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☐ **Brief Communication** ☐

Intestinal parasite infections at an institution for the handicapped in Korea

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Abstract: Stool and cellotape anal swab examinations were carried out in August 1997 on handicapped people at an institution located in Chorwon-gun, Kangwon-do, Korea. A total of 112 stool samples (78 males and 34 females) revealed three cases of *Trichuris trichiura* infection and one case of *Enterobius vermicularis* infection. Other helminth eggs were not detected. The overall prevalence rate was 35.7% (38.5% for males and 29.4% for females). More than two different kinds of parasites were found in 42.0% of the positive stool samples (17 cases). The infection rates for protozoan cysts are as follow: *Entamoeba coli* (25.0%), *E. histolytica* (1.8%), *Endolimax nana* (21.4%), *Iodoamoeba bütschlii* (1.8%) and *Giardia lamblia* (0.9%). In cellotape anal swab examinations (165 samples), the prevalence rate of *E. vermicularis* was 20.6% (25.7% of males and 9.6% of females). In conclusion, the handicapped people in the institution showed higher infection rates of protozoan parasites and *E. vermicularis*, possibly due to more accessibility to the infection.

Key words: *Enterobius vermicularis*, epidemiology, infection rate, intestinal parasite, intestinal parasitic protozoa, Korea

In August 1997, we carried out stool and cellotape anal swab examination on the handicapped people of an institution in Chorwon-gun, Kangwon-do, Korea. Formalin-ether sedimentation technique for 112 stool specimens revealed intestinal helminth eggs of *Enterobius vermicularis*, *Trichuris trichiura*, and protozoan cysts of *Entamoeba coli*, *E. histolytica*, *Endolimax nana*, *Iodoamoeba bütschlii*, and *Giardia lamblia*, respectively. The infection rates of intestinal helminths and protozoan cysts are summarized in Table 1. The overall infection rate was 35.7% (40 out of 112 subjects; 38.5% in males and 29.4% in females). Two or more different kinds of parasites were found in 17 positive stool samples. Fourteen specimens were positive for two kinds of parasites and three specimens were positive for three different parasites. Examination of the intestinal helminths and protozoan parasites revealed the highest positive rate as 25.0% for *Entamoeba coli* cysts, followed by 21.4% for *Endolimax nana*, 2.7% for *Trichuris trichiura*, 1.8% for *Entamoeba histolytica*, 1.8% for *Iodoamoeba bütschlii* and 0.9% for both *Enterobius vermicularis* and *Giardia lamblia*. It was interesting to compare these results with a previous study done by Hong (1994) in which the positive rate of protozoan cyst was reported as 3.0% among 23,165 general Korean population. In addition, Schupf et al. (1995) described that the prevalence of

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Table 1. Prevalence rates of intestinal helminths and protozoa by formalin-ether sedimentation technique among 112 handicapped people at an institution in Chorwon-gun, Kangwon-do, Korea in 1997

Parasites	Prevalence rate (%)		
	Male	Female	Total
No. examined	78	34	112
No. parasite infected[a)]	30 (38.5)	10 (29.4)	40 (35.7)
Enterobius vermicularis	1	—	1 (0.9)
Trichuris trichiura	2	1	3 (2.7)
Entamoeba coli	18	10	28 (25.0)
Entamoeba histolytica	2	—	2 (1.8)
Endolimax nana	19	5	24 (21.4)
Iodoamoeba bütschlii	2	—	2 (1.8)
Giardia lamblia	1	—	1 (0.9)

[a)]Multiple infection case counts as one.

Table 2. Egg positive rates of *Enterobius vermicularis* by age and sex of handicapped people at an institution in Chorwon-gun, Kangwon-do, Korea

Age group (yrs)	No. of examination			Egg positive rate[a)] (%)		
	Male	Female	Total	Male	Female	Total
0-9	4	2	6	0 (0.0)	0 (0.0)	0 (0.0)
10-19	27	11	38	8 (29.6)	1 (9.1)	9 (23.7)
20-29	74	38	112	20 (27.0)	4 (10.5)	24 (21.4)
30-39	7	0	7	1 (14.3)	0 (0.0)	1 (14.3)
40-49	1	0	1	0 (0.0)	0 (0.0)	0 (0.0)
50-59	0	1	1	0 (0.0)	0 (0.0)	0 (0.0)
Total	113	52	165	29 (25.7)	5 (9.6)	34 (20.6)

[a)]Cellotape anal swab technique

intestinal parasite infections for institutionalized residents with severe mental retardation was much higher than that of people with mild mental retardation or that of the normal population.

The results of *Enterobius vermicularis* examination by cellotape anal swabs are presented in Table 2. After screening of 165 subjects, the infection rate of *E. vermicularis* was estimated at 20.6% (34 cases), comprising 29 male cases (25.7%) and 5 female cases (9.6%). The higher rates were observed mainly in their teens (23.7%) and in their twenties (21.4%). Considering that the presented data is the result of a single examination of cellotape anal swab, the positive rate could be higher if multiple examinations were performed. Previous studies reported that the rate of infection for children in orphanages and kindergartens were higher than those of children staying at home (Cho and Kang 1975; Kim et al., 1991). Oothuman et al. (1992) also described the prevalence rate of *E. vemicularis* in Malaysia as 9.2% among adults (aged 18-35) living in hostels on campus, which the rate was higher when compared to 1% of the medical students (aged 20-22). Thus, higher *E. vemicularis* infection of adults in these institutions may be attributed to a poor hygiene consciousness of the residents. Most surveys performed in Korea have described the prevalence rates of *E. vermicularis* for children under 10 years old (Park et al., 1974; Ryang, 1975; Chai et al., 1976), except the report of 822 ROK army soldiers showing a 19.8% infection rate (Im et al., 1972) and a study on

teenagers (1.4%) and a group of people in their twenties (0.2% infection rate) (The Ministry of Health and Welfare, Korea Association of Health Republic of Korea, 1997). In this study, the prevalence of *E. vemicularis* in handicapped subjects in an institution was higher than those reported in similar age groups in Korea and appeared to be the highest prevalence reported in adults to date.

In conclusion, the handicapped people in the institution showed higher infection rates of protozoan parasites and *E. vermicularis*, possibly due to more accessibility to the infection.

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