A PRELIMINARY TRIAL OF THE MASS-TREATMENT OF URINARY BILHARZIASIS WITH AN ORGANO-PHOSPHORUS COMPOUND*

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ABSTRACT

In the course of an evaluation of various schistosomicidal drugs in Iran, the effect of an organo-phosphorus compound in the treatment of 45 mild cases of urinary bilhariziasis was assessed and the drug was given in 3 doses of 10 mg/kg body weight each with 3-week intervals. Follow-up examinations undertaken 3 weeks after the 1st, 2nd and 3rd doses as well as 3 months after completion of therapy showed cure rates of 71, 82, 91 and 90% respectively. A reverse correlation was observed between the mean number of eggs excreted in the urine and the cure rate. Side-effects were mild and were observed in only 20% of the patients. In order of their frequency, they were: abdominal pain, nausea, headache, vertigo and vomiting. The administration of Atropine together with each dose of the drug did not have any effect on the reduction of side-effects.

INTRODUCTION

The use of mass-treatment as an effective method for the control of bilharziasis has increased in recent years (WHO, 1973). An organo-phosphorus compound (0,0-dimethyl-2-,2,2-trichloro-0-1-hydroxyethylphosphonate), was tried in the course of the evaluation of new schistosomicidal drugs in the bilharzia endemic area of Khuzestan, southwestern Iran. The results of this trial are presented in this paper.

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°*The chemical compound used during this study was kindly provided by the Bayer Company.

MATERIAL AND METHOD

Of the 310 population of Boneh Rahimeh, a village 76 km south of Dezful, the site of the Bilharziasis Research Station, 260 persons were examined for urinary bilharziasis. An egg count was performed for all patients by direct counting of the number of eggs per 5 ml of thoroughly mixed urine from each person.

An organo-phosphorus compound in the form of 100 mg tables was administered at a dosage of 10 mg/kg body weight 3 times at 3-weeks interval to 45 out of 67 cases found in the village. All side-effects encountered up to 24 hours after the administration of each dose were recorded. Due to the absence of laboratory facilities in the village, changes in blood cholinesterase were not indicated among the cases treated. In addition, 22 infected cases were chosen as a control.

Follow-up examinations were undertaken 3 weeks after each dose was given, (just prior to the administration of the 2nd and 3rd doses and 3 months after the end of treatment).

To indicate the possible effect of Belladona tincture in reducing the amount and severity of side-effects, treated cases were divided into 2 groups; 15 drops of the drug was given 3 times daily at the same time when the drug was administered to the 1st group, and the 2nd group was kept as a control.

RESULTS

As indicated in Table I, the overall prevalence of infection in the village was 26% with the maximum rate and intensity in the age group 11-19.

Cure rates observed 3 weeks after the 1st, 2nd and last doses were administered, as well as 3 months after the completion of therapy, are shown in Table II. As shown in this table, the parasitological cure occurred in 71.2% of cases after the 1st, 82.3% after the 2nd and 91.2% after the 3rd dose, and 88.9% ceased excretion of schistosoma eggs 3 months after the completion of therapy.

The highest cure rate (100%) was observed among the age group 0-9 and a reverse correlation between the mean egg excretion and the cure rate was observed.

The side-effects encountered were mild and included, in order of freququency, abdominal pain, nausea, headache, vertigo and vomiting. No significant difference regarding the frequency and severity of side-effects was observed among the two groups with or without the administration of Belladona tincture. A follow-up examination of 21st of the 22 infected cases kept as control showed that only one case had become negative while the others were still passing eggs of the parasite.

DISCUSSION

The effect of organo-phosphorus compounds on urinary and intestinal schistosomiasis has been evaluated by various workers using different treatment schedules. (2,5) Talaat *et al.* (4) (1960) have administered the drug on alternate days for 6 doses of 10 mg/kg body weight and 5 mg/kg for 12 doses. Hanna *et al.* (3) (1966) have used the drug in a dose of 5 mg/kg body weight for 12 consecutive days. Abdel-aal *et al.* (1) (1970) have administered the drug according to 2 regimes, 2 mg/kg for 10 days and 10 mg/kg for 5 days. Forsyth and Rashid (2) have tried the drug with a dosage of 7.5 mg/kg at 2-4 weeks interval.

The cure rate obtained from the present trial is very close to the results observed by the most of the above-mentioned researchers. The high cure rates observed in our trial after the 1st and 2nd doses may be due to the fact that the patients under study were, by the large, recently infected cases and the intensity of the disease was low among them. Generally speaking, the results obtained from the present trial, i.e. high cure rate and low incidence of side-effects, are very encouraging.

Further evaluation of the effects of this drug and a comparison with other new schistosomicidal drugs regarding the efficiency, cost of mass-treatment and amount and severity of side-effects observed, should be undertaken.

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TABLE I

Number of persons examined, prevalence of bilharziasis in various age groups and number treated in the village of Boneh Rahimeh (Dezful, 1972)

Age Group	No. Exam.	No. Positive	Prevalence %	No. Treated	Mean Egg Count among treated cases
Below 10	88	23	26	11	24
11-19	41	20	9	20	130
20 & over	131	24	18	14	34
TOTAL	260	67	6	45	74

TABLE II

Results of follow-up examinations of treated Bilharzia cases, undertaken between each dose (with 3-weeks interval) and 3 months after completion of therapy with an organo-phosphorus compound (Boneh Rahimeh, Dezful, 1972)

Age Group		After 1st dose	After 2nd dose	After 3rd dose	3 months after therapy
Below 10	Cure Rate	81.9	81.9	100	100
	% Reduction in egg excretion $\bar{x}$	*	57	100	100
10-19	Cure Rate	55	80	85	80
	% Reduction in egg excretion $\bar{x}$	*	55	59	87
20 & over	Cure Rate	85.8	85.8	92.9	92.7
	% Reduction in egg excretion $\bar{x}$	*	88	88	88
Total	Cure Rate	71.2	82.3	91.2	88.9
	% Reduction in egg excretion $\bar{x}$	55.4	55.4	86.4	90

$\bar{x}$ In remaining cases only