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OBSERVATION ON THE INTESTINAL PARASITIC INFECTIONS

M. Rezaeian, Ph.D.

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ABSTRACT

During 1980-82, a total number of 4143 stool samples, from 2332 males and 1811 females, referred to the Central laboratory of the School of Public Health, were examined for intestinal parasites. All the specimens were examined by formol-ether concentration and wet-mount(ringer solution)techniques. The main prevalent pathogenic parasites were Entamoeba histolytica (8.7%), Giardia lamblia(16.1%), Ascaris lumbricoides (9.1%), Trichuris trichiura (3.1%), and Hymenolepis nana(3.2%). The Overall infection rate with protozoa, metazoa and both were 45%, 18.3% and 53.8% respectively.

INTRODUCTION

Intestinal parasitic infection has a widespread distribution in the world, specially in the tropics. The Infection is more or less prevalent in all parts of Iran, particularly in the rural areas (3,5,7,14,15,2).

* School of Public Health, Teh. Med. Sc. Univ. P.O. Box 14155-6446, Teheran - Iran.

As a rule, the infection mostly occurs in poor communities with low standards of hygiene. The present paper reports the protozoal and helminthic infections in outpatients who were referred from different parts of Iran to the Central Laboratory, School of Public Health, University of Tehran during 1980 to 1982.

MATERIALS AND METHODS

A total of 4143 stool samples collected from 2332 males and 1811 females were examined. The patients belonged to different social categories from Tehran and suburban areas or occasionally from other parts of the country The stool specimens, collected fresh in Paper cups were examined by formol-ether concentration and direct (wet mount ringer solution and MIF), techniques. On some occasions, permanent staining and culture techniques were also used. For diagnosis of oxyuriasis the adhesive cellulose tape (Graham method) was applied. In suspected negative cases the stool examination was repeated three times on different occasions.

RESULTS

The main purpose of this study was to determine the intestinal parasitic infection in Tehran area as shown in Tables 1 and 3. The prevalence of pathogenic protozoan parasites for Giardia lamblia was 16.7% and 8.7% for Entamoeba histolytica and for non pathogenic proto-

zoa, Entamoeba coli was 18.4%, Entamoeba hartmanni 2.8%, Dientamoeba fragilis 1.5%, Endolimax nana 2.9%, Iodamoeba butschlii 3.5%, Trichomonas hominis 2.4% and Chilomastix mesnili 1.1%. According to the age distribution the most infected individuals with Giardia lamblia were found in the age group 1-15 years old with an infection rate of 20% to 27%. Entamoeba histolytica was observed in adults with highest infection rate of 7.4% to 12.2%(Table 1), without any significant differences between males and females (Table 2). The prevalence of intestinal helminthic infection as shown in Table 3, was 9.1%, for Ascaris lumbricoides, Trichuris trichiura, 3.7% Trichostrongylus spp. 0.6%, Entrobius vermicularis 1.7%, Strongyloides stercoralis 0.6%, Taenia saginata 0.6% and Hymenolepis nana 3.2%. No significant differences in age and sex distribution were noticed in infected individuals with these parasites (Table 4). As shown in Table 5, single infection showed much higher rate tha multiple infections, particularly in helminthic parasites (17% single and 1.3% multiple).

DISCUSSION

The patients, who were mostly from Tehran, in addition to other parts of Iran, had different occupations.

Studies on the prevalence of protozoan infections in Iran were mostly undertaken in the rural areas(10,14, 15,1), whereas there has been no complete record from the

urban areas. The pathogenic protozoa (Entamoeba histolytica and Giardia lamblia)were mostly prevalent in the age groups of 21-40 and 6-10 years respectively. According to Piekarski, 1956 (11), the high prevalence of Giardia in the younger age groups (children) was due to the high carbohydrate consumption, but we believe that in Iran in addition to this fact, neglect of hygiene and the high risk of exposure to the organism can also play an important role.

In this study, in contrast to Japanese investigators, "Belding 1964"(6), there were no significant differences between male and female groups.

METAZOA:

As shown by different investigators, the metazoa parasites are a major health problem in various parts of Iran (3,5,7,8,9,12). Some like Ascaris, Trichocephalus, Hymenolepis and Trichostrongylus are more or less uniformly scattered all over the country, whereas some others (hookworms) have a local distribution (Caspian areas and Khuzestan Province). In our findings the prevalence of 9.1% for Ascaris and 3.7% for Trichocephalus infections was much lower than those reported from the rural sectors by other investigators(7,8,9,13). As reported by Ghadirian et al.(2) and Massoud et al.(6) the prevalence of metazoan parasites in urban areas was much lower than the rural areas, which indicated the effect of poor sanitati-

on and environmental health factors in the transmission of helminthic infection in this country. Hymenolepis and Entrobius infections were mostly prevalent in the younger age groups than the adults. Hookworm infection, in our study was very low (17 cases) originating mostly from the Caspian region. Fasciola and Dicrocoelium ova were found in 16 and 12 cases respectively, which after administrating meat free diet, after a few days all stools became free of ova except 5 cases which retained the egg of Fasciola as the concrete infection. Fasciola infection in human, in Iran, has been previously reported from different parts of the country by different investigators (4).

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Table 1. Prevalence of different protozoal infections in different age groups.

Age group	No. Exam.	Percent infected with								
		E.his	E.coli	E.hart.	D.f.	E.nana	I.but.	G.lam.	T.hom.	Ch.m
<1	69	1.4	7.2	-	-	-	-	2.9	-	-
1-5	474	3.1	8.4	1.05	0.84	1.8	1.4	20.2	1.4	0.2
6-10	574	5.5	17.2	1.7	1.5	2.4	1.7	27.3	2.6	0.8
11-15	470	7.4	15.9	2.7	2.1	4.04	3.6	21.2	4.6	1.06
16-20	590	10.5	20	2.7	0.6	1.8	4.06	12.5	1.6	1.8
21-40	1433	12.2	26.3	3.7	1.6	3.9	4.8	14.02	3.4	1.4
41-60	484	7.4	20.2	4.5	2.4	2.6	2.4	7.6	2.8	1.2
61+and over	49	10.2	28.5	-	-	2.04	-	4.08	6.1	-
Total	4143	8.7	18.4	2.8	1.5	2.9	3.3	16.1	2.4	1.1

Table 2. Prevalence of different protozoal infections in males and females.

Sex	No. Exam	Percent infected with								
		E.his.	E.coli	E.hart.	D.f.	E.nana	I.but.	G.lam.	T.hom.	Ch.m.
M	2332	8.4	17.4	2.8	1.2	2.6	3.7	16.7	2.7	1.5
F	1811	9.05	19.7	2.9	1.8	3.4	2.9	15.4	1.9	0.7
Total	4145	8.7	18.4	2.8	1.5	2.9	3.3	16.1	2.4	1.1

E.his.= Entamoeba histolytica, E.coli= Entamoeba coli, E.hart.=Entamoeba-hartmanni, D.f.=Dientamoeba fragilis, E.nana= Endolimax nana, I.but.= Iodamoeba butschlii, G.lam.= Giardia lamblia, T.hom.=Trichomonas hominis Ch.m.=Chilomastix mesnili.

Table 3. Prevalence of different helminthic infection in different age groups.

Age group	No. Exam	Percent infected with					
		A.l.	T.t.	Tr.	E.v.	S.s.	H.nana
<1	69	-	-	-	-	-	-
1-5	474	5.4	1.2	0.2	1.8	0.2	2.1
6-10	574	7.6	2.4	-	4.3	0.7	5.05
11-15	470	8.5	3.4	0.8	2.7	0.6	3.8
16-20	590	11.5	4.7	0.6	1.01	0.5	3.7
21-40	1433	10.7	5.3	0.97	1.1	0.9	3.5
41-60	487	9	2.9	0.4	0.4	0.4	0.6
61+and over	49	6.1	2.04	-	-	2.04	2.04
Total	4143	9.1	3.7	0.6	1.7	0.6	3.2

Table 4. Prevalence of different helminthic infection in males and females.

Sex	No. Exam	Percent infected with					
		A.l.	T.t.	Tr.	E.v.	S.s.	H.nana
M	2332	9.3	3.7	0.5	1.6	0.8	3.5
F	1811	8.8	3.7	0.7	1.7	0.4	2.8
Total	14143	9.1	3.7	0.6	1.7	0.6	3.2

A.l.=Ascaris lumbricoides, T.t.= Trichuris trichiura
Tr.=Trichostrongylus spp, E.v.=Enterobius vermicularis
S.s.=Strongyloides stercoralis, H.nana.=Hymenolepis nana

Table 5. Percentage of single and multiple parasitic infection.

Parasite	No. inf.	% infected	
		Single	Multiple
Protozoa	1894	27.1	18.6
Helminths	800	17	1.3
Mixed	2231	28.9	24.2

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