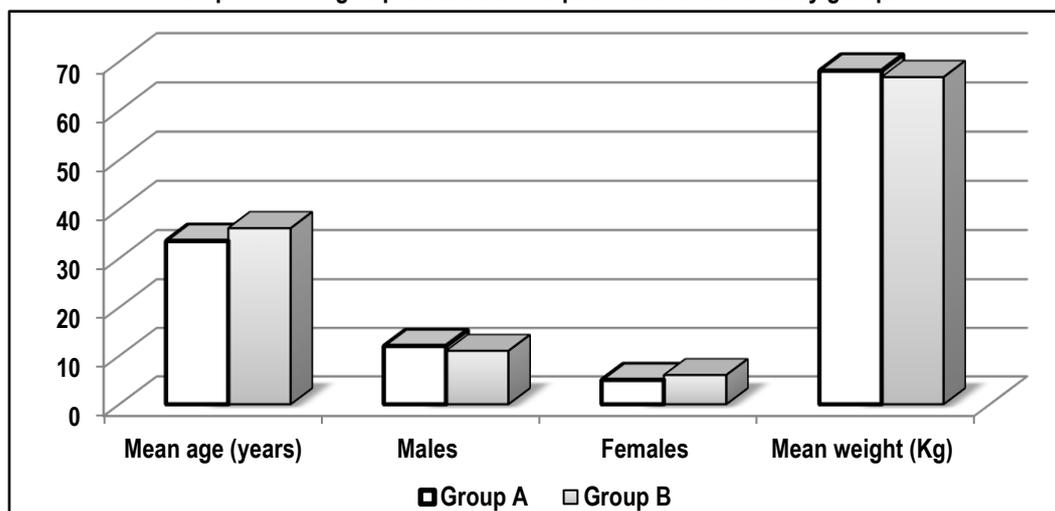


Table 1: Comparison of microbiological efficacy in patients of the two study group

PARAMETER	Group A (n= 17)	Group B (n= 17)
Complete clinical cure (No. of cases)	14	15

Table 2: Side-effects observed in the present study

SIDE-EFFECT	Group A (n=17)	Group B (n=17)
Headache	3	2
Dizziness	3	1
Nausea and vomiting	1	3
Myalgia	1	0

RESULTS

We analyzed a total of 34 patients with urinary tract infection and divided them broadly on the basis of type of treatment protocol followed, into two study groups; group A and group B. mean age of the patients of group A and group B was 33.5 and 36.1 years respectively. No. of males in group A and group B were 12 and 11 respectively. Complete cure was seen in 14 and 15 patients of group A and group B respectively. Headache was the most commonly observed adverse effect among patients of group A while nausea and vomiting were the most commonly observed adverse effect among patients of group B.

DISCUSSION

Michael M et al compare the effectiveness of short course (2–4 days) with standard duration oral antibiotic treatment (7–14 days) for urinary tract infection (UTI). Ten trials were eligible, involving 652 children with lower tract UTI recruited from outpatient or

emergency departments. Main outcome measures were UTI at the end of treatment, UTI during follow up (recurrent UTI), and urinary pathogens resistant to the treating antibiotic. There was no significant difference in the frequency of positive urine cultures between the short (2–4 days) and standard duration therapy (7–14 days) for UTI in children at 0–7 days after treatment and at 10 days to 15 months after treatment. There was no significant difference between short and standard duration therapy in the development of resistant organisms in UTI at the end of treatment or in recurrent UTI. A 2–4 day course of oral antibiotics is as effective as 7–14 days in eradicating lower tract UTI in children.⁷ Gauthier M et al described the feasibility and complications of outpatient management with IV antibiotics of UTI among febrile children, at the day treatment center (DTC) of a tertiary-care pediatric hospital. Between April 1, 2002, and March 31, 2003, a prospective cohort of patients 3 months to 5 years of age who were examined in the emergency department (ED) and diagnosed

as having presumed febrile UTI were treated according to a clinical protocol. Patients were treated at the DTC unless they met exclusion criteria, in which case they were hospitalized. The DTC was open 7 days per week, including holidays, from 8:30 am to 4:30 pm. At the DTC, patients were initially treated with a daily dose of IV gentamicin, until the child had been afebrile for at least 24 hours, and with oral amoxicillin, until preliminary urine culture results were available. Children allergic to penicillin received gentamicin only. IV antibiotics were administered through peripheral IV access; the IV catheter's patency was maintained with injection of 50 U of heparin once daily throughout the treatment period. Parental satisfaction with the DTC experience was assessed with an anonymous, self-administered questionnaire. Two hundred ninety-one episodes of presumed febrile UTI were diagnosed in the ED, of which 212 (72.9%) were sent to the DTC. There were 71 hospital admissions (24.4%); in 9 of these instances, the child was admitted because parents refused or were unable to comply with DTC treatment. Adherence to the treatment protocol in the ED was excellent; in 92.1% of presumed febrile UTI episodes (268 of 291 episodes), the patient was referred to the appropriate setting for treatment. In 8 instances, patients who met an exclusion criterion were sent to the DTC. They should have been hospitalized, according to the protocol. At the DTC, a final diagnosis of UTI was made in 178 of the 212 episodes (84%). Patients treated at the DTC, with a final diagnosis of UTI, had a median age of 12.0 months (range: 3-68 months), and their mean initial temperature was 39.2 degrees C (SD: 1.1 degrees C). Patients were afebrile by 24 hours in 52% of UTI episodes and by 48 hours in 82%. Minor problems with IV access occurred in 9.0% of cases. The duration of IV antibiotic therapy at the DTC was 1.9 days (SD: 0.9 day). Successful treatment at the DTC (defined as attendance at all visits, normalization of temperature within 96 hours, negative control urine cultures, if performed, and absence of hospitalization from the DTC) was observed in 96.6% of the 178 UTI episodes. Overall adherence of physicians to the protocol at the DTC was 87.1% (95% confidence interval: 82.2-92.0%). One hundred seventy-two satisfaction questionnaires were returned and revealed good, very good, or excellent parental satisfaction in 98.8% of cases. Their data show that ambulatory treatment with IV antibiotics, at a DTC, may be used for at least three-fourths of UTIs among febrile children 3 months to 5 years of age. It is safe and feasible and appears very satisfactory to parents.⁸

Keren R et al searched online bibliographic databases (Medline and Cochrane Clinical Trials Registry) for RCTs comparing short- and long-course therapy for the treatment of UTI in children, and examined the references of all retrieved articles. Candidate studies for meta-analysis were restricted to RCTs comparing short-course (<=3 days) and long-course (7-14 days) outpatient therapy for acute UTI in children age 0 to 18 years. We excluded studies that were restricted to children with recurrent UTI or included children with asymptomatic bacteriuria. Sixteen studies met the inclusion criteria. Study quality was evaluated using a 9-item scoring system developed by the investigators. Data on the primary outcomes-treatment failure and reinfection rate-were extracted when available and reanalyzed based on intention to treat whenever possible. To determine whether anatomic level of infection (upper vs lower urinary tract) influenced the results, the meta-analysis was repeated on the subgroup of studies that

attempted to restrict their participants to children with lower UTI. In the meta-regression, neither study quality nor mean participant age was significantly associated with the odds ratio of treatment failure or reinfection, in either the complete set of studies or the subset of studies restricted to patients with lower UTI. In pooled analyses of published studies comparing long- and short-course antibiotic treatment of UTI in children, long-course therapy was associated with fewer treatment failures without a concomitant increase in reinfections, even when studies including patients with evidence of pyelonephritis were excluded from the analysis.

In conclusion; under the light of above results, we conclude that both single dose and multiple doses of antibiotic appear to be equally effective in treating patients with urinary tract infection. However; further studies with larger parameter are recommended for better exploration of this field of medicine.

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