

Prevalence Of Intestinal Parasites Among The Local People In Lum Pra Due Village, Nakornratchasrima, Thailand Without Previous History Of Anthelmintic Drug Distribution

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Abstract

A survey of prevalence of intestinal parasites among the local population of Lum Pra Due village in the Nakorn Ratchasrima province was performed during the year of 2000. The setting is a community in the endemic area of trematode infection without the recent previous history of anthelmintic drug distribution. Stool examination from 153 villagers (63 males and 90 females) was performed. The infection rate was 68 % (104 cases). The rate of infection in male (72 %) was higher than in female (62 %). Most of the infected cases (88 %) were in the age group 41 - 60 years. Single *Opisthorchis viverrini* infection was found in 7 cases. Combined infection of *Opisthorchis viverrini* with other non-fluke intestinal parasite was found in 44 cases. Combined infection of minute intestinal fluke with other non-fluke intestinal parasite was found in 85 cases. There were also 5 infected cases, but without fluke, with non-fluke parasite. Therefore, trematode infection is still a major health problem for this community.

INTRODUCTION

People in rural areas of Thailand have difficulty accessing good health care and basic health education. Subsequently, some preventable diseases such as parasitic infections are still prevalent in many remote areas of Thailand^{1,2,3,4}.

Among pathogenic parasitic infections in northeastern region of Thailand, liver fluke infection is disease with the highest prevalence. The Ministry of Public Health has set a number of control programs since 1984. However, the coverage of these programs to the far rural area is limited.

Here, we report a survey of prevalence of intestinal parasites among the local population of Lum Pra Due village in the Nakorn Ratchasrima province. The setting is a community in the endemic area of trematode infection without the recent previous history of anthelmintic drug distribution. Stool examinations were performed as indicators of the basic health status of the people in this rural area.

MATERIALS AND METHODS

STUDY AREA AND PARTICIPANTS

All 153 villagers living in Lum Pra Due village, Huay

Thalaeng District, Nakorn Ratchasrima province, were recruited into the study. The study area is the endemic area of parasitic diseases, especially the fluke diseases. Its location is about 300 km from Bangkok, capital of Thailand. This survey was performed during May 2000. In cooperation with local health workers, we dealt directly with the community leaders who assisted us in maximizing community participation and compliance. The people in this area were willing to participate in the study. Verbal informed consent was obtained from each individual before the study.

STOOL EXAMINATIONS

Stool specimens were obtained from all participants and examined for the presence of intestinal parasite eggs or larvae as previously described (Triteeraprapab et al, 1997; Triteeraprapab et al, 1998; Triteeraprapab et al, 1999). About ten grams of each stool specimen were collected. Stool examination was performed microscopically using a direct smear technique at the camp by the medical technologists.

The rest of samples were fixed in formalin before further processed by using a formalin-ether concentration technique,

and then examined under microscope at the Veterinarian Parasitology Laboratory, Faculty of Veterinarian Science, Chulalongkorn University for confirmed of diagnosis.

DATA ANALYSIS

All data were statistically analysed by the Microsoft Excel 6.0 programs.

RESULTS

CHARACTERISTICS OF STUDY POPULATION

Cartons were provided to 153 individuals residing in Lum Pra Due village, Huay Thalaeng District, Nakorn Ratchasima Province, at the time of our visit. All individuals returned their stool samples the next day. Of the 153 individuals examined for intestinal parasites, 63 were males and 90 were females. The demographic data of all subjects were presented in Table 1.

Figure 1

Table 1: Demographic data and relative prevalence of parasitism.

| Parameter | Total number of subjects | Infected subject (relative percentage) |
|-----------------|--------------------------|--|
| Age group | | |
| □ 1 - 20 years | 50 | 24 (48 %) |
| □ 21 - 40 years | 43 | 31 (72 %) |
| □ 41 - 60 years | 50 | 44 (88 %) |
| □ > 60 years | 10 | 5 (50 %) |
| Education | | |
| □ < grade 4 | 115 | 77 (74 %) |
| □ grade 6 | 12 | 16 (15 %) |
| □ grade 9 | 11 | 6 (6 %) |
| □ grade 12 | 3 | 3 (3 %) |
| □ > grade 12 | 2 | 2 (2 %) |
| Sex | | |
| □ male | 63 | 39 (62 %) |
| □ female | 90 | 65 (72 %) |
| Occupation | | |
| □ farmer | 100 | 79 (76 %) |
| □ merchant | 3 | 1 (0.1 %) |
| □ other | 50 | 24 (23.9 %) |

PARASITISM IN THE STUDIED POPULATION

Intestinal parasites were recovered in 104 individuals (Table 1,2), giving the infection rate was 68 %. The rate of infection in male (72 %) was higher than in female (62 %). Most of the infected cases (88 %) were in the age group 41 - 60 years. Single *Opisthorchis viverrini* infection was found in 7

cases. Combined infection of *Opisthorchis viverrini* with other non-fluke intestinal parasite was found in 44 cases. Combined infection of minute intestinal fluke with other non-fluke intestinal parasite was found in 85 cases. There were also 5 infected cases with non-fluke parasite.

Figure 2

Table 2: Prevalence of intestinal parasite infection in our study.

| Types | Total number of infected cases | Infection rate (%) |
|---|--------------------------------|--------------------|
| 1. Single <i>Opisthorchis viverrini</i> | 7 | 4.6 |
| 2. <i>Opisthorchis viverrini</i> with other parasites * | 44 | 28.8 |
| 3. minute intestinal fluke with other parasites ** | 85 | 55.6 |
| 4. non fluke parasites *** | 5 | 3.3 |

* combined with hookworm, *Enterobius viverrini*, *Ascaris lumbricoides*, *Fasciolopsis buski*
 ** combined with hookworm, *Enterobius viverrini*, *Ascaris lumbricoides*, *Fasciolopsis buski*
 *** hookworm, *Enterobius viverrini* and *Taenia spp*

DISCUSSION

Parasitic infections affect people in most developing countries worldwide.

For Thailand, parasitic helminths affect more than 35 % of the population₁. The prevalence rates of intestinal parasitic infections vary from one area to another depending on the degree of personal and community hygiene, and other sanitation and climatic factors₅.

In order to access the parasitic infection status of a population in a village in the endemic area of parasitic disease, in Northeastern of Thailand, without previous history of drug distribution due to the fluke control program, we performed stool examinations. We found that upto 68 % of the studied population harbored parasites. This number was 2 times higher than the national average (35 %) according to the national epidemiological survey of 1996₁. Concerning to our study, the infection rates of minute intestinal fluke (55.6 %) and *Opisthorchis viverrini* (33.4 %) were very high. These rates were similar to the report before the control program in 1984, which presented the infection rate up to 78.7 %. However, the rate from the survey after the control program reduced to 22.01 %₆. Therefore, without the control program, trematode infection is still a major health problem for this community.

Furthermore, in comparison to the previous reports from the remote areas, also without control program for intestinal parasites, of Tak and Khon Kaen Provinces_{2,3} have 46 % and 34 % of their populations carrying at least one parasite,

respectively. Obviously, the health intervention program for intestinal parasitic infection control in the remote area is necessary.

Concerning the relation of age group and parasitic infection, our study revealed the high infection rate in age group 41 - 60 years. This result confirmed previous studies, which mentioned the high infection in adult and lower rate in children^{7,8}. Our result showed slightly higher infection among female. However, the sex predominant for parasite infection is still not confirmed. Some reported higher rate in male⁹, the others reported similar rate in both sexes^{7,8}. The infection may relate to the daily activity of the surveyed subjects than sex.

Parasitic diseases are still diseases of the poor though the diagnosis and treatment for most of them are not difficult. The common consequences of parasitic infections have been shown to affect nutritional status, physical development, mental function, verbal ability and inhibition-control aspects of cognitive behavior in children^{10,11,12,13} (Tripathy et al, 1971; Tripathy et al, 1972; Nokes et al, 1992; Nokes et al, 1994). However, the morbidity from parasitic infections in mild but chronic. Previous studies have shown that parasitic diseases are still a public health problem (Triteeraprapab et al, 1997; Triteeraprapab et al, 1998; Triteeraprapab et al, 1999). Data from this study suggests that annual health education and control program for the far community as this community is still needed. Active strategies to find and reach those far rural villages with low occasion are recommended.

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