

Trial of Trimethoprim-Sulphamethoxazole in Infantile Gastroenteritis*

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Introduction

Trimethoprim-sulphamethoxazole is a complex of trimethoprim and sulphamethoxazole. Trimethoprim was found to antagonize competitively folic and folinic acid in the growth of micro-organism. It seems to penetrate by nonionic diffusion and the entrance is unrelated to the ability of the cell to assimilate folic acid.

Trimethoprim is one of the most active agents that exerts additive effects when used with a sulfonamide. This antifol compound is in itself an effective inhibitor of some species of gram-negative and gram-positive bacteria. Sulphamethoxazole and trimethoprim exert their effects at different sequential steps along the same biochemical pathway of folic acid. Cross resistance between trimethoprim and sulphamethoxazole does not develop.

Material and Method

The present investigation was undertaken to find out the effect of Trimethoprim-Sulphamethoxazole in infantile gastroenteritis. The study was conducted at the Medical City Teaching Hospital. Before starting the treatment, samples were taken for the following investigations: Rectal swab for culture and sensitivity, repeated after 2 days therapy with trimethoprim-sulphamethoxazole; routine urine examination, general stool examination; C.B.C.; x-ray; chest x-ray and mantoux test 1/1000 were done for each patient.

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Specific treatment was started without waiting for the results of investigations. I.V. glucose saline was given when indicated and was followed by a certain regime of hydration. Patients who did not respond to trimethoprim-sulphamethoxazole after 48 hours were changed to other drugs according to the results of culture and sensitivity.

The patients were examined daily to record progress and to detect any side effects of the specific therapy. The regime of the therapy was as follows: children aged from 6 months to 5 years were given one teaspoonful (5 ml.), twice daily for a 5 day period. Children under 6 months were given 2.5 ml. twice daily.

Fifty-four infants suffering from gastro-enteritis were treated with trimethoprim-sulphamethoxazole. The age of the infants ranged from 1 to 15 months. There were 40 boys and 14 girls. The peak incidence was between 3 and 6 months. Male/Female ratio was 2.9.:1 as shown in (Figure 1). The duration of the illness ranged from a few days to a few weeks before admission (Table I). 6 out of 64 infants were breast fed (Table II).

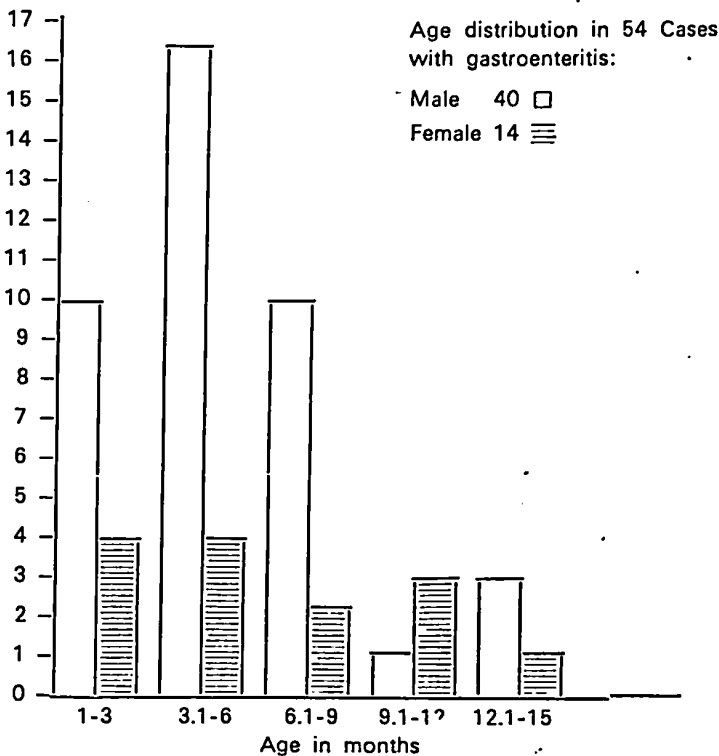


Figure 1

TABLE I
DURATION OF ILLNESS BEFORE ADMISSION

No. of days	No. of cases
1 days	1
2 days	10
3 days	3
4 days	4
5 days	5
6 days	3
7 days	10
over one week	18

TABLE II

Type of diet	No. of cases
Breast milk only	6
Breast milk and cow milk	7
Cow's milk only	39
Mixed diet	2

Results

There was a rise of temperature of more than 2°C in three patients only. The most prominent feature of all cases admitted, was severe dehydration, shown in 41 cases (76 %); more than 10 % loss of body weight occurred in 16 cases (22.2 %).

Vomiting was observed in 35 cases (64.8 %). while blood in the stool was seen in only 7 cases. Rectal swabs for culture and sensitivity showed enteropathogenic *E. Coli* in 15 cases, only two of which showed sensitivity to trim-sulphame in vitro.

Salmonella serotypes were found in 11 cases, five of which showed sensitivity to this drug, while shigella isolated in two cases were resistant (Table III). No pathogenic organism was isolated from 26 cases.

All 54 cases were given trim-sulphame suspension. Out of 15 cases suffering from gastro-enteritis due to Enteropathogenic *E. Coli* infection, 10 responded well, and in the other remaining cases other chemotherapy was used. Nine of eleven cases with salmonella enterities responded well. Those with normal intestinal flora did well, as shown in (Table IV). One severe case died 24 hours after admission.

TABLE III
SENSITIVITY TEST

Micro-organism	Sensitive	Resistant
Enteropathogenic E.Coli		
0128 B12	-	+
0128 B12	-	+
0126	-	+
0119	-	+
055	-	+
055	-	+
055	-	+
055	-	+
0111	-	+
0111	-	+
0125	-	+
0125	+++	-
0125	-	+
020	-	+
Not Done	+++	-
Not done	-	+
Salmonella Serotype		
Salm. typhimurium	+++	-
" "	+++	-
" "	-	+
" "	-	+
Salm. stanly	+++	-
Salm. stanly	-	+
Salm. enteritidis	-	+
Salm. paratyphi B	+++	-
Salm. Havana	-	+
Salm. group B	-	+
Shigella		
Boydii	-	+
Flexneri	-	+

TABLE IV
RESULT OF PATIENTS ON TRIMETHOPRIM-
SULPHAAMETHOXAZOLE

Type of microorganism isolated from rectal swab	No. of cases cured	percent %	No. of cases not cured
Enteropathogenic E.Coli	10	66.6	5
Salmonella	9	81.9	2
Shigella	1	50	1
Normal flora (? virus)	25	96	1
Total	45	83	9

Discussion

The use of chemotherapy in the treatment of gastroenteritis is a controversial subject. Most of the cases of gastroenteritis respond well to I.V. fluid therapy, and antibiotics have been found unnecessary.

The high mortality, often as much as 50 % associated with pathogenic *E. Coli* infection in the first few weeks of life, may demand antibiotic therapy^{1, 9} and all infants with gastroenteritis who show signs of toxicity needs chemotherapy.

Because of the high mortality rate of infective gastroenteritis in this country, we always try to find a new chemotherapeutic agent. Trimethoprim-sulphamethoxazole has been found effective against *E. Coli*.⁸ Therefore, we tested this drug on 54 cases of infantile gastroenteritis admitted to the Medical City. We did not make a comparative trial using placebo, because our admitted patients were seriously ill.

The most common organism found in this study were pathogenic *E. Coli*, confirming the findings of other workers in developing countries.⁸ Those cases with negative bacterial cultures were assumed to be viral in origin and constitute about 48 % of cases; they usually improve within 24 hours of therapy. For the assessment of the effect of trimethoprim-sulphamethoxazole on each case we depended on the disappearance of diarrhoea and other constitutional disorders usually associated with it.

Trimethoprim-sulphamethoxazole has been found effective in vivo in *E. Coli* gastroenteritis and salmonella. However, those cases with assumed viral enteritis recovered completely. One case of gastroenteritis with *E. Coli* died one day after admission and we think it was due to poor hydration of the case.

Summary

A clinical trial on fifty four patients with gastroenteritis using trimethoprim-sulphamethoxazole is presented. Forty-five out of fifty-four patients (83.3 %) improved after 48 hours of usage of the drug; 66.6 % of the patients with enteropathogenic *E. Coli* gastroenteritis and eight patients with salmonella enteritis showed a good response after 48 hours.

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