INTRODUCTION

Toxoplasmosis is a common and important parasitic infection caused by the protozoan Toxoplasma gondii. This parasite is distributed widely in human and domestic and wild animal. In human populations the seroprevalence in general is high, achieving levels of up to 90% in some places. In the Amazon Region, epidemiological studies demonstrated that this infection is also common, with seroprevalence reaching values above 70% (Bichara, 2001; Cavalcante et al., 2006). The T. gondii completes its biological cycle in different obligatory hosts, one definitive and one intermediate. The definitive are, domestic or wild felines, where the oocysts are formed as result of the sexual cycle of parasite, and the intermediate are birds, mammals, including human in whom the parasite cysts are in their tissues. The parasite transmission is directly related with the ingestion and/or inhalation of oocysts and/or ingestion of tissue cysts.

The T. gondii had been responsible for several outbreaks in Brasil and other countries due to the consumption of raw or badly-cooked meat, as well as by contaminated food, water or soil by oocysts.

OBJECTIVE

To report a human toxoplasmosis outbreak in Monte Dourado District, Pará State, Brazil.

METHODS

Studied Area

The investigated area was Monte Dourado District, a locality belonging to the municipality of Almeirim and distant about 453 Km from capital city, Belém. Monte Dourado is situated in the North of Pará State (0° 53' 22'' S, 52° 36' 6'' W) (Figure 1) their population is estimated in 12.000 inhabitants.

In Monte Dourado is located the industrial complex of the JARI Celulose S/A Company. This company has a medical department that takes care of the population health and to send any patient to bigger center, such as Belém city, when they need to have a corrected diagnosis.

Investigation of the Outbreak

Five patient residents in Monte Dourado District presented the first clinical signs and symptoms suggestive of toxoplasmosis between February 20 and March 10, 2004. During the infection evolution, high fever, prostration, anorexy, weakness and sistemic lymphadenopathy were observed. During the infection evolution, high fever, prostration, anorexy, weakness and sistemic lymphadenopathy were observed. Then, they were sent to Belém, where they had been tested for several infectious diseases, including toxoplasmosis and this diagnosis was confirmed.

After the diagnosis confirmation, the company medical team contacted the Evandro Chagas Institute asking for orientation. Thus, a technical team of Institute, a physician, a biologist and two laboratory technicians, went to Monte Dourado District, from 15 to 17 March, 2004, to evaluate the local situation, since other population persons were presenting the same signs and symptoms of those that were diagnosed as toxoplasmosis.

The work strategy for the investigation included:

a) Visit to the neighborhoods of the district, observation of the soil condition (dry, humid, wet, etc.); visit to the system of water distribution and treatment; observation about the presence of felines and other wandering animals in the urban area.

b) Patients evaluation, as well as of their relatives and contacts. This evaluation was conducted by filling of epidemiological questionnaire and collecting blood (Figure 2).

b) Presentation about toxoplasmosis for health professionals, engineers, teachers, etc.

c) Definition of the control measures together with the health and agriculture authorities of the municipality and the company.

Laboratorial Methods

Of each investigated person it was collected 5 ml of total blood by venous punction, that resulted in two serum sample (100 µl each). The serological test performed was an immunoenzimatic assay (ELISA) to detect anti-T. gondii antibodies, indirect ELISA for IgG and capture ELISA for IgM. It was used commercial kits (Toxoplasma gondii IgG/IgM-In vitro Diagnostica/Human). The methods were accomplished based in the manufacturer’s recommendations.

Each person was also searched for human malaria by a thick blood smear slide, due to endemicity of malaria in the Amazon region and the similarity of signs and symptoms among malaria and toxoplasmosis.

RESULTS

Epidemiological Analysis of the Area:

It was observed:

a) High population of abandoned cats, favoring a great spread of oocysts (Figure 3); b) Streets and backyards were not paved, becoming the oocysts survival longer;

The detected toxoplasmosis cases were distributed all over the neighborhoods, not as agglomerated;

c) When the first cases had occurred it was a period of intense rains, which can cause the oocysts suspension and dispersion to distant neighborhoods;

e) At the same period of the cases occurrence, some families were doing their gardens, fact that can have promoted the oocysts suspension facilitating the oocysts inhalation.

f) It was reported that a large number of cats was born at the same period of the toxoplasmosis cases. Kittens are important sources of T. gondii oocysts.

Clinical Evaluation of Patients

One hundred and eighty six persons were clinically evaluated. Forty one presented suggestive symptoms of toxoplasmosis (lymphadenopathy, fever, anorexy, exanthema and other), twelve unspecific symptoms and the others were asymptomatic.

Laboratorial Evaluation

Forty individuals had a serological profile of acute or recent toxoplasmosis, from them 34 were symptomatic, 05 presented unspecific symptoms and 1 was asymptomatic (Table 1).

All slides were negative for any Plasmodium species.

Table 1: Results of ELISA (IgG, IgM) for toxoplasmosis in 186 persons living in Monte Dourado District, in accord with the clinical situation.

<table>
<thead>
<tr>
<th>Serological Profile</th>
<th>Presenting suggestive symptoms of toxoplasmosis</th>
<th>Presenting unspecific symptoms</th>
<th>Asymptomatics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgG + / IgM +</td>
<td>34</td>
<td>5</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>IgG + / IgM -</td>
<td>3</td>
<td>4</td>
<td>75</td>
<td>82</td>
</tr>
<tr>
<td>IgG - / IgM +</td>
<td>4</td>
<td>3</td>
<td>57</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>12</td>
<td>133</td>
<td>186</td>
</tr>
</tbody>
</table>

CONCLUSION

The outbreak registered between February and March, 2004 in Monte Dourado District was caused by Toxoplasma gondii. The hypothesis of transmission by oocysts is supported by some factors, such as the high cat population all over the urban area; the frequent gardening procedures, and the habit of consumption of well cooked meat. It was also discussed the possibility of circulation of an atypical T. gondii strain in Monte Dourado, since there were some patients with a toxoplasmic inactive retinochoroidal scar, presenting systemic symptoms, including respiratory manifestations, and serological profile of acute infection. The hypothesis is based on the fact that the atypical T. gondii strains had been detected in wild felids (Panthera onca) in French Guiana. In Monte Dourado, domestic cats frequently enter in the forest where these wild felines had been observed.

The treatment and follow up of the patients were conducted by the local health teams, it was also given guidance to the authorities for introducing control measures for abandoned cats, and avoiding new cases or outbreaks of this disease.

Financial Support: Instituto Evandro Chagas / SVS-MS; JARI Celulose S/A