Cryptosporidium and Giardia infections among orphans in the Chiangmai Reception Home, Chiang Mai: a revisit

Narissara Suwan, B.N.S.,* Somsak Piangjai, DIP. IN. M.S.T.,* Yongyuth Muangyimpong, DIP. IN. M.S.T.,* Pisit Poolpiputana**

*Department of Parasitology, Faculty of Medicine, Chiang Mai University,
**Chiangmai Reception Home, Department of Public Welfare, Ministry of Interior, Tambol Don Keaw,
Amphoe Mae Rim, Chiang Mai, Thailand

Abstract Stool specimens were collected from sixty-seven orphans in the Chiangmai Reception Home, Chiang Mai, and examined for parasites. Four (5.9%) were positive for Cryptosporidium and twenty-four (35.8%) positive for Giardia. Chiang Mai Med Bull 1992;31: 193-196.

Introduction Infection by intestinal flagellates parasites, Giardia lamblia, can be initiated with only a few Giardia cysts. Population in areas with inadequate sanitation are at special risk and expected to have a high prevalence of giardiasis. Of particular importance to the spread of Giardia within the community are congregation of young children such as child-care centers, preschools and orphans home. Like-wise, human cryptosporidiosis is distributed world-wide and the incidence is higher in younger age groups. The previous study on the prevalence of Cryptosporidium and Giardia infections among orphans in the Home for Boys, Chiang Mai, Thailand, showed that 9.2% were positive for Cryptosporidium and 40.7% positive for Giardia. Metronidazole was given to Giardia-infected children, and adult workers in the orphanage were advised about the preventive measures. The present study was to reexamine the prevalence of Cryptosporidium and Giardia among orphans in the Chiangmai Reception
Home, Chiang Mai (formerly included in the Home for Boys). 3 years after the first visit. The results revealed that giardiasis was still prevalent and remained a problem.

Materials and Methods

Samples.

Stool specimens were collected from 67 orphans, 1 month to 12 year-of-age, in the Chiangmai Reception Home, Department of Public Welfare, Ministry of Interior, during 31 August to 16 September 1992. 2-3 specimens were collected from each subject within 1 month period and processed as described below.

Stool examination.

Direct smears were made from diarrheic specimens, fixed and stained for Cryptosporidium. Subsequently all specimens were subjected to the modified formalin-ether concentration technique(6) and two slides prepared from the sediment: one was examined for the presence of parasites or their products, the other was dried with an aid of a hair dryer, fixed and stained by a modified Ziehl-Neelsen acid fast method, and examined under the microscope for the presence of reddish oocysts of Cryptosporidium.(7)

Results

All acid-fast stained simple smear examined were negative for Cryptosporidium. By concentration method, however, 4(5.9%) were positive for Cryptosporidium oocysts and 24 (35.5%) positive for Giardia.

Table 1 summarizes the prevalence of Giardia in various age-group. It was noted that none of babies (1 month to 5 month) was infected.

Table 1 Prevalence of Giardia infection among orphans in the Chiangmai Reception Home, Chiang Mai

<table>
<thead>
<tr>
<th>Group</th>
<th>No.examined</th>
<th>No.positive(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mo - 5 mo (babies)</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>6 mo - 1 11/12 y (toddlers)</td>
<td>36</td>
<td>15 (41.6%)</td>
</tr>
<tr>
<td>2 y - 2 11/12 y **</td>
<td>12</td>
<td>5 (41.6%)</td>
</tr>
<tr>
<td>3 y - 3 11/12 y</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4 y - 4 11/12 y</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>&gt; 5 y ***</td>
<td>11</td>
<td>4 (36.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>35.8%</td>
</tr>
</tbody>
</table>

*One had Entamoeba coli. **One had E.coli and E. nana. ***One had E.coli. One had E.coli and E.nana. One had Opisthorchis eggs. And one had E.coli, E.nana and hookworm eggs.
Discussion

This study was done three years after the first survey, and the results revealed that giardiasis was still there with a high prevalence rate. An interview with the Home’s officers suggested that water and food were not vehicle of transmission since the drinking water was filtered and boiled while the food was well-cooked. The data showing that none of babies was infected supports this notion. It was possible that the transmission was fecal-oral, as the infection has been shown to be highest among toddlers in other day-care centers. Measures should be introduced to eradicate the infection.

To our surprise was that prevalence of Cryptosporidium was quite low in comparison to that of Giardia despite their similar mode of transmission. It was noted that those who were positive had only a few oocyst in a smear from concentrated stool. One of Cryptosporidium positive child was positive 3 years ago, demonstrating persistence of infection. It was possible that giardiasis is readily spread because the parasite number in a stool is very high while the number required to initiate infection in 50% of subject (ID50) has been estimated to be only about 25-100 cysts. The infectious dose of Cryptosporidium has not been reported to our knowledge.

Acknowledgments

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References

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ความชุกของ Cryptosporidium และ Giardia ในเด็กที่สถานavoritesเด็กภาคเหนือ จังหวัดเชียงใหม่

นารีร่า สุวรรณ, พ.บ.,* สมคิด เปิญใจ, พ.บ.,* ยงยุทธ ปราญมั่นพุฒิ, พ.บ.,** ประสิทธิ์ พุนพินิจ, ศ.บ.**

*ภาควิชาป้องกันวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่, **สถาน��หารวบเด็กภาคเหนือ กรมประชาสัมพันธ์
กระทรวงมหาดไทย คลินิกการ์ อ้มริน ชัยชัยใหม่

บทเพิ่มเติม: คณะผู้ทำการวิจัยได้ทำการตรวจดูจากเด็กที่รักษา สถาน��หารวบเด็กภาคเหนือ จังหวัดเชียงใหม่ จำนวน 67 คน
พบเด็กที่มี Cryptosporidium 4 คน (ร้อยละ 5.97) และเด็กที่มี Giardia 24 คน (ร้อยละ 35.8) เขียนไว้ในหน้าซ้าย
2535;31:193-196.