'ALBENDAZOLE' IN INTESTINAL HELMINTHIASIS

Pages with reference to book, From 114 To 117

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Abstract

A new anthelmintic drug Albenwas dazole (Zentel) was tested for its efficacy and tolerance in 100 children having single or mixed infestation with roundworms, hookworms, whipworms, pinworms and tapeworms. Their stools were examined by direct examination and by centrifugal floatation technique. The patients were observed carefully before and after treatment, for clinical efficacy, side effects or any alterations in haematology, blood chemistry and urine.

After a single dose of Albendazole (400 mg) the cure rate was 100% in Ascariasis and Ancylostomiasis. When this drug was given in the same dosage for three consecutive days the cure rate was 100% in Taeniasis and 60.6% in Hymenolepis nana.

Albendazole was well tolerated and laboratory investigations showed no significant biochemical abnormalities (JPMA 36: 114, 1986).

INTRODUCTlON

Helminthiasis is a common problem of the tropics and subtropical countries where health Care Programmes are still deficient. Contaminated drinking water, unhygenic living habits, poor sanitation, poverty, over-crowding and lack of health education are the main causes of different infections along with worm infestation.

Albendazole, a new benzimidazole derivative is methyl-5-prophylthio-1 -H benzimidazole-2-yl carbamate. The drug is a widely used broad-spectrum anthelmintjc in veterinary practice.[1,2] Recently it has been studied for use in humans, and initial studies have found it to be highly effective against ancylostomiasis, ascariasis, enterobiasis, trichuriasis and taeniasis in a single dose of 400 mg. It hás also been found effective against Hymenolepis nana and Strongyloides stercoralis infestation when given in a dose of 400 mg for three consecutive days.[3] Very few side effects have been noted so far.. Many studies[4-10] have been carried out on the prevalence of intestinal parasitosis in Pakistan showing the highest incidence of Ascariasis followed by Ancylostomiasis and Taeniasis but to our knowledge very few have studied the effectiveness of drugs used in treating intestinal helminthiasis.

The present study was conducted in order to evaluate the efficacy and tolerance of Albendazole in children with intestinal helminthiasis.

MATERIAL AND METHODS

Hundred children with positive stool examinations were included in the study. Most of them were indoor patients, though out-door patients who came with a history of passage or worms in stools or with complaints of pain in abdomen, distension, diarrhoea, nausea, wheezy chest, pallor or pruritus were included. Those who were seriously ill or had proteinuria, convulsive disorders, blood dyscrasias were included in the study. All patients gave their fully informed consent and were told of their right to withdraw from the study at any time.

Faecal examination was dpne by direct microscopy which consisted of two direct cover glass films placed on a slide side by side, one in physiological saline and the other examined with D. Antonis Iodine. For staining cysts, a small amount of faeces was emulsified in a drop of D. Antonis

iodine and was examined under the microscope immediately.' Negative Samples were further checked by zinc sulphate centrifugal floatation technique. The concentration was effected by suspending portion of the faeces (about 0.5 gms) in approximately 8 ml of tap water contained in shell vial. After stoppering, the material was thoroughly mixed by shaking then strained through two thicknesses of damp gauze into a 12 by 100mm tube. 'fliis suspension was centrifuged at 1800 rpm for 45 seconds and zinc sulfate solutions (sp. Gravity 1.180) was added to near the top of tube. Then re-suspension of the faecal material by agitation, sufficient amount of zinc sulfate solution was added to produce a convex meniscus. The tube was allowed to stand for 10 minutes after which a slide was touched to the top of the meniscus, then carefully inverted. The material thus obtained was stained with iodine and examined.

Before starting treatment with Albendazole, a complete physical examination full blood count, PCV, RBC, Serum Bilirubin, SGPT, Blood Urea and urine examination were carried out. Albendazole suspension 400 mg per 20 ml or

Albendazole tablet 200 mg were used.

Stools were re-examined on day 7, 14 and 21 and all the above mentioned investigations were repeated.

RESULTS

The ages ranged between 2-14 years. There were 65 males and 35 females.

Out of 100 patients 87% had a single infestation whereas 13% had mixed worm infestation.

Of 87 cases with single worm infestation 43% had Ascaris lumbricoides and 38% Hymenolepis nana (Table I).

TABLE I
Frequency and Distribution of Parasites (Single Infestation).

Parasites	No. of cases		Total	%
	M	F		
Ascaris lumbricoides	24	13	37	43%
Hymenolepis nana	18	15	33	38%
Ancylostoma duodenale	10	2	12	14%
Taenia saginata	2	1	3	3%
Enterobius vermicularis	1	0	1	1%
Trichuris trichiura	1	0	1	1%

Mixed infestation was present in 13 cases only.

TABLE II
Frequency and Distribution of Parasites (Mixed Infestations).

Parasites	No. of cases M	F	Total
Enterobius vermicularis + Diphyllobothrium latum	1	0	1
Ascaris lumbricoides + H. nana + Taenia saginata	1	0	1
Trichuris trichiura + Taenia saginata	1	0	1
Trichuris trichiura + Ascaris lumbricoides	1	0	1
Ancylostoma duodenale + Trichuris trichiura	2	0	2
Taenia saginata + Ascaris lumbricoides	1	0	1
Taenia saginata + Enterobius vermicularis	0	1	1
Ascaris lumbricoides + Ancylostoma duodenale	0	1	1
Ascaris lumbricoides + H. nana	1	0	1
Taenia saginata + Ancylostoma duodenale	0	1	1
Ascaris lumbricoides + Enterobius vermicularis	1	0	1
H. nana + Ancylostoma duodenale	0	1	1

Table II shows the types of helminths found in mixed infestation.
The efficacy of Albendazole was assessed on examination of post treatment faecal samples of stools on

day 7, 14 and 21.
In 37 patients of Ascariasis 33 were cured by single dose of 400 mg and the rest became free of infection by a repeat dose of 400 mg. In 12 patients with ancylostoma duodenale infection cure rate was 100% with single dose of Albendazole. Same was with single infection of Trichuris trichiura and Entrobius vermicularis. 100% cure rate was seen in cases of Taenia saginata when Albendazole was given at the dose of 400 mg daily for 3 consecutive days. 33 patients with H. nana infection were given Albendazole 400 mg daily for 3 consecutive days and cure rate was 60.6% and it rose to 66.66% after a 2nd dose was given after three weeks (Table III).

TABLE III
Efficacy

Parasite	Positive Cases	After lst dose	After repea-ted dose	Total cured	%
Ascaris lumb-ricoides.	37	33(89.27)	4	37	100%
H. nana	33	20(60.6)	2	22	66.66%
Ancylostoma-duod	12	12	–	12	100%
Taenia saginata	3	–	3	3	100%
Trichuris tri-chiura	1	1	1	–	100%
Enterobius verm.	1	1	–	1	100%
Mixed infections	13	10	0	10	76.92%

In 13 cases of mixed infection, the drug cured 10 patients (76.9%) while in 3 patients one of the worms was seen in the stool samples collected 7-14 days after treatment. A second dose was given to them but all three children were lost to follow up (Table III).
Albendazole was well tolerated. No change in blood chemistry or haematological parameters were observed within seven days or after the completion of treatment (Table IV).

TABLE IV
Effect of Albendazole on Blood Chemistry.

Investigation	Normal Range	Before Albendazole therapy	After Albendazole therapy
Haemoglobin %	14 - 16 mg %	Average 10.6 mg%	10.6 mg%
Total leucocytic count	4000-10,000/cmm	Average 8,000/cm	8,000/cm
Eosinophil count	1-3%	Average 4%	Average 3%
Red Blood cell count	4.5-5.5 million/cm	Average 3.8 million/cm	3.8 million/cm
Packed cell volume	35-45%	Average 32%	Average 32%
Blood urea	20-40mg%	20-40mg%	20-40mg%
Serum Bilirubin	0.8-1mg%	Below 1mg%	Below 1mg%
Urine Analysis		Only 3 cases showed pus cells more than 10 per high field and E-Coli infection.	All the three cases were treated with appropriate antibiotics

The initial Hb% in all the children was low most probably due to infection, worm infestation, and malnutrition and same was the PVC and RBC count. There was no significant change in Hb, RBC or PVC after Albendazole therapy.

Side Effects

Four percent of the patients complained of nausea and 2% of pain in epigastrium while 6% said that they felt giddy for a few hours (Table V).

TABLE V
SIDE EFFECTS

Side effects	No. of cases	%
Nausea and giddiness	6	6%
Nausea alone	4	4%
Urticaria	3	3%
Pain in Epigastrium	2	2%
Diarrhoea	2	2%
Total	17	17%

DISCUSSION

Worm infestation remains a major health hazard in the paediatric age group in Pakistan. Although no large scale surveys have been done to show the actual prevalence in the community, the few available studies[4-10] indicate that the problem is enormous. Unfortunately worm infestation is generally taken lightly inspite of the fact that it has been shown to be responsible for precipitating overt malnutrition in children who are at risk. Also worms have been shown to be responsible for respiratory and allergic problems and to cause serious complications like intestinal obstruction.

Several anthelminthics are available in the market. However their spectrum of activity is limited to single worms or at most the members of the cestode group. Since laboratory facilities are generally not available and where available rather expensive, their need for a broad spectrum anthelminthic with minimal side effects which can be given safely in the absence of laboratory confirmation of worm infestation and the type of worms present, has been felt for a long time.

Our study like that of Theodonides et al,[1] Georgi et al[2] and Peve et al[3] has shown that albendazole is a dependable broad spectrum anthelminthic. We feel that in conditions like ours in which multiple doses cause problems of patient compliance, the introduction of a single dose effective broad spectrum anthelminthic is really welcomed. The side effects were also very minor and of short duration.

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