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Quixalin in the Treatment of Dysenteriform Diarrhea

by

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Introduction

Quixalin is halquinol, a chlorinated hydroxyquinoline derivative developed in the Squibb Medical Research Laboratories.

It is a chemically standardised mixture of controlled and reproducible composition containing three chlorinated quinolines which are kept at a constant ratio.

It is : 5 : 1 — dichloro — 8 hydroxyquinoline
7 — chloro — 8 hydroxyquinoline
5 — chloro — 8 hydroxyquinoline

Quixalin has a wide range of antibacterial. It exerts its main activity within the lumen of the intestinal tract, and is virtually non-toxic. Following oral administration, Quixalin is excreted mainly in the faeces,

but a percentage of the total dosage is excreted in the urine.

Numerous investigators have reported the effectiveness of Quixalin in specific and non-specific diarrheas. Stewart (1962) treated 10 cases of acute gastro — enteritis from *E. coli* which all immediately improved and 9 gave 3 negative stools after treatment. In 4 cases of dysentery from *Shig. sonnei* all immediately improved and one gave a negative stool after treatment. Kawashima et al. (1962) treated 16 cases of shigellosis and noted microbiological clearance in 14, although 2 cases subsequently had positive stools. Nakazawa et al. (1962) found Quixalin to be effective in 34 out of 35 cases of acute colitis and acute enteritis.

The present paper is a report on the results of clinical trials with Quixalin (Squibb) tablets on the treatment of dysenteriform diarrhea which still forms a major problem

in Indonesia with a very high incidence rate in infancy and childhood.

Material and Methods

The material consisted of 45 children varying in age from 2 months to 2 years, 30 being boys and 15 girls. They were admitted to the Department of Child Health from August 1970 to December 1970 due to gastroenteritis and dehydration. Patients, whose stool showed double positive (10 — 20 leucocytes per low power microscopic field) or more leucocytes microscopically, were treated with Quixalin.

Quixalin was given in the form of powder, the dosage being 30 — 50 mg per kg body weight daily divided in 3 or 4 doses during 5 — 7 days. On admission intravenous fluid drip (IVFD) using 3a* solution and Darrow — Glucose solution were given immediately according to the scheme outlined by Sutedjo et al. (1961). If rehydration appeared, the IVFD was stopped and continued with re-alimentation.

A daily control was performed with special attention to possible complications and side effects of the drug, e.g. urticaria, skin rash, abdominal discomfort and loss of appetite.

Macroscopic and microscopic examination of stool specimens were examined before the therapy, on the third and fifth day after the drug

was given while the number of bowel movements were noticed daily. For bacteriological studies a rectal swab was taken from patients before treatment and on the fifth day after treatment.

Toxicity studies were also conducted on some patients, by testing the liver function before and after treatment.

Clinical failure was arbitrarily defined when the diarrhea persisted for more than 7 days after this drug was started. If the diarrhea persisted after 7 days of treatment with Quixalin, then Chloramphenicol was introduced.

The classification of the results of treatment was as follows:

1. Excellent, if the patient shows very quick response. The clinical symptoms disappear and microscopic examination of stools become normal within 3 days.
2. Good, if clinical symptoms disappear and microscopic examination of stools become normal within 3 — 5 days.
3. Poor, if clinical symptoms disappear and microscopic examination of stools become normal within 5 — 7 days.

Results

Out of 45 children subjected to this trial, 30 boys and 15 girls, the age varied from 2 to 24 months (average 9,7 months), the body weight

* 3a Solution = 1 part NaCl 0.9% + 1 part glucose 5% + 1 part Na-lactate 1/6 Mol.

varied from 3850 to 10500 gm (average 6240 gm) (table 1).

Most of the patients had fever of more than 38 centigrade, frequency of watery diarrhea varying from 4 to 20 times a day (average 7 times a day).

The stool usually contained mucus but seldom blood.

Many patients were undernourished and some of them suffered from parenteral infection or cerebral involvement (table 2).

TABLE 1 : Age and Sex distribution

Age	M A L E		F E M A L E	
	No. of cases	Percentage	No. of cases	Percentage
0 - 6 mo	5	11,1%	5	11,1%
6 - 12 mo	17	37,7%	5	11,1%
0 - 1 y	22	48,8%	10	22,2%
1 - 2 y	8	17,7%	5	11,1%

TABLE 2 : Accompanying diseases observed in dysenteriform diarrhea.

	Number of patients	Percentage
Malnutrition	16	35,5%
Otitis	7	15,5%
Tonsillopharyngitis	5	11,1%
Cerebral involvement	3	6,6%

Response to therap of the positive cultures are shown in table

TABLE 3 : Pre and after treatment of positive cultures.

Microorganism	BEFORE TREATMENT POSITIVE CULTURES	AFTER TREATMENT NEGATIVE CULTURES
Shigella	6	4
E. coli	3	0

Shigella (*Shigella flexneri*) could only be isolated from 6 patients (13,5%). In 6 cases of shigellosis, clinical improvement was good in 5

and failure in 1 case, in which the treatment was switched to Chloramphenicol, while microbiological clearance was noted only in 2 cases.

E. coli was isolated in 2 cases (4.4%) and all immediately improved and gave negative stools after treatment.

Time taken for frequency of motions and microscopic examination of stools to become normal are shown in table 4.

TABLE 4 : *Time for frequency of motions and microscopic examination of stools to become normal*

Signs and symptoms to become normal	Duration of treatment			
	0-3 days	3-5 days	5-7 days	more than 7 days*
Freq. of motions	21	18	2	1
Microscopic stool examination (Disappearance of leukocytes)	20	21	0	1

* 7 days treated with quixalin and then switched to Chloramphenicol.

Mortality occurred in 3 cases (6.6%) in which all cases suffered from severe dehydration.

Discussion

It was striking that *Shigella* could only be isolated from 6 patients.

According to Van Bueren (1939) bacteriological examination in dysenteriform diarrhea were 55% positive for *Shigella* at the first examination, 82% after three fecal specimens had been examined and 93% after six specimens. In our trial, we only take rectal swab on the first and the fifth day.

Shigella became negative after treatment only in 2 cases although clinically they were recovered.

This is also found by Stewart (1962) in 4 cases of shigellosis in which all immediately improved and one gave a negative stool after treatment.

Summary and Conclusion

Quixalin tablet (Squibb) was tried out on 45 patients suffering from dysenteriform diarrhea and moderate to severe dehydration with a dose of 30 — 50 mg/kg b.w./day.

Every child received a basic treatment of IVFD.

The result was classified as excellent in 20 (44.5%), good in 19 (42.2%), poor in 2 (4.4%) and failure in 1 case (2.2%).

Shigellosis became negative after treatment only in 2 out of 6 cases and dysentery from *E. coli* gave all microbiological clearance.

No side effects or toxic manifestations were observed on any of the patients.

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