ENVIRONMENTAL CONTAMINATION BY TOXOCARA SP EGGS IN PUBLIC AREAS OF SALVADOR, BAHIA STATE, BRAZIL

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A survey of parasite eggs and cysts in soil and dog feces collected in public places of 23 boroughs of Salvador, a city in the Northeast of Brazil, was performed. High degree of contamination by Toxocara sp eggs was observed in all boroughs studied; other parasites found included: Ascaris lumbricoides, hookworms, whipworms and protozoan cysts. Parks and public gardens were more contaminated than streets and beaches for all parasites, including Toxocara sp.


Toxocara canis and Toxocara cati are animal ascarids which accidentally infect man without completing their life cycle. The former is the most common agent of visceral larva migrans (VLM), a disease occurring during childhood and leading to clinical manifestations such as liver and spleen enlargement, fever and persistent hypereosinophilia2 17 19.

Visceral larva migrans has a worldwide distribution, the largest number of cases reported from developed countries probably indicates better diagnostic conditions than higher prevalences. The enzyme-linked immunosassay technique using as antigen Toxocara larvae secretory-excretory products, developed on the seventies7 8 has facilitated the diagnosis of VLM and encouraged the development of epidemiological studies throughout the world. Seroprevalence studies carried out in temperate and tropical countries have shown that up to 9% of the population have been infected by Toxocara sp4. In São Paulo, Brazil, Chieffi et al6 found 3.6% Toxocara antibody positivity in 2025 individuals surveyed6. In addition, high number of soil and dog fecal samples have been found contaminated by Toxocara eggs in Brazil4 5 13, however, to the best of our knowledge, only 26 clinical cases of VLM have been reported in this country1 3 10 11 14 15 18, none of them in Bahia State.

In Salvador, contact of children with dogs and their excreta outside houses seems to be frequent. Many homeless dogs can be seen in beaches, parks and streets.

The present work aimed at measuring the contamination levels of soil and dog feces collected at public places by eggs of Toxocara sp in Salvador, Bahia, as the first step to study possible risk factors for children to develop visceral larva migrans.

MATERIAL AND METHODS

Two hundred and seventy seven dog fecal samples and 298 soil samples were collected from the following sites: 12 parks and public gardens, 18 streets (both inland and at the seaside) and 9 beaches, from 23 boroughs of Salvador. Seven to 8 soil samples and all feces found were taken from each of these sites. The geographical distribution of the boroughs is seen in Figure 1.

Soil samples were taken from sites at least one meter apart from any visible fecal material and examined within the first 24 hours for the presence ofascarid eggs by a technique described by Dubin and colleagues9. Feces were preserved in a merthiolate-iodo-formalin solution5 and examined by the classical sedimentation technique.

RESULTS

From the 298 soil samples and 277 dog fecal samples examined, soil was significantly (p < 0.01) more positive (24.8%) than feces (18.4%) for eggs of Toxocara sp (Table 1).

The percentages of samples with Toxocara eggs are seen in Figure 1. Eggs in the soil or feces were found in all boroughs, although in two of them no Toxocara were detected on soil and or on dog feces laid on the ground (Figure 1). Other parasites found in the soil included: Ascaris lumbricoides (26.8%), Trichocephalus sp (27.5%), hookworm (0.6%) eggs and cysts of Iospora sp (2.8%).

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The data were also analysed in terms of sites of samples collection (Table 2). Soil from parks and public gardens were more contaminated than beaches and streets. These differences were statistically significant for all parasites (Toxocara sp and other parasites, p < 0.01; A. lumbricoides, p < 0.05). However, dog feces contaminated with Toxocara eggs were more prevalent in streets than in other sites (p < 0.01).

DISCUSSION

The most important finding in this work was the observation of high degree of soil contamination by eggs of Toxocara sp. The degree of contamination, as expected, was higher than that described by Dubin and collaborators in New York, who found a 10% rate of soil samples contaminated by animal ascarid eggs. It was also higher than the data reported in Brazil by Chieffi & Muller and Ferreira et al., who found 60% and 41.6% of parks contaminated by Toxocara eggs, since we found Toxocara eggs in all boroughs studied. These differences could be explained by the relatively large number of samples studied in the present work or could be in fact a reflection of a higher prevalence of these parasites in Salvador in relation to the areas studied by other authors. Although the number of viable eggs was not determined in the present study, the possibility that the eggs found in child’s playing places may be swallowed and cause VLM should be taken into consideration.

The high degree of positivity for Toxocara sp eggs in the soil as compared to dog feces could be accounted for by the persistence in the soil of the eggs, highly resistant to environmental conditions, for several years after the contaminated feces had been normally dispersed or washed away. Large egg burdens in a relatively small percentage of contaminated feces could also contribute to the observed situation.

The high prevalence of A. lumbricoides eggs at the studied areas very likely reflects inadequate sanitary conditions. In fact, this prevalence was even higher than that of Toxocara eggs.

RESUMO

Foi realizado um inquérito de ovos e cistos de parasitos em fezes de cães e solo coletados em locais públicos de 23 bairros de Salvador, uma cidade do Nordeste do Brasil, objetivando determinar os níveis de contaminação desses locais por ovos de Toxocara sp. Todos os bairros tiveram níveis altos de contaminação por ovos de Toxocara sp. Outros parasitos encontrados foram: Ascaris lumbricoides, ancilostomídeos, Trichocephalus sp e cistos de protozoários.
Parques e jardins públicos tiveram taxas de contaminação mais elevadas para todos os parasitos, quando comparados com ruas e praias.


REFERENCES


