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COMPARATIVE STUDY BETWEEN EFFICACY OF METRONIDAZOLE AND FURAZOLIDONE IN 7 TO 11 YEAR OLD CHILDREN WITH GIARDIASIS

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ABSTRACT

Metronidazole and furazolidone were compared for efficacy in 268 seven to 11 year old children infected with giardiasis. With metronidazole the cure rate was 82.3% and 80.0% in boys and girls respectively, while furazolidone showed an efficacy of 74.4% and 71.7% in the corresponding groups. The overall efficacy was 81.1% with metronidazole and 73.3% with furazolidone. There were no significant differences between metronidazole and furazolidone efficacies in regard to the age groups or sexes.

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INTRODUCTION

Giardia lamblia is the most common intestinal parasite, distributed worldwide, particularly where sanitation is poor. It is more prevalent in children than in adults.[1]

Four drugs are effective in the treatment of giardiasis; quinacrine, metronidazole, furazolidone, and tinidazole.[2] Furazolidone and metronidazole have been routinely used in clinics and each have their advocates.[3-5] Comparative studies have varied considerably in their patient population, drugs tested, dose and duration of treatment, method of patient allocation, ascertainment of compliance, and criteria for cure.[2,3,6,7,8]

Metronidazole is used in children and adults, but in children it should be given in smaller doses.[3] However, some authorities have not considered furazolidone in the list of drug priority for treating giardiasis[3], while others prefer furazolidone.[4,5]

The present study is an attempt to compare the efficacy of five-day metronidazole with 10-day furazolidone in treatment of 268 seven to 11 year old children.

MATERIAL AND METHODS

Chidren aged 7 to 11 years old with laboratory-confirmed giardiasis were enrolled after obtaining informed, oral consent from their parents. They were randomly divided into two groups. Infected children were weighed and assigned to one of two regimens. For one group (122 children), metronidazole was given orally in a dosage of 25 mg/kg/day divided into three doses for a period of 5 days.[9] The second group (146 children) received furazolidone 8 mg/kg/day orally divided into three or four doses for a period of 10 days.[4,10] Both drugs were used in tablet form with meals.

Post- treatment stool specimens were obtained at four weeks. Fresh stool specimens were concentrated by the formalin-ether solutions.[11] Cure was defined as failure to identify giardia in post- treatment stool examination. Treatment failures were classified as cysts found in any post-treatment specimens. Children unable to tolerate furazolidone or metronidazole were retreated with the other drug and excluded from the study groups.

Statistical analysis was by X^2- test. P value of <0.05 was considered significant.[12]

RESULTS

The efficacy of metronidazole and furazolidone in boys, girls and both sexes are shown in Tables I, II and

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Table I. The efficacy of metronidazole and furazolidone in 7 to 11 year old boys with Giardiasis

Drug / Age (years)	Metronidazole		Furazolidone	
	no.	percent	no.	percent
7-8	24	83.3	31	71.0
9-10	19	84.2	30	76.7
11	19	78.9	25	76.0
Total	62	82.3	86	74.4

Table II. The efficacy of metronidazole and furazolidone in 7 to 11 year old girls with Giardiasis

Drug / Age (years)	Metronidazole		Furazolidone	
	no.	percent	no.	percent
7-8	19	68.4	23	69.6
9-10	20	85.0	16	75.0
11	21	85.7	21	71.4
Total	60	80.0	60	71.7

III, respectively. The efficacy of metronidazole was better in both boys and girls than the corresponding sexes or age groups treated with furazolidone (Table I and II). The overall efficacy with the course of therapy was 81.1% with metronidazole and 73.3% with furazolidone (Table III). The difference between efficacies of the two drugs was not statistically significant in regards to the age groups or sexes.

Table III. The efficacy of metronidazole and furazolidone in 7 to 11 year old boys and girls with Giardiasis

Drug / Age (years)	Metronidazole		Furazolidone	
	no.	percent	no.	percent
7-8	43	76.7	54	70.4
9-10	39	84.6	46	76.1
11	40	82.5	46	73.9
Total	122	81.1	146	73.3

DISCUSSION

The results obtained from this study indicate that in routine medical practice, one should expect cure rates of 81.1% and 73.3% for metronidazole and furazolidone, respectively. Thus still quite a few number of patients remain untreated. Therefore, stool examination one month post-treatment should be done to make sure whether treatment was efficient.

Although the difference is not statistically significant, furazolidone, in the commonly recommended dose as used in this study, appears to be less effective than metronidazole. This finding is in accord with those found by others.[8] However, an exact comparison is very difficult, because each worker has used different therapeutic dosages in different age groups with completely different courses of therapy.

Furazolidone given in larger than therapeutic doses over long periods of time has been shown to be associated with an increased incidence of mammary tumors in rats.[13] With metronidazole administration, mammary and lung tumors occur with doses similar to those used therapeutically.[14,15] It is also mutagenic in bacteria[16] and its use in children has generally been reserved for infections that fail to respond to other drugs. Metronidazole is a more effective drug; however, it is not currently licensed for giardiasis, and there is concern over its mutagenicity.[4]

At this time, none of the drugs currently available for the treatment of giardiasis in children are ideal. The point of prime importance is that usage of these drugs must be carefully prescribed. Because of their carcinogenic effects, they should never be given repeatedly by physicians. A drug that is effective, nontoxic, and free of carcinogenic potential would be a welcome development in the treatment of children with giardiasis.

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