

A Comparison of Trimethoprim-Sulphamethoxazole and Penicillin/Streptomycin in the Treatment of Gynaecological Infections

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Summary

A CONTROLLED TRIAL OF the use of trimethoprim-sulphamethoxazole and penicillin and streptomycin in gynaecological infections was undertaken. One hundred and fifty five patients were treated in two randomly selected groups. Clinical responses were much better with trimethoprim-sulphamethoxazole in similar type of gynaecological infections. Significant responses were seen with septic abortions and post-operative gynaecological infections. ($p > 0.02 < 0.05$). For all groups, good responses were obtainable in 70 per cent of cases treated with trimethoprim-sulphamethoxazole and 50 per cent of cases treated with penicillin and streptomycin. The bacteriological studies correlated well with the clinical response. The invitro sensitivity was not significantly different. ($p > 0.8 < 0.9$). The side effects were minimal with both drug combinations.

Introduction

Trimethoprim-sulphamethoxazole has been reported in the treatment of various infections. Results have been generally favourable notably in the treatment of urinary tract infections (Brumfitt et al, 1969; Cox et al, 1969; Lao et al, 1971), gonorrhoea (Csonka and Knight, 1967; Lao et al, 1971) and acute gynaecological infections (Chong and Lean, 1970). We have previously reported on a clinical and bacteriological study of the use of trimethoprim-sulphamethoxazole in obstetrical and gynaecological infections (Ng et al, 1973).

Of importance in the use of trimethoprim-sulphamethoxazole in gynaecological infections is whether it is better than previously commonly

used drugs or drug combinations. This is with special reference to the use of penicillin/streptomycin combinations which have been very commonly used in the treatment of acute gynaecological infections. This paper presents the results of a clinical trial comparing the use of trimethoprim-sulphamethoxazole and penicillin and streptomycin in the treatment of acute gynaecological infections (excluding urinary tract infections).

Materials

One hundred and fifty five cases of gynaecological infections as seen in the gynaecological ward of the University Hospital, University of Malaya Medical Centre, were included in this study. The cases included the common infections seen in the gynaecological wards, namely acute pelvic inflammatory diseases, septic abortions and post-operative infections. We have specifically excluded urinary tract infections, there being obvious difficulty in comparison of effects and responses, as penicillin and streptomycin have minimal clinical effect on urinary tract infections.

Diagnosis was chiefly based on clinical and laboratory findings. Laboratory investigations done, both as a method of diagnosis and as a method of assessing treatment, were total white and differential counts, microscopic examination and culture of urine, and culture of cervical and high vaginal swabs, and of pus from sites of infection when indicated.

Patients were randomly selected and treated with trimethoprim-sulphamethoxazole. A course of treatment consisted of 2 drapsules twice a day for five days given orally. The remaining patients were treated with intramuscular injections of procaine penicillin and streptomycin. Penicillin

was prescribed as procaine penicillin 1 mega by intramuscular injection and streptomycin was given as 1 gram. by intra-muscular injection daily.

Daily assessment of the patient was made. Improvement was based on disappearance of pyrexia, lowering of the pulse rate to normal and disappearance of pain and tenderness. Possible side effects were specifically asked and looked for.

Responses were divided into 3 categories namely good, moderate and poor. Cases in which symptoms and signs of infection disappeared rapidly, that is, within 48 hours were considered to have responded favourably. In cases where symptoms and signs disappeared much more gradually, that is more than 48 hours but less than 96 hours, the response was considered as moderate. In cases where the condition of the patient remained the same or deteriorated, the response was considered to be poor.

Results

Table I(a)
Use of Trimethoprim-Sulphamethoxazole

Clinical Conditions	No. of Cases	Response		
		Good	Mo- derate	Poor
*Pelvic Inflammatory Disease	18	12	4	2
+Septic Abortions	40	31	7	2
Post-operative #Infections:	17	10	6	1
(a) Cellulitis	16	10	5	1
(b) Peritonitis	1	0	1	0
Total	75	53	17	5

- * $p > 0.3 < 0.5$
+ $p > 0.02 < 0.05$
$p > 0.02 < 0.05$

Table 1(b)

Use of Penicillin and Streptomycin Combinations

Clinical Conditions	No. of Cases	Response		
		Good	Mo- derate	Poor
*Pelvic Inflammatory Disease	25	15	3	6
+Septic Abortions	40	20	16	4
Post-operative #Infections:	15	4	5	6
(a) Cellulitis	14	4	4	6
(b) Wound Infection	1	0	1	0
Total	80	40	24	16

- * $p > 0.3 < 0.5$
+ $p > 0.02 < 0.05$
$p > 0.02 < 0.05$

Comments on the Results

From a comparison of the results so obtained, the combination of trimethoprim-sulphamethoxazole seemed to be more effective than parenteral penicillin and streptomycin. There was a good response in 70 per cent of cases when trimethoprim-sulphamethoxazole was prescribed [Table I(a)]. Good response was only seen in 50 per cent of cases which were treated with penicillin and streptomycin [Table I(b)].

The responses were significantly different in those patients treated with trimethoprim-sulphamethoxazole and those treated with penicillin and streptomycin. The results were significantly better when trimethoprim-sulphamethoxazole was used in the treatment of septic abortions and post-operative infections and pyrexia, when compared with penicillin and streptomycin under similar conditions [Table I(a) and I(b)].

Bacteriology

Out of the 155 patients, culture of organisms could only be obtainable from 102 i.e. 67 per cent. Out of the organisms cultured, 78 were considered pathogenic or possibly pathogenic. The sensitivity of these organisms were tested in vitro against both drug combinations.

Table II

Sensitivity of Organisms to Penicillin/Streptomycin Compared to Trimethoprim-Sulphamethoxazole in Patients Treated with Trimethoprim-Sulphamethoxazole

Organisms	No. Isolated	Sensitive to	
		Penicillin/ Strep- tomycin	Trime- thoprim- Sulphame- thoxazole
E. Coli	11	2	9
Staph. Pyogenes	9	5	8
Coliform Organisms	5	0	5
Proteus	3	0	3
Klebsiella Aerogenes	3	1	2
Pseudomonas	1	0	0
Strept. Faecalis	2	2	2
Haemolytic Strept.	3	3	3
Anerobic Strept.	2	2	2

Table III
Sensitivity of Organisms to Penicillin/Streptomycin Compared to Trimethoprim-Sulphamethoxazole in Patients Treated with Penicillin/Streptomycin

Organisms	No. Isolated	Sensitive to	
		Penicillin/Streptomycin	Trimethoprim-Sulphamethoxazole
E. Coli	7	2	7
Staph. Pyogenes	8	4	8
Coliform Organisms	2	0	2
Klebsiella			
Aerogenes	3	1	3
Pseudomonas	4	3	0
Non-Haemolytic			
Strept.	2	2	2
Haemolytic Strept.	5	5	2
Anaerobic Strept.	2	2	2
Para Colon	6	4	6

As can be seen, the bacteria cultured were similar for both groups. More organisms cultured from both groups were sensitive to trimethoprim-sulphamethoxazole than were to penicillin and streptomycin. Out of the 78 pathogenic organisms 84.6 per cent (66) were sensitive to trimethoprim-sulphamethoxazole, and only 49.7 per cent (38) were sensitive to penicillin and streptomycin.

42.5 per cent (34) of these micro-organisms were sensitive to trimethoprim-sulphamethoxazole but not sensitive to penicillin and streptomycin.

7.8 per cent (6) of these micro-organisms were sensitive to penicillin and streptomycin but not sensitive to trimethoprim-sulphamethoxazole.

7.8 per cent (6) of these micro-organisms were not sensitive to both drugs.

All 5 cases of *Pseudomonas* cultured were insensitive to trimethoprim-sulphamethoxazole.

Table IV
Comparison of Sensitivity of Organisms to Drugs in In-Vitro Tests

Drugs		Total	Penicillin & Streptomycin	
			Sensitive	Resistant
		78	38	40
Trimethoprim-Sulphamethoxazole	Sensitive	66	32	34
	Resistant	12	6	6

$p < 0.8 < 0.9$

A statistical analysis however showed that these findings were not significant.

Side-Effects

There were 2 cases of nausea and one with skin rash in those patients treated with trimethoprim-sulphamethoxazole.

Of those patients treated with penicillin and streptomycin, one developed a rash, probably urticarial in nature. Of particular interest in any comparison of usage, is that there were 3 patients who were supposed to have treatment with penicillin and streptomycin but were not so treated because of history and signs of allergic reactions. They were left out of the study.

Conclusion

It would seem that trimethoprim-sulphamethoxazole is more useful in the treatment of gynaecological infections than the combination of penicillin and streptomycin. This was significant for cases of septic abortions and post-operative infections.

In vitro bacteriological investigation showed that a greater proportion of organisms isolated from gynaecological infections would respond to trimethoprim-sulphamethoxazole.

The side effects were minimal with both drug combinations.

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