PARASITIC INFECTIONS IN THAI WORKERS THAT PURSUE OVERSEAS EMPLOYMENT: THE NEED FOR A SCREENING PROGRAM

Wilai Saksirisampant[1],Viroj Wiwanitkit[2], Penkae Akrabovorn[1] and Surang Nuchprayoon[1]

[1]Department of Parasitology, Faculty of Medicine, Chulalongkorn University;
[2]Department of Laboratory Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Abstract. Stool examination is a requirement of the screening program for Thai workers seeking overseas employment. We report on the prevalence of intestinal parasitic infections among these workers; the stool examination results of 2,213 Thai workers who visited the Out-patients Department of the King Chulalongkorn Memorial Hospital between September 2000 and January 2001 were analysed. One hundred and thirty-five (6.1 %) were found to be infected with 1 or 2 species of parasite. There were 54 (40 %), 47 (34.8 %), and 25 (18.5 %) cases infected with nematodes, platyhelminths and protozoa, respectively. The commonest parasite was *Opisthorchis viverrini* (28.9%). Most nematode infections were due to *Strongyloides stercoralis* (19.2%); most protozoal infections were due to *Giardia lamblia* (17.0%). Mixed infections were found in 9 cases. Not unexpectedly, the rate of intestinal parasitic infection among Thai workers remains high. Screening for the parasitic infections among these workers can help to decrease their rate of rejection by the countries in which overseas employment is sought.

INTRODUCTION

Alien workers have been attracted to developed countries for many years; this occupational migration is due, in part, to economic crises and population trends. As the number increases year by year, so foreign workers assume ever wider roles and responsibilities. Disease prevention measures need to be strengthened (Pardo, 1995; Carmoni *et al*, 2000). Many alien workers come from Southeast Asian countries such as Indonesia, Malaysia, the Philippines, and Thailand: countries in which infectious diseases abound. Workers from these countries may import disease (Greenberg *et al*, 1994; Lo and Lee, 1996; Wang, 1998; Cheng and Shieh, 2000).

The guidelines of many countries on the management of alien workers stipulate that each is required to have a health examination before immigration. Screening programs offered to these workers prior to departure are very important. The Thai screening examination comprises: a general physical examination (including mental health), chest X-ray, testing for HIV antibodies, syphilis serology, testing for hepatitis B surface antigens, a stool examination for intestinal parasites, a pregnancy test, a urine test for marijuana, morphine, and amphetamines, and a leprosy test. An entry permit is unlikely to be granted to anybody who fails any of these items. Early detection and prompt treatment are required before emigration. Failure to pass compulsory medical examinations in the country of destination is likely to result in deportation (Cheng and Shieh, 2000).

The King Chulalongkorn Memorial Hospital is the largest Red Cross Society hospital in Thailand. The hospital has a clinic that provides a screening test program for the Thai workers who want to work in developed countries.

MATERIALS AND METHODS

This study was designed as a retrospective descriptive study. Stool examination data regarding the workers in the screening between September 2000 and January 2001 were reviewed. Simple smear and the formalin-ether concentration technique were used to detect intestinal parasites. All data were recorded in tabular form. Descriptive statistical analysis was used as appropriate.

RESULTS

The stool examination data of 2,213 Thai workers were analyzed. One hundred and thirty-five (101 males and 34 females) were found to be infected with 1 or 2 species of parasite, with an overall infection rate of 6.1%. Eleven kinds of parasites were identified: *Ascaris lumbricoides*, *Trichuris trichiura*, *Strongyloides stercoralis*, *Enterobius vermicularis*, Hookworm,

Correspondence: Wilai Saksirisampant, Department of Parasitology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.
Tel : ++66 (0) 2256 4387; Fax: ++66 (0) 2252 4963
E-mail: fmedwss@md2.md.chula.ac.th

Taenia spp, *Opisthorchis viverrini*, Echinostomes, *Giardia lamblia*, *Entamoeba histolytica*, and *Sarcocystis* spp (Table 1). Classified by group, 54 (40%), 47 (34.8%) and 25 (18.5%) cases were infected with nematodes, platyhelminths, and protozoa respectively.

The commonest platyhelminths was *Opisthorchis viverrini* (39 cases). The commonest nematode was *Strongyloides stercoralis* (26 cases). Of the protozoa, the commonest was *Giardia lamblia* (23 cases). Mixed infections of parasites were found in 9 cases (6.7%) (Table 1).

DISCUSSION

In recent years, the incidence of certain parasitic infections has been rising in many developing countries. In Thailand, the rise may in part be due to the increasing rates of illegal immigration from neighboring countries; migrant workers have caused reemerging parasitic infections such as filariasis. Infection may cause a variety of unpleasant signs and symptoms, including rectal itching, abdominal pain, weight loss, malnutrition, malabsorption, fever, and diarrhea. In extreme cases, parasitic infections can be fatal. Intestinal parasites are found in industrialized as well as developing countries, although they are commoner in the latter.

Some studies have reported a high prevalence of intestinal parasites among immigrant workers, especially those from Southeast Asia. To prevent the alien workers acting as carriers of parasites many control strategies have been established. Some countries, such as Taiwan, require certification of a worker's parasite-free status prior to allowing entry (Cheng and Shieh, 2000). Furthermore, to control illegal workers who have failed the health examination, a repeat examination after entry to the country of destination is often performed. The screening program for Thai workers is, therefore, very important: early detection results in early treatment, which decreases the deportation rate.

Reports from many countries have stated the very high prevalence of parasitic infections among Thai workers (Greenberg *et al*, 1994; Lo and Lee, 1996; Wang, 1998; Cheng and Shieh, 2000). As high as 70% infection has been reported (Greenberg *et al*, 1994; Cheng and Shieh, 2000) (Table 2). It is not entirely unexpected, as this study shows, that intestinal parasitic infection among Thai workers is still found (6.1%).

Table 1
Parasites identified in 2,213 Thai workers.

Parasite	Infected workers				Total	
	Female		Male			
	No.	%	No.	%	No.	%
Nematodes					54	40
Ascaris lumbricoides	6	4.4	-	-	6	4.4
Enterobius vermicularis	5	3.7	2	1.5	7	5.1
Strongyloides stercoralis	3	2.2	23	17.0	26	19.2
Trichuris trichiura	8	5.9	6	4.4	14	10.4
Hookworm	1	0.7	-	-	1	0.7
Platyhelminths					47	34.8
Echinostomes	-	-	6	4.4	6	4.4
Opisthorchis viverrini	6	4.4	33	24.4	39	28.9
Taenia spp	-	-	2	2.2	2	2.2
Protozoa					25	18.5
Giardia lamblia	5	3.7	18	13.3	23	17
Entamoeba histolytica	-	-	1	0.7	1	0.7
Sarcocystis spp	-	-	1	0.7	1	0.7
Mixed					9	6.6
Platyhelminths +Nematodes	-	-	8	5.9	8	5.9
Protozoa + Nematodes	-	-	1	0.7	1	0.7
Total	34	25.2	101	74.8	135	6.1

Table 2
Recent reports of the prevalence of intestinal parasites among Thai workers.

Study	Setting	Infection rate (%)	Commonest parasite
Lo and Lee, 1996	Taiwan	16.6	*Opisthorchis viverrini*
Wang, 1998	Taiwan	12	*Opisthorchis viverrini*
Greenberg *et al,* 1994	Israel	74	*Opisthorchis viverrini*
Cheng and Shieh, 2000	Taiwan	64.9	*Opisthorchis viverrini*
This study	Thailand	6.1	*Opisthorchis viverrini*

Interestingly, the most common parasite identified in Thai workers was *Opisthorchis viverrini*: a finding identical to those of previous reports. (Greenberg *et al,* 1994; Lo and Lee, 1996; Wang, 1998; Cheng and Shieh, 2000). According to the annual report of parasitic infections in Thailand in the year 2000, the commonest intestinal parasitic infection is hookworm (7.16%); the second commonest is *Opisthorchis viverrini* (6.72%) (Department of Communicable Disease Control, 2000). This difference is due to the demographic distribution of the parasites. Most of the workers come from the northeast of Thailand, where opisthorchiasis is the commonest parasitic infection.

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