

Re-infestation of intestinal nematodes in a peri-urban population

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Summary

Seventy two children under 15 years of age having parasitic infestation with intestinal nematodes, were treated with 500 mg mebendazole. Among them 62 children with no evidence of infestation in the specimens of stools were followed up for 5 months. By 3 months, 38.7% of the children were reinfested, by 4 months 61.3% were reinfested and by the end of the 5th month 75.8% were reinfested.

Introduction

Intestinal nematodes is a common problem in Sri Lanka. (1, 2, 3, 4) This is due to poor socioeconomic conditions, unhygienic environment and poor knowledge regarding health. If left untreated the infested persons could develop malnutrition, anaemia and other complications.

The infestation could be controlled by health education, personal hygiene, improvement in environmental conditions and intermittent drug therapy. The frequency of drug therapy will depend on the re-infestation rate. The re-infes-

tation rate varies, from place to place, depending on the soil pollution and personal habits of the population. This study was undertaken to find the re-infestation rate in a peri-urban area in Jaffna following antihelmintic therapy.

Methodology

One hundred and twelve children from Kokuvil Kondavil community health project area were selected for this study. All these children were under 15 years. These children belonged to the families allocated to third year medical students carrying out their family health project. With the help of the medical students, the stool specimens were obtained from these children and examined at the Division of Parasitology, Faculty of Medicine. The specimens were examined by using direct saline and iodine smear and after formol ether concentration. The peri-anal swab of these children were examined for the presence of thread worm ova.

The children who had ova of any intestinal nematodes were given a single dose (500mg) of mebendazole. The drug was administered under the personal supervision of the medical students concerned.

A second specimen of stool from the treated children was examined by

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the same method, about 2-3 weeks after treatment. Those children who were found to have ova in their stools were given a 2nd dose of 500mg, mebendazole, and stools re-examined again 2-3 weeks later.

The children who were found to have no ova in their stools either after the 1st dose or 2nd dose of mebendazole constituted the ultimate study group. The children who continued to have ova in their stool were not include in the study.

Results:

Among the 112 children initially selected for the study 72 showed one or more parasitic infestation with intestinal nematodes. Six children were lost to follow up and were excluded from the study.

Out of the balance 66 children, 4 children did not respond to 2 doses of mebendazole and were also excluded from the study. The final study population was 62 children.

The number of children infested with intestinal nematodes is given in Table 1.

Table 1
Intestinal nematode infestation among children prior to treatment

Intestinal nematodes	Number	%
Round worm	45	62.5
Hook worm	23	31.9
Whip worm	43	59.7
Thread worm	12	16.7

Table 2 shows the children reinfested during the follow up period. At 2

Table 2
Reinfestation of children during follow up

	Number infested	% infested	Children with		
			Single infestation	Double Infestation	Triple infestation
At commencement of study	Nil	0	0	0	0
At 2 Months	18	29.0	12	6	0
At 3 Months	24	38.7	16	8	0
At 4 Months	38	61.3	23	14	1
At 5 Months	47	75.8	15	25	7

months, 18 children were reinfested, which constituted 29% of the study population. Among the 18 children 6 children had double infestation and 12 children had single infestation. Majority of the single infestations were with whip worm (7) and double infestation were with whip worm and hook worm (5). At 3 months 6 other

children became infested given the total of 24, which is 38.7% of the study population.

Among the 24 children 16 had single infestation and 8 had double infestation. At 4 months 14 more children became reinfested giving the total of 38 which is 61.3% of the study group.

At 5th months total reinfested children were 47 which is 75.8% of the study group. Among them 15 had single infestation, 25 children had double infestation and 7 children had triple infestation.

Discussion:

Control of intestinal nematode infestation involves health education interference with environment and antihelminthic drug treatment. S. P. Kan in 1983⁽⁵⁾ showed that the prevalence of intestinal helminthic infestations could be reduced in urban slums, semi urban area and rural areas in Malaysia, by half to two thirds in 5 years by giving yearly antihelminthic treatment alone, using mebendazole only without interfering with environment.

Our study shows that the infestation re-appears very early after antihelminthic treatment. By 4 months more than 50% of the children treated had one or more nematode infestations and by 5 months over 75% had infestations. Therefore in our community mebendazole treatment alone cannot be expected to give, significant long term reduction in the prevalence of helminthic infestations. Health education regarding personal hygiene and improvement in the living conditions should go hand in hand to achieve reduction in the prevalence of nematode infestations.

This study shows that hookworm and whip worm infestation re-appear sooner than roundworm. According to the life cycle hookworm infestation would take roughly 1-2 months to appear in the stools of a person who gets infested by the larva in the soil, But whip worm infestation should

take over 3 months along with the round worm to re-appear in the stools. The observation that whip worm appeared earlier than round worm points to the possibility that mebendazole had not effectively eradicated whip worm. S. P. Kan of Malaysia⁽⁶⁾ noted that the cure rate of whip worm infestation with a single dose of mebendazole varied from 7.1%-61.9% depending on the severity of the infestation, whereas for round worm the cure rate was closer to 100%. As such, the late appearance of round worm ova in stool was probably due to pure re-infestations whereas the early appearance of whip worm was probably because the single dose of mebendazole did not produce complete cure in all those treated, but only reduced the worm load.

In view of the observation that over half of subjects showed re-infestation by one or more nematodes at 4 months, if antihelminthic treatment alone is to be administered, it has to be given at least every four months.

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