Minimum effective dose of trimethoprim for urinary tract infection

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SUMMARY. Non-pregnant women with urinary tract infection attending a health centre were treated with single doses of 400 mg, 200 mg or 100 mg of trimethoprim. The cure rates for these doses were 100%, 93% and 90%, respectively. In general practice the expected cure rate for this infection treated conventionally over five to seven days is 85–90%. Therefore, 100 mg of trimethoprim is the minimum effective dose for the treatment of urinary tract infection in general practice.

Introduction

FOR many years it has been recognized[1,2] that single dose treatment of urinary tract infection in general practice can be as effective as conventional therapy given for five to seven days. This paper reports the outcome of a study to establish how little trimethoprim need be given to achieve the expected cure rate of 85–90% obtained by the conventional treatment of urinary tract infection in general practice.

Method

Non-pregnant women attending the health centre at University College, London, who had acute symptoms suggesting urinary tract infection (predominantly frequency of micturition and dysuria) were offered the opportunity to participate in the study. Two diagnostic mid-stream urine samples were collected from those patients who agreed to participate. Urine samples were refrigerated at 4°C until they could be cultured. The patients were prescribed a single oral dose of trimethoprim, to be taken last thing at night. Successive groups of patients were prescribed 400 mg, 200 mg or 100 mg of trimethoprim.

A follow-up visit was made to the health centre after seven days when a further urine sample was cultured. Patients were asked to return sooner if symptoms persisted or any other problems supervened.

Results

The mean age of the 135 patients was 27.8 years and the age range 19–59 years. For those women shown to have significant bacteriuria, that is more than 100 000 organisms of a single type per ml of urine in two separate samples, the results of treatment are shown in Table 1. Urinary infections were considered to be cured if the organism isolated in the original sample was not isolated at follow up. This excludes any bias that might have occurred had the assessment been clinical rather than microbiological. The few patients whose infections were not cured were given alternative treatment, for example, with amoxycillin (3 g x 2).

The organisms isolated from urine cultures were *Escherichia coli, Proteus mirabilis,* coagulase negative staphylococci, *Streptococcus faecalis, Klebsiella* spp and *S. haemolyticus* group B.

Table 1. Results of treatment of urinary tract infection using single doses of trimethoprim.

Dose of trimethoprim (mg)	Number of patients: Total	With two positive urine cultures	Excluded because: Follow-up inadequate	Excluded because: Pathogen resistant to trimethoprim	Evaluated	Cured at seven days (%)
400	45	23	5	2	16	16 (*100*)
200	35	17	2	1	14	13 (*93*)
100	55	27	4	2	21	19 (*90*)
Total	135	67	11	5	51	48 (*94*)

All the uninfected but symptomatic patients who received treatment were asymptomatic at follow up. No side effects were reported by any of the patients in the study.

Discussion

Since the first report of single dose treatment of urinary tract infection[1] there have been many other studies[3] suggesting that this can be as effective as longer courses. Possible advantages of single dose treatment are improved patient compliance, reduction in cost, reduction in dose-related side effects and decreased selection of antibiotic resistant bacteria. It is therefore desirable to establish the minimum effective single dose of antimicrobial drugs that can be given for the treatment of urinary tract infection. The minimum effective dose is the smallest dose which gives the expected cure rate in the relevant clinical setting. The expected cure rate for urinary tract infection in general practice is 85–90% with a wide variety of different drugs given for five to seven days.[4]

This study has shown that 200 mg or 100 mg of trimethoprim given as a single dose is as effective in curing urinary tract infection in general practice as 400 mg of the drug,[2] or conventional therapy. It might have been possible to reduce the dose yet further, but this was not attempted because there is no convenient, commercially available presentation of trimethoprim in quantities less than 100 mg.

We have demonstrated that the minimum effective dose of trimethoprim for urinary tract infection is 100 mg or less. Since 100 mg is effective why give more?

References

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