

on the host's nutritional status, both natural and acquired immunity may be reduced.<sup>10,11</sup>

Although data regarding the prevalence of intestinal parasitic infections in foreign laborers are available,<sup>1-5</sup> there is little information about the influence that these parasitic infections have on the health of the workers. In this study, I attempted to determine the influence of intestinal parasitic infections on 302 Thai laborers who had recently entered Taiwan. In addition, the epidemiology of their infections and results of therapy were assessed.

## MATERIALS AND METHODS

### Subjects

From June 1992 to December 1993, totally 302 Thai laborers participating in the mandatory entry health examination at Chang-Gung Memorial Hospital, Lin-Kou Medical Center were interviewed and examined. These subjects underwent a physical examination, chest roentgenography, and serological tests for human immunodeficiency virus antibody, syphilis (VDRL), and hepatitis B surface antigen.

### Parasitological Examination

From each laborer, a fresh fecal specimen was collected in a plastic container weekly for 3 consecutive weeks. Another 3 consecutive specimens were also collected after each course of antihelminthic treatment until no intestinal parasites were detected. These specimens were examined by 2 experienced research assistants for intestinal helminthic and protozoan parasites by using the formalin-ethyl acetate sedimentation technique,<sup>12</sup> including trichrome stain. The scanning of prepared slides was performed at 100-150x magnifications or 400-1000x magnifications if necessary.

### Questionnaire Survey

A questionnaire was designed to obtain demographic data as well as hygienic practices, customs, and habits concerning the acquisition of parasitic infections. The information was obtained from each laborer by an interview through a Thai-speaking interpreter. Adverse reactions following treatment of parasitic infections were also assessed by the interviewer.

### Anthropometric Measurements

At least 2 measurements of height and weight were taken for each laborer, and the average of these measurements was recorded. Body mass index (BMI,  $\text{kg}/\text{m}^2$ ) was calculated from the height and weight.

### Blood Collection

Blood samples were taken after an overnight fast. Whole blood samples were collected by venipuncture in tubes containing EDTA and examined within 3h of collection. Serum samples were stored at  $-70^\circ\text{C}$  for further analyses.

### Complete Blood Count, Differential White Blood Cell Count, Liver Function, and Serum IgE Level

Values for complete blood count, differential white blood cell count, and liver function tests were obtained by an automatic analyzer (SYMEX NE-8000, Toa Instrument Co., Japan). Serum total IgE levels were determined by enzyme-linked immunosorbent assay (Behring, Germany).

### Assessment of Nutritional Status

According to World Health Organization,<sup>13,14</sup> BMI  $< 18.7 \text{ kg}/\text{m}^2$  is considered to be undernourished and hemoglobin level  $< 13.0 \text{ gm}\%$  to be low hemoglobin. Malnutrition was further assessed by evaluating lymphocyte count ( $< 1200/\text{u}$ ) and serum albumin level ( $< 3.5 \text{ gm}/\text{dL}$ ).<sup>15</sup>

### Treatment

According to the species of parasite, pyrantel pamoate (single dose 750 mg), mebendazole (100 mg bid for 3 days), praziquantel (25 mg/kg tid for 2 days), or metronidazole (single dose of 2 g) were administered to infected laborers. Clinical manifestations before treatment and adverse effects after therapy were also recorded.

### Statistical Analyses

Data were analyzed by Chi-square test, and the association of present infection with previous history of parasitic infection was determined by McNemar Chi-square test. Continuous values were expressed as means  $\pm$  SD, and their differences in positive and negative laborers were determined by Student's *t*-test. Val-