ENTEROBIUS VERMICULARIS INFECTION AMONG PRE-SCHOOL CHILDREN IN KAREN HILLTRIBE VILLAGES IN CHIANG MAI, THAILAND

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Abstract. We surveyed Karen hilltribe villages in the Mae Chaem District of Chiang Mai Province between April and May 2001. Two hundred and forty-nine pre-school children were selected by stratified sampling from 10 villages and were examined for Enterobius vermicularis eggs by the Scotch tape perianal examination technique. One hundred and thirteen (53 boys and 60 girls) were found to have E. vermicularis eggs, giving an overall infection rate of 45.38%. We were able to determine that E. vermicularis infection is prevalent among the children of these hilltribe villages.

INTRODUCTION

Enterobius vermicularis is an important helminthic infection among children in the rural areas of developing countries (Devera et al, 1998; Fan, 1998, Lee et al, 2000). Enterobiasis is frequently asymptomatic. The commonest symptom is perianal pruritus, especially at night, which may lead to excoriation and bacterial superinfection (Finn, 1996; Grencis and Cooper, 1996). Occasionally, invasion of the female genital tract, followed by vulvovaginitis and pelvic or peritoneal granulomas occurs.

A high prevalence of enterobiasis can be found among the children of families of low socioeconomic status. This infection affects both the general health and the intellectual development of children (Bahader et al, 1995; Avolio et al, 1998). A high prevalence of enterobiasis is a feature of many developing countries and, therefore, control of this infection remains important. We report on the very high prevalence of enterobiasis among the pre-school children of hilltribes in rural in rural Thailand.

MATERIALS AND METHODS

Study area and participants
We studied Karen hilltribe villages in Mae Chaem district, Chiang Mai Province, between April, and May 2001. Two hundred and forty-nine pre-school children were selected stratified sampling from 10 villages. The province is situated some 800km from Bangkok.

RESULTS

All 249 pre-school children were examined. One hundred and thirteen (53 boys and 60 girls; age range 1-12 years old) were found to be positive for E. vermicularis eggs: an overall infection rate of 45.5% (Table 1).

DISCUSSION

In cooperation with local health workers, we dealt directly with the community leaders, who assisted us in maximizing community participation. A Thai-Karen translator was used. Verbal informed consent was obtained from each child’s parents.

Examination for enterobiasis
Specimen collection was performed by well-trained health personnel. Enterobius vermicularis eggs were collected by applying Scotch tape to the perianal region; specimens were collected at the subject’ home at between 06.00 and 08.00 hours. The specimens were sent for identification by light microscopy in the laboratory of Mae Chaem Hospital. The study was approved by the Academic Committee of the Faculty of Allied Health Science, Chulalongkorn University.
**Table 1**

*Enterobius vermicularis* infection in pre-school children.

<table>
<thead>
<tr>
<th>Pre-school children</th>
<th>No. positive (%)</th>
<th>No. negative (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>53 (47.8)</td>
<td>58 (52.2)</td>
<td>111</td>
</tr>
<tr>
<td>Female</td>
<td>60 (43.5)</td>
<td>78 (56.5)</td>
<td>138</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113 (45.5)</strong></td>
<td><strong>136 (54.6)</strong></td>
<td><strong>249</strong></td>
</tr>
</tbody>
</table>

**Table 2**

The prevalence of enterobiasis in pre-school children: a summary of recent reports.

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan (1998)</td>
<td>Taiwan</td>
<td>14.0 %</td>
</tr>
<tr>
<td>Lee <em>et al</em> (2000)</td>
<td>Tangjin-gun, Chungchongnam-do, Korea</td>
<td>14.8 %</td>
</tr>
<tr>
<td>Current study</td>
<td>Mae Chaem, Chiang Mai, Thailand</td>
<td>45.4 %</td>
</tr>
</tbody>
</table>

Infective eggs from hands, contaminated by scratching the perianal region, to the month. Person-to-person transmission can also occur through the handling of contaminated clothes or bed linen (Finn, 1996; Grencis and Cooper, 1996).

Infections are more common among school- and pre-school children and in crowded conditions. In order to control this infection, parental education, screening for infection, and the distribution of pyrantel pamoate which interrupts the worm’s life cycle, are warranted.

In this survey, we were able to determine that *E. vermicularis* is prevalent among children in hilltribe villages; the rate of infection was high (45.38 %). Although our technique, the Scotch test, has a lower sensitivity than perianal swabbing, the infection rate found in our study was greater than those found by many other researcher (Devera *et al*, 1998; Fan, 1998, Lee *et al*, 2000) (Table 2).

Enterobiasis is an important infectious disease in the environment in which our study was conducted. On the basis of our finding, we plan to launch a control program in the community which will include distribution of pyrantel pamoate and a follow-up to review its effectiveness.

**ACKNOWLEDGEMENTS**

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**REFERENCES**


