

High Prevalence Of Hookworm Infection Among “Phu Tai” Tribers In An Endemic Area Of Liver Fluke Infection, Northeastern Thailand

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Citation

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Abstract

Parasitic infections affect people in most developing countries worldwide. In Thailand, the people in rural areas have difficulty accessing good health care and basic health education, resulting in high prevalence of some preventable diseases especially for parasite infections(1, 2). The Northeastern Region of Thailand is a known area with high rate of parasitic infection in Asia, where the world highest rate of liver fluke infection has been reported.

Here, we reported a high prevalence of hookworm infection among a group of ethnic tribers “Phu Tai” in the Northeastern Region of Thailand. Some interesting notes on the difference of culture and the difference of the prevalence of parasitic infections are demonstrated. Nevertheless, our findings can be a good data starting point for further field works regarding parasitic infection control in this area.

INTRODUCTION

The mass chemotherapy with praziquantel has been performed in this area for years. Historically, praziquantel was used in a pilot study in the Khon Kaen province by the Faculty of Tropical Medicine, Mahidol University in co-operation with the MOPH. The message that a drug was used against OV but not yet on the market caused thousands of individuals from the Northeast to look for treatment in Bangkok which then forced the MOPH to establish, for the time being, treatment centers in the northeastern region. First supported by the German Agency of Technical Co-operation (GTZ); finally, it is now entirely financed by Thai governmental funds, from a region where a control program was undertaken and included into the National Plans (3, 4).

Here, we reported a high prevalence of hookworm infection among a group of ethnic tribers “Phu Tai” in the Northeastern Region of Thailand. Some interesting notes on the difference of culture and the difference of the prevalence of parasitic infections are demonstrated. Nevertheless, our findings can be a good data starting point for further field works regarding parasitic infection control in this area.

MATERIALS AND METHODS

STUDY PARTICIPANTS

The setting was the Guan Boon Village, Tao Nhoi District, Sakonnakorn Province, where 57 (23 males and 34 females) villagers were recruited to participate in the study. The study area was an endemic area for parasitic diseases, especially fluke diseases. This village is located approximately 600 km from Bangkok, the capital of Thailand. This survey was performed during April, 2001. In cooperation with local health workers, we worked 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. All 57 villagers were stratified samples from each house in the village who were recruited to join this study. This number of subjects participating in the study is equal to 20 % of the total village population.

STOOL EXAMINATIONS FOR FLUKE PARASITE

Stool specimens were obtained from all participants and examined for the presence of intestinal parasitic eggs or larvae by the standard method (5) used in previous field studies (1, 2). About ten grams of each stool specimen were collected. Stool examination was performed microscopically

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using a direct smear technique by the medical technologists at the camp. The stool samples were also examined using the concentration technique as a confirmation test at the Faculty of Allied Health Sciences.

DATA ANALYSIS

All data were statistically analyzed using the Microsoft Excel 6.0 program. Descriptive statistical analysis as percentage was used in this study. The comparison between the proportion was performed based on Z proportional test at a statistical significant level of $p = 0.05$.

RESULTS

Cartons were provided to 57 individuals (23 males and 34 females) residing in Guan Boon Village at the onset of the survey. All individuals returned their stool samples the next day. The parasite infection rate was 29.8 % (17 cases; Table 1). There were fourteen cases of non mixed infections and three cases of mixed infections. The most common parasite in this village was hookworm. In cases where infections were detected, the villagers were advised to get antihelminthic drugs of choice from the local hospital.

Figure 1

Table 1: Prevalence of intestinal parasite infection in this study.

| Types | Total number of infected cases | Infection rate (%) |
|---|--------------------------------|--------------------|
| Hookworm infection | 14 | 24.6 |
| <i>Opisthorchis viverrini</i> infection | 2 | 3.6 |
| <i>Fasciolopsis buski</i> infection | 2 | 3.6 |
| <i>Strongyloides</i> spp infection | 1 | 1.8 |
| <i>Taenia</i> spp infection | 1 | 1.8 |

* There were 3 cases with mixed infections: (1) Hookworm and *Opisthorchis viverrini* infection, (2) Hookworm and *Fasciolopsis buski* infection, and (3) hookworm and *Taenia* spp infection.

DISCUSSION

Despite a decade of disease control and a competent network of country-wide health infrastructure, parasitic infection remains an important health threat in rural Thailand (3, 4). Apart from the general rural population, the minority of the ethnic tribers can be considered as an underprivileged group for primary health care services. Here, we performed a small-scale survey in a sample of Phu Tai tribers, an ethnic population in the Northeastern Region of Thailand. The study population is a minority group, originally from the Plain of Jars in northern Laos. They were forced to come to Thailand after losing the war over a century ago. The Phu Tai Tribe offers an interesting case study regarding their specific ancient customs and traditions.

The purpose of this study is to examine the prevalence of the

intestinal parasitic infection among a sample of Phu Tai tribers in a Phu Tai village. Of interest, we demonstrated a high prevalence of intestinal parasitic infections five times higher than the findings from a recent study among the general Thais (6).

Of interest, similar low prevalence of liver fluke infection was observed from the recent study findings among the local villagers in the nearby setting, or adjacent community (7). However, unlike that previous study, a predominance of hookworm infection was observed in this village (Proportional Z test, $P < 0.05$; Table 2). Although both setting are under the same liver fluke control program, a difference in infestation could be observed. Concerning the difference in behavioral traditions, we observed that the Phu Tai tribers, as a tradition, do not wear shoes and defecate in the bush. We also found that up to 30.9 % of subjects still practice those same tradition (7).

Figure 2

Table 2: Intestinal parasites (current vs. adjacent villages)

| Intestinal parasite infection | Relative frequencies of intestinal parasite infection (%) | | P value |
|-------------------------------|---|--------------------------|------------|
| | Present study (n = 57) | Previous study* (n = 56) | |
| With hookworm infection | 14 | 0 | $P < 0.05$ |
| With liver fluke infection | 2 | 0 | $P > 0.05$ |
| With other parasite infection | 4 | 7 | $P > 0.05$ |

* previous study among the general Thai population in the adjacent setting (7)

Indeed, promoting toilet usage, not eating raw fish and dispensing Praziquantel could serve as a critical intervention strategy to prevent Thai liver fluke (4, 5). The deep - rooted traditions of the population still exist. The success of the liver fluke control might depend mainly on the effective administration of praziquantel. In our setting, as a clinical challenge, sometimes the infecting organism, hookworm, may not be sensitive to praziquantel. Therefore, emphasis should not only be put on liver fluke control but the overall control of intestinal parasites using the fight against liver fluke as an entry point to gain access to those affected communities. Lastly, planning, monitoring and supervision of such programs must be considered a paramount concern.

References

1. Tritreerapapab S, Jongwutiswes S, Chanthachum N. The prevalence rates of human intestinal parasites in Mae-la-moong. Umphang District, Tak Province, a rural area of Thailand. Chula Med J 1997; 41: 649-58
2. Tritreerapapab S, Nuchprayoon I. Eosinophilia, anemia, and parasitism in a rural region of Northwest Thailand. Southeast Asian J Trop Med Public Health 1998; 29: 584-90

High Prevalence Of Hookworm Infection Among "Phu Tai" Tribers In An Endemic Area Of Liver Fluke Infection, Northeastern Thailand

3. Jongsuksuntigul P, Imsomboon T. Epidemiology of opisthorchiasis and national control program in Thailand. *Southeast Asian J Trop Med Public Health* 1998;29:327-32
4. Jongsuksuntigul P, Imsomboon T. The impact of a decade long opisthorchiasis control program in northeastern Thailand. *Southeast Asian J Trop Med Public Health* 1997;28:551-7
5. NCCLS. Procedures for the recovery and identification of parasites from the intestinal tract, Approved Guideline, M28-A, National Committee for Clinical Laboratory Standards, Villanova, PA, 1997
6. Moji K
ACIPAC JICA Short term expert report. Asian Centre of International Parasite Control. JICA Short term expert report 2002; 1:1
7. Wiwanitkit V, Chunhaparn P , Suwansaksri J. Prevalence of intestinal parasite and self-prevention behavior of the villagers in a rural village after opisthoschis viverrini control program, Mahasarakham Province, Thailand. Presented at the Joint International Tropical Medicine Meeting 2001, Bangkok Thailand, during August 6 - 8, 2001
8. Wiwanitkit V, Suwansaksri J , Nithiuthai S. Prevalence of intestinal parasite among the local people in a village without previous history of antihelminthic drug distribution, Lum Pra Due Village, Nakornratchasima, Thailand. Presented at the Joint International Tropical Medicine Meeting 2001, Bangkok Thailand, during August 6 - 8, 2001
9. Tritteeraprapab S, Akraovorn P, Promtorng J, Chuenta K. High prevalence of hookworm infection in a population of Northeastern Thailand after an opisthorchiasis control program. *Chula Med J* 1999; 43: 99-108

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