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Recent patterns of intestinal parasite infections among residents in Kolyung county, Kyungpook Province, Korea*

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Introduction

Since Mills(1911) and Suzuki(1911) first reported on human parasites in Korea, many investigators have attempted to determine the prevalence and distribution of intestinal helminths and protozoa.

Matsumoto(1915) conducted a survey on the intestinal helminths among the Koreans in Taegu charity hospital located in Kyungpook Province, based on the discovery of helminthic eggs by stool examinations, and reported the high prevalence of helminthiasis. Nishimura(1943) studied the incidence of *C. sinensis* and other intestinal parasites among residents in Taegu and Yeongcheon areas in Kyungpook Province, and reported that an endemic focus of the liver fluke exists in the vicinity of Yeongcheon. He also found fresh-water fish from the river Kumho which contained the vector snails with *C. sinensis* cercariae.

After the Korean War, Lee et al. (1960) reported the high prevalence of soil-transmitted parasitic diseases, and Seo et al. (1969) in a study of helminthic infections in the Koreans reported that the overall positive rate was 91.2 per cent, and that of *T. trichiura* was by far the most common helminthic parasite, followed by *A. lumbricoides* and *T. orientalis*.

After the beginning of the New Community Project in the third Five year Economic Development Plan in 1972, the Korean government made plans to control helminthic infections, and performed the mass-treatment of egg-positive cases although *A. lumbricoides* and *T.trichiura* and hookworm were the principal subjects. At the same time, environmental measures, especially night soil disposal were taken into consideration although its enforcement was not sufficient. As a result, these operations resulted in a gradual decrease in the prevalence of soil-transmitted parasitic diseases.

Quite recently Joo and Hong(1991) in a study of *C. sinensis* in the vicinity of the river Ahnseong running through Kolyung county reported the high prevalence of the liver fluke in the residents and in fresh-water fish hosts.

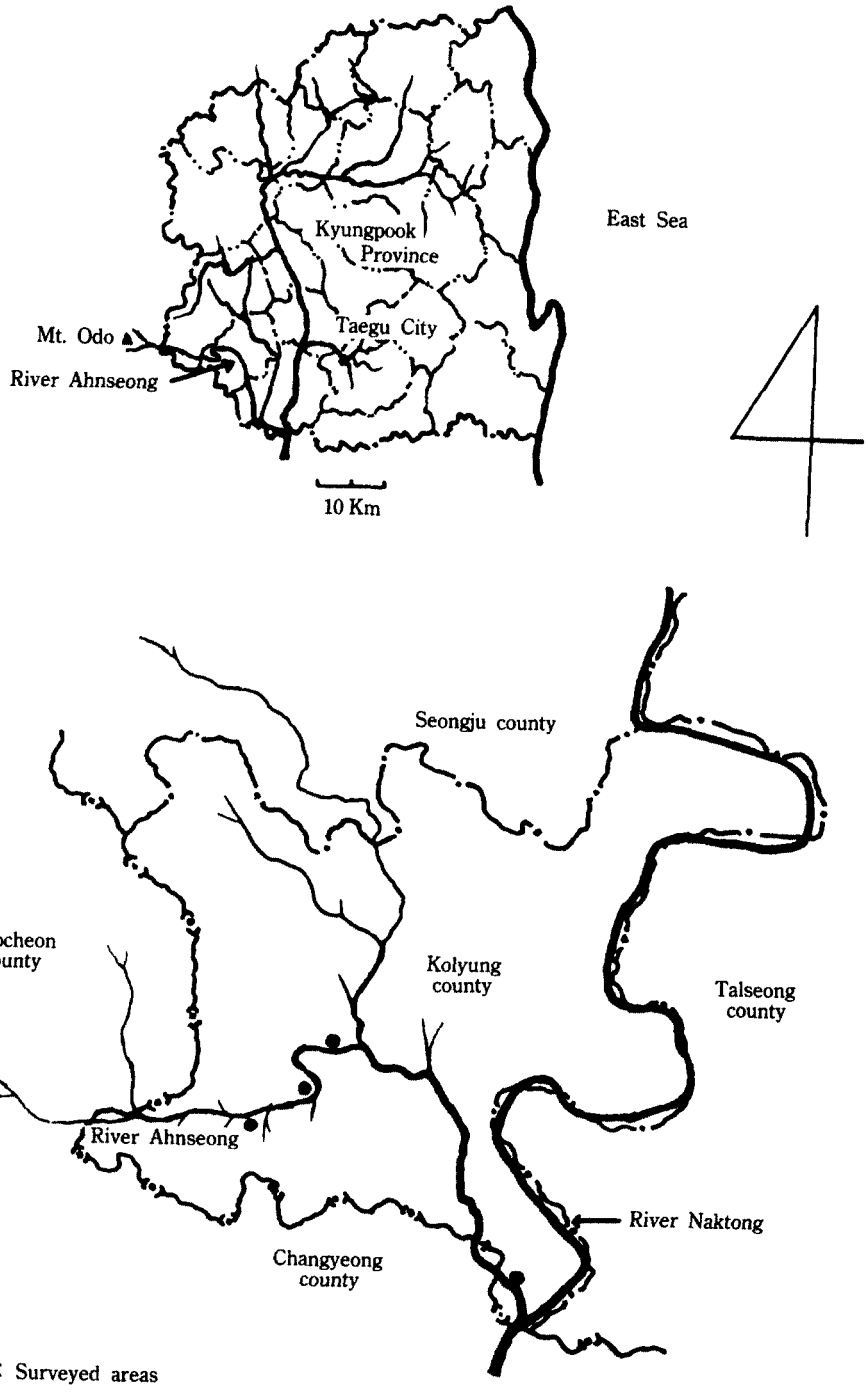
The purpose of this study was to obtain some informations on the recent patterns of intestinal parasitic infections among the residents in Kolyung county and to secure other data which might be useful in the control measures of parasitic diseases.

Geographical conditions of surveyed areas

Kolyung county is situated in the rural areas of the southwestern part of Kyungpook Province, having an area of 384 square kilometers, and is bordered on the north by Seongju county, on the south-west by Hapcheon county, and on the east by Dalseong county and Taegu city(Fig. 1).
It has a total annual rainfall of 1,200mm, a mean temperature of 13.0℃ and is characterized by wide seasonal temperature variations(−17 to 37.4℃).

The Ahnseong river running through Kolyung county joins the Naktong river in the Kaeki of Ugok myun. There are 10 rivulets in the basin. In all

* The results of this study were presented at the 34th annual meeting of the Korean Society for Parasitology(1992).



villages the river is essentially used by the residents for domestic and agricultural purposes.

The three locations, Shangrim, Ugok, and Kolyung, were selected as the study areas because of

their being rural districts in the vicinity of the Naktong river and its tributaries, the Ahnseong and Taega rivers. More datailed geographical conditions of surveyed areas were presented by Joo and Hong(1991).

Materials and Methods

During the period from September, 1991 to June, 1992, the authors carried out a parasitological survey in order to estimate the prevalence of intestinal parasites based on the discovery of protozoan cysts and helminthic eggs among the residents in Kolyung county. Stool specimens were collected from Shangrim and Baiksan primary school children, Shangrim middle school students and the residents in Shangrim myun, Ugok myun, and Kolyung town. The specimens were collected in cardboard cartons and forwarded to the Parasitology laboratory. The formalin-ether sedimentation technique(Ritchie, 1948) was used to recover protozoan cysts and helminthic eggs. One drop of the sediment was first placed on a microscopic slide and one drop of Lugol's iodine solution was mixed. The preparation was mounted with a cover slip, and the enteire area was examined for cysts. When *E. histolytica* cysts were found, the size of a sufficient number of cysts was measured with a micrometer to determine the relative prevalence of large and small races, cysts measuring smaller than 10 micron being assigned to the latter. The Stoll's egg-count technique(Stoll and Hausheer, 1926) was applied to estimate the intensity of *C. sinensis* infections.

Results

Table 1 shows the species and infection rates for intestinal protozoa and helminths in 1,062 residents of Kolyung county. Five species of intestinal protozoa were found as well as eggs of five helminths. Of the protozoa, *E. nana* was found most prevalent, in 3.5 per cent of the residents, followed by *E. histolytica* with 3.1 per cent and *E. coli* with 0.8 per cent. *Iodameba bütschlii* was the least prevalent species. Both the small and large races of *E. histolytica* were observed. Eighteen individuals had large race cysts only; 10 small race only; and 5 both large and small race cysts.

Among the fecal specimens examined, one or more species of helminths were found in 199, which indicates an overall infection rate of 18.7 per cent. *C. sinensis* was found most frequently, the rate being 17.5 per cent among the residents, followed by *M. yokogawai* with the prevalence rate of 5.6 per cent and *T. trichiura* with 0.5 per cent. *Taenia* species was the least prevalent. *A. lumbricoides* was found in only 0.2 per cent of the residents, and hookworm and *Trichostrongylus* species were absent.

As to the sex-specific rate of *C. sinensis, M. yokogawai* and *Taenia* species, males were higher than females, while, in the case of *T. trichiura,* the infection rate in females was a little higher than in males.

The infection rates of *E. histolytica,* and *C. sinensis* by sex and age groups are listed in Table 2.

In age specific rate of *E. histolytica* infections, it was found to be zero per cent in the 0－9 year age group in both sexes and 1.3 per cent in males and 0.5 per cent in females in the 10－19 year age group. The rate subsequently increased and reached a maximum of 10.8 per cent in males and 11.9 per cent in females in the 30－39 year age group, but was uniformly high in all age groups over 40 years.

In the rate of *C. sinensis* infections by age groups, it was found to be 2.2 per cent in males and 3.6 per cent in females in the 0－9 year age group, and 2.1 per cent in males and 3.9 per cent in females in the 10－19 year age group. the rate subsequently increased and reached a maximum of 52.5 per cent in males in the 50－59 year age group and of 43.5 per cent in females in the 60 or more age group.

Since few individuals had *A. lumbricoides, T. trichiura, Taenia* species and *E. coli,* no reliable age or sex distribution could be charted.

Table 3 presents the single or multiple infections with intestinal parasites in the same individuals. Single infection was the highest in 14.7 per cent, followed by double infections in 7.9 per cent and

Table 1. Prevalence of intestinal protozoa and helminths among residents in Kolyung county, Kyungpook Province, Korea(1991)

Species	Male		Female		Total	
	No. infected	%	No. infected	%	No. infected	%
Protozoa						
Entameba histolytica						
Large race	10	1.8	8	1.6	18	1.7
Small race	5	0.9	5	1.0	10	0.9
Both LR+SR*	2	0.4	3	0.6	5	0.5
Entameba coli	3	0.5	5	1.0	8	0.8
Endolimax nana	20	3.6	17	3.4	37	3.5
Iodameba bütschlii	2	0.4	0	0	2	0.2
Giardia lambria	6	1.1	3	0.6	9	0.8
Helminth						
Ascaris lumbricoides	1	0.2	1	0.2	2	0.2
Trichuris trichiura	2	0.4	3	0.6	5	0.5
Clonorchis sinensis	118	21.3	68	13.4	186	17.5
Metagonimus yokogawai	39	7.0	21	4.1	60	5.6
Taenia species	1	0.2	0	0	1	0.1
Total number examined	555		507		1,062	

* LR+SR means large race & small race.

Table 2. Infection rates for *E. histoytica* and *C. sinensis* by sex and age group among residents of Kolyung county(1991)

Age group (Y)	Sex	No. tested	*E. histolytica*		*C. sinensis*	
			No.	%	No.	%
0−9	M	93	0	0	2	2.2
	F	84	0	0	3	3.6
	T	177	0	0	5	2.8
10−19	M	237	3	1.3	5	2.1
	F	206	1	0.5	8	3.9
	T	443	4	0.9	13	2.9
20−29	M	18	1	5.6	2	11.1
	F	18	1	5.6	8	22.2
30−39	M	37	4	10.8	19	51.4
	F	42	5	11.9	12	28.6
	T	111	7	6.3	42	37.8
50−59	M	59	2	3.4	31	52.5
	F	62	4	6.5	22	35.5
	T	121	6	5.0	53	43.8
60−	M	46	3	6.5	23	50.0
	F	46	2	4.3	20	43.5
	T	92	5	5.4	43	46.7
Total	M	555	17	3.1	118	21.3
	F	507	16	3.2	68	13.4
	T	1,062	33	3.1	186	17.5

triple infections in 0.6 per cent. The most frequent species of the 99 single infections was *C. sinensis* with 9.3 per cent, followed by *E. histolytica* with 2.4 per cent. The least frequently found was *A. lumbricoides* with 0.1 per cent. In the 84 double combinations, *C. sinensis* was combined with *M. yokogawai*(4.3 per cent), with *E. nana*(2.4 per cent), and with *E. histolytica*(0.6 per cent). In the 6 triple combinations, *C. sinesis* and *M. yokogawai* were combined with *E. coli*(0.3 per cent), with *E. nana* (0.1 per cent), with *A. lumbricoides*(0.1 per cent), and with *Taenia* species(0.1 per cent).

The intensity of *C. sinensis* infections among the residents by sex is listed in Table 4. The intensity of infection, expressed in eggs per gram of feces, was divided into 500, and 4,500 egg intervals in the first and second classes, and followed by 5,000 egg intervals for the purpose of convenience. 61 cases or 39.9 per cent of the residents with clonorchiasis had less than 5,000 eggs. Only 7 cases or 4.6 per cent showed heavy infections. The data indicate that most cases of clonorchiasis examined were mild infections of the liver fluke.

Discussion

The findings in the present study are based on discovery of protozoan cysts and helminthic eggs by the formalin-ether sedimentation method and Lugol's iodine stained technique on 1,062 specimens. In practice, this is not an indication of the true infection rate among the residents in Kolyung county because a single examination of the Lugol's iodine stained technique is not sufficient to obtain a reliable infection rate of intestinal protozoa and because the individuals for this study are not adjusted for the proportion of the residents belonging to each sex, age, social situation, and socioecono-

Table 3. The frequency of single or multiple infections by formalin-ether sedimentation technique in 1,062 residents(1991)

Species found	Number	%
Single infection	156	14.7
Entameba histolytica	26	2.4
Endolimax nana	8	0.8
Iodameba bütschlii	2	0.2
Giardia lambria	7	0.7
Ascaris lumbricoides	1	0.1
Trichuris trichiura	5	0.5
Clonorchis sinensis	99	9.3
Metagonimus yokogawai	8	0.8
Double infections	84	7.9
E. histolytica & E. coli	1	0.1
E. coli & E. nana	3	0.1
E. histolytica & C. sinensis	6	0.6
E. coli & C. sinensis	1	0.1
E. nana & C. sinensis	25	2.4
G. lambria & C. sinensis	2	0.2
C. sinensis & M. yokogawai	46	4.3
Triple infections	6	0.6
E. coli, C. sinensis & M. yokogawai	3	0.3
E. nana, C. sinensis & M. yokogawai	1	0.1
A. lumbricoides, C. sinensis & M. yokogawai	1	0.1
Taenia species, *C. sinensis & M. yokogawai*	1	0.1
Total number positive	246	23.2

Table 4. Intensity of *Clonorchis sinensis* infections by Stoll's egg-count technique among residents of Kolyung county(1991)

Range of EPG	Male		Female		Total	
	No. infected	%	No. infected	%	No. infected	%
0− 500	33	32.7	28	53.8	61	39.9
501− 5,000	49	48.5	20	38.5	69	45.1
5,001−10,000	3	3.0	4	7.7	7	4.6
10,001−15,000	3	3.0	0	0	3	2.0
15,001−20,000	6	5.9	0	0	6	3.9
20,001−25,000	3	3.0	0	0	3	2.0
25,001−	4	4.0	0	0	4	2.6
Total	101		52		153	

mics, etc. However, the results are quite comparable with earlier reports based on one time examination of feces by means of similar laboratory procedures. From the data listed in Table 5, it is noted that, although higher prevalence is expected if examinations were repeated, the present results show a decrease in the prevalence of *E. histolytica* and *E. coli* compared with earlier reports available.

The protozoan prevalence from the present data is very similar to that of Kim and Joo(1988) and Kim et al.(1988) though it is far less than those recorded in previous surveys made in Kyungpook Province(Nishimura, 1943; Choi et al., 1971; Kim et al., 1971; Lee, 1979; Choi and Hwang, 1980; Kwon and Choi, 1983).

The factors contributing to the lower prevalence among the residents in this survey than in those repored by previous investigators were considered to be the adequate, safe supplies of water for drinking and household purposes obtained by filtration, sedimentation, or by sterilization, and protection from contamination of human excreta used as fertilizer and from infected foodhandlers, flies and cockroaches. There is good reason to believe that the diminution in protozoan infections in Kyungpook Province is due to improvements in the sanitary conditions and traditional habits through the New Community Movement in combination with extensive public health education.

The sex-specific rate of *E. histolytica* and *E. coli* in the present study was a little higher in females than in males, while, in the cases of *E. nana, I. bütschlii and G. lambria*, the infection rate in males was higher than in females. It is in agreement with previous findings reported by many investigators studying in Kyungpook Province.

The scientific reasons for the sexual difference are not known, but it can be explained by environmental factors, and the habits and differences of physical conditions of each sex.

The patterns of age specific rate of *E. histolytica* infections were appreciably varied; *E. histolytica* cysts were initially established in the 10−19 year age group with an average of 0.9 per cent. It subsequently increased and reached a maximum of 11.4 per cent in the 30−39 year age group, followed by a decrease. A similar pattern was described with Ha and Joo(1987) in the Ulchin county, and Kim and Joo(1988) in Taegu city.

As shown in Table 5, the prevalence of *E. nana* was 3.5 per cent and was the most predominant species among intestinal protozoa in this study. Another species such as *E. coli and I. bütschlii* showed variable prevalences by many investigators.

G. lambria was one of the known pathogenic flagellates in Korea. Nishimura(1943) and Kim et al. (1971) reported that the prevalences of *G. lambria* were 6.6 per cent and 6.4 per cent, whereas, Choi et al.(1971) and Kim and Joo(1988) reported 0.4 per cent and 0.5 per cent, respectively. The pre-

Table 5. The reported prevalences of intestinal protozoa among residents in Kyungpook Province, Korea

Source	No. tested	Total positive rate(%)	E. h	E. c	I. b	E. n	G. l	Location	Group tested
Nishimura (1943)	303	—	9.9	24.1	4.0	—	6.6	Taegu & Yeongcheon	Residents
Lee (1970)	549	28.4	3.6	24.0	—	5.5	1.5	Seonsan & Wiseong	Residents
Choi et al. (1971)	5,288	35.7	11.9	15.3	0.5	7.3	0.4	Taegu	Paitents*
Kim et al. (1971)	203	47.3	9.9	28.1	1.0	11.8	6.4	Kyungsan	Residents
Lee (1979)	860	—	45.5	7.3	1.5	2.4	—	Taegu	Patients
Choi & Hwang (1980)	731	—	26.9	4.8	1.1	1.4	—	Taegu & Yeongduck	School children
Kwon & Choi (1983)	2,083	—	54.6	8.4	0.8	1.2	—	Taegu	Patients
Ha & Joo (1987)	819	8.8	5.4	2.2	0.4	2.3	1.9	Ulchin	Residents
Kim & Joo (1988)	2,381	—	4.2	0.5	0.9	1.5	0.5	Taegu	Residents
Kim et al. (1988)	2,500	—	3.5	0.8	1.4	4.8	—	Taegu	School children
Authors (1991)	1,062	7.4	3.1	0.8	0.2	3.5	0.2	Kolyung	Residents

* Patients: In-and outpatients in Kyungpook National University hospital.
E. h: *Entameba histolytica* E. c: *Entameba coli*
I. b: *Iodameba bütschlii* E. n: *Endolimax nana*
G. l: *Giardia lambria*

valence of *G. lambria* in this study is very similar to Choi et al.(1971) and Kim and Joo(1988).

In the studies on *C. sinensis* among the residents in Kyungpook Province, there have been many investigations since the establishment of the first "Five-year Economic Development Plan" in 1962 (Shin, 1964; Seo et al., 1969; Kim et al., 1971; Joo and Choi, 1974; Choi, 1978; Joo, 1984; Joo and Baik, 1986; Ha and Joo, 1987; Kim et al., 1988; Joo and Hong, 1991). As a result, the prevalence of *C. sinensis* among the residents in Kyungpook Province were found to be high, ranging from 0.4 per cent in Ulreoung county(island) to 41.9 per cent in Wiseong county. In addition, it has been demonstrated that approximately 10 piscine species belonging to families Cyprinidae and Bagridae play an important role in transmitting the liver fluke in the Province.

The prevalence of *C. sinensis* among the residents in Kolyung county was relatively high. The infection rate of liver fluke in 1,062 residents was found to be 17.5 per cent, and there was a significant difference in the rate of infection between males and females. The former was 21.3 per cent and the latter 13.4 per cent. The higher prevalence in males than in females suggest that it is probably related to some differences in the oportunities of eating raw or uncooked fresh-water fish and to social customs. In practice, Korean people have a tradition of eating raw fresh-water fish, soaked simply in vinegar or red-pepper mash, as an appetizer when drinking rice-wine and/or distilled spirits when participating in such meetings, Males therefore have more chance

Table 6. the reported prevalences of intestinal helminths among residents in Kyungpook Province

Source	No. exam.	Total positive rate(%)	A. l	T. t	H. w	T. o	C. s	M. y	T. s	Method	Group tested
Matsumoto (1951)	351	–	77.9	82.8	29.2	–	18.6	–	3.8	MGL	School children
Nishimura (1943)	341	62.2	33.7	45.7	10.3	5.6	3.5	1.2	0.6	Direct smear	School children
Lee et al. (1960)	4,249	–	83.8	43.9	21.4	20.9	8.6	1.2	0.4	MGL*	School children
	1,269	–	81.1	46.8	22.6	37.9	2.2	0.3	0.3	MGL	Middle school student
	498	–	86.3	46.4	30.3	36.1	22.1	0.8	–	MGL	Residents
Yun et al. (1968)	1,370	81.2	40.9	65.9	9.2	35.0	2.2	–	1.1	MGL	Residents & School children
Seo et al. (1969)	6,796	91.2	60.6	74.9	6.6	9.3	6.6	0.6	0.5	Kato's method**	Residents & soldiers
Choi et al. (1971)	5,288	86.7	40.9	83.6	22.4	61.6	29.8	0.2	0.6	MGL	Patients***
Kim et al. (1971)	203	80.3	43.3	55.2	5.4	26.6	11.3	–	0.5	MGL et al.	Residents
Choi et al. (1973)	763	–	59.9	75.2	23.8	31.8	3.1	–	–	MGL	School children
Choi & Kim (1981)	239	64.4	23.4	54.0	0.8	2.5	4.2	12.6	–	MGL	School children
Joo (1984)	1,697	27.9	6.4	13.2	0.4	0.7	3.5	1.1	0.6	MGL	Residents
Joo & Baik (1986)	2,377	43.9	13.8	18.4	1.5	0.4	5.0	0.9	1.0	MGL	Residents
Ha & Joo (1987)	819	28.4	12.1	21.9	0.4	0.6	0.7	1.1	0.2	MGL	Residents
Kim et al. (1988)	2,500	2.2	0.2	1.4	–	0.1	1.2	0.4	0.1	MGL	School children
Kim et al. (1990)	598	23.4	0.3	1.7	–	–	21.6	0.6	–	Kato's method	Residents
Authors (1991)	1,062	18.7	0.2	0.5	–	–	17.5	5.6	0.1	MGL	Residents

* MGL: Formalin-ether sedimentation technique
** Kato's method: Cellophane thick smear method
*** Patients: In-and out patients in Kyungpook National University hospital
No. exam: No. examined
A. l: *Ascaris lumbricoides*
H. w: Hookworm
C. s: *Clonorchis sinensis*
T. s: *Taenia* species
T. t: *Trichuris trichiura*
T. o: *Trichostrongylus orientalis*
M. y: *Metagonimus yokogawai*

of risking infcetion than do females.

As for the age-specific rate, the prevalence of *C. sinensis* increased in the higher age groups, those between 50—59 years in males and 60 or more age group in females showing the highest infection rates of 52.5 per cent and 43. 5 per cent, respectively.

As for the degree of infection, approximately 85.0 per cent of the 153 residents with clonorchiasis belonged to the light infection group, and had less than 5,000 eggs per gram of feces, 10.5 per cent to the moderate infection group and only 7 cases or 4.6 per cent to the heavy infection group.

As also indicated by Joo and Hong(1991), it was shown in this study that the infection rate and intensity of *C. sinensis* among the residents was found to be higher among older age groups. It is suggested that such an increase was considered to be caused by the successive new infection and long survival of the parasites in human bodies.

M. yokogawai was one of the known pathogenic intestinal flukes in Korea. Nishimura(1943) reported that the prevalence of *M. yokogawai* among the residents in Yeongcheon area was found to be 1.2 per cent. Chung and Choi(1979) in a study on metagonimiasis in Yeongduck area, Kyungpook Province reported that the infection rate for the fluke was found to be 18.8 per cent, and stressed that the high infection rates for *M. yokogawai* in the children were possible features in determining the foci and influencing spread of metagonimiasis.

Choi and Kim(1981) reported a high prevalence of 12.6 per cent in Weolseong county, and claimed that an endemic foci of *M. yokogawai* exists in the vicinity of the Taechong river. Recently, Joo and Baik(1986) in a comprehensive survey in several counties of Kyungpook Province reported that the overall infection rate of this fluke was 0.9 per cent in a total of 2,377 residents examined. They reached the conclusion that the difference in infection rates by locations was related to the opportunity and amount of eating of raw fresh-water fish and brackish-water fish, especially the sweetfish by the residents in the respective areas.

In this study, *M. yokogawai* infections were found in 60 cases, with prevalence of 5.6 per cent. The sex-specific rate for this fluke, with the prevalence significantly higher in males than in females, is in agreement with previous findings(Chung and Choi, 1979; Kim and Choi, 1981; Joo and Park, 1982).

The overall positive rate of intestinal helminths in this study, 18.7 per cent of total individuals examined, is a marked decrease from those reported in similar surveys in this Province(Yun et al., 1968; Seo et al., 1969; Choi et al., 1971; Joo, 1984; Joo and Baik, 1986; Kim et al., 1990).

From the data presented in Table 6, it may be possible to know yearly change in the prevalences of soil-transmitted helminths in general although the differences in localities surveyed, subjects examined, and reliability of the methods applied should be considered. As shown in Table 6, the prevalences of *A. lumbricoides, T. trichiura,* and hookworm in 1915 are presented as an average of 77.9 per cent, 82. 8 per cent and 29.2 per cent, and then the rates decreased to 33.7 per cent, 45.7 per cent and 10.3 per cent in 1943, respectively. However, it increased suddenly to more than 80 per cent, 46.8 per cent and 22.6 per cent in 1960. Such a marked increase of *A. lumbricoides* infection alerted the attention of the Korean government and control against this helminthic disease, based on the findings obtained from active studies on control and mass treatment was intensively conducted. This operation resulted in a gradual decrease in the prevalence of this parasites and in 1990 it decreased to 0.2 per cent.

As to the change of the prevalences of *A. lumbricoides, T. trichiura,* Hookworm, and *Trichostrongylus* species in Kyungpook Province, it is clearly indicated that in this Province the high prevalences during the years 1960—1979 dramatically decreased to those in 1990.

Summary

In order to estimate the recent patterns of intestinal parasite infections among the residents in Kolyung county, Korea, a survey based on discovery of protozoan cysts and helminthic eggs by forma-

lin-ether sedimentation technique and Lugol's iodine stain were carried out during the period from August, 1991 to June, 1992.

Among the specimens examined, one or more species of intestinal parasites were found in 246, revealing an overall positive rate of 23.2 per cent.

Of them, *C. sinensis* was found most frequently in 17.5 per cent, followed by *M. yokogawai* in 5.6 per cent. *Taenia* species was the least prevalent.

The sex-specific rate of *E. histolytica, E. coli* and *T. trichiura* was a little higher in females than in males, while in cases of *C. sinensis, M. yokogawai, Taenia* species and *G. lambria,* the infection rates in males were higher than in females.

E. histolytica was most prevalent in the 30−39 year age group and showed the same prevalences in males and females of all age groups, *C. sinensis* infection rates increased with age.

Single infection was 63.4 per cent of all positive cases. Of the double infections, the percentage of *C. sinensis* in combination with other parasites was higher than that of *M. yokogawai.*

The findings indicate that although the infection rates of intestinal parasites among the residents in Kolyung county are still high, eradication of these parasitic diseases seems to be possible with extensive public health education and improvement of dietary life, in combination with administration of specific drugs.

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=國文抄錄=

경북 고령군 주민들에 있어서 장내 기생충의 최근 감염상

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경북 고령군 주민들에 있어서 장내 기생 원충류와 윤충류 감염상을 알아보기위해 1991년 8월부터 1992년 3월까지 고령군내 3개면 주민을 조사대상으로 선정하여 formalin-ether집란법과 Lugol iodine 염색법으로 원충류 포낭과 윤충류란을 조사하였다. 총피검자 1,062명 중 장내 윤충류 감염율은 18.7%였으며, 원충류 감염율을 7.4%였다. 윤충류 가운데 간흡충이 17.5%로 가장 높았고, 그 다음은 5.6%를 나타내는 요코가와흡충이었으며, 촌충은 0.1%로 가장 낮았다. 원충류 가운데 왜소 아메바의 감염율은 3.5%로 가장 높았고, 그 다음은 이질아메바, 대장아메바 순이었으며, 그 율은 각각 3.1%, 0.8%였다.

성별 감염율에 있어서는 이질아메바, 대장아메바 및 편충의 경우에는 여자가 남자에 비해 그 율이 약간 높았으나, 간흡충, 요코가와흡충, 촌충, 람블편모충의 경우에는 남자가 여자보다 그 율이 높았다.

연령군별 감염율에 있어서 이질아메바는 30-39세군에서 남자 10.8%, 여자 11.9%로 가장 높았으며, 남녀 모두 0-9세군에서는 전혀 검출할 수 없었다. 간흡충은 50-59세군에서 가장 높았으며, 요코가와흡충도 간흡충과 비슷한 양상을 나타내었다. 혼합 기생상에 있어서는 1종 기생이 가장 많았고, 다음은 2종의 중복 기생이었으며, 3종의 혼합기생은 0.6%로 매우 적었다.

이상의 성적으로 미루어보아 경북 고령군 주민들에 있어서 장내 기생 원충류와 윤충류의 감염은 아직은 고율임을 알 수 있었다.