

Where are the geohelminths? Search of parasites in public recreation areas and parks in the metropolitan region of Campinas, SP, Brazil

Suzete A. A. Andrade*, Alex Q. Braga, Robson P. Silva, Thaís S. Schweller, Tiago T. L. Souza, Patrícia J. Thyssen

Abstract

Geohelminths are parasites that need, to complete their life cycle, a stage in the soil. Diseases caused by these helminths gain importance in public health because of their association with lack of sanitation and health education. The contamination of public spaces open to the community for leisure in the literature is quite common due to the risks that these areas offer: presence of waste, feces, insects, domestic animals, insolation, humidity and soil suitable for the survival of parasites. Thus, the present study aimed to evaluate the sanitary conditions of the soil (sand) from public areas and parks in the metropolitan region of Campinas, SP, Brazil.

Key words:

Public health, prophylaxis, survey of parasites.

Introduction

The field of zooparasitology covers the visualization and understanding of who the parasites are, what their biological cycle is, what local conditions favor their permanence in the environment and what public health problems may be related to it, when there is an imbalance in the interactions with the host and the environment¹. In this scenario, it is necessary to produce studies with practical application for the society in order to assist it on potential risks of infection.

Geohelminths are parasites that need, to complete their life cycle, a stage in the soil. Diseases caused by these helminths gain importance in public health because of their association with lack of sanitation and health education. The contamination of public spaces open to the community for leisure in the literature is quite common²⁻⁶ due to the risks that these areas offer: presence of waste, feces, insects, domestic animals, insolation, humidity and soil suitable for the survival of parasites.

Thus, the present study aimed to evaluate the sanitary conditions of the soil (sand) from public areas and parks in the metropolitan region of Campinas, SP, Brazil.

Results and Discussion

Soil samples (5 x 100g of each point, randomly selected, totaling 500g per area / park) were collected in the morning in seven public areas of the metropolitan region of Campinas, SP, Brazil, between September 2017 and June 2018 (Table 1). The sedimentation (HPJ) and flotation (Willis) methods were used to search for parasites after sand washing through sieves with 20 and 5 micrometer mesh, respectively. Three to five slides by method were stained with Lugol's iodine solution and examined under a common microscope.

Contrary to what was expected, the results were negative for the presence of infectious stage geohelminths in all samples analyzed. What is influencing this result? The study has been conducted according to the methodology described in the literature, where several relevant results have been published²⁻⁶. Collections of material were made in different periods of the year and in regions with different infrastructure and socioeconomic conditions.

Our results indicate that preventive and control measures implemented by the public power have been more effective or the population has changed their behavioral and cultural habits. The second hypothesis seems more plausible. Geohelminths are not transmitted directly from one individual to the other but by contact with soil or food contaminated with it. Greater care with the hygiene, cleaning, origin of the food consumed and use of vermifuge has diminished the sources of infection consequently damaging the propagation of the parasites in the environment.

Table 1. Geographic coordinates and material collection period by location.

Location	Coordinates	Period
Hortolândia	22°53'52.6"S 47°11'03.1"W	Sep/2017
Sumaré	22°48'40.6"S 47°09'54.9"W	Sep/2017
Campinas	22°49'17.9"S 47°04'57.7"W	Sep/2017
	22°57'40.0"S 47°06'26.1"W	Sep/2017
	22°49'52.6"S 47°04'51.9"W	Sep/2017
	22°49'17.9"S 47°04'57.7"W	Mar/2018
	22°54'35.5"S 47°03'24.5"W	Apr/2018
	22°58'34.6"S 47°07'44.4"W	Jun/2018

Conclusions

Geohelminths can possibly be better controlled or eradicated through behavioral and cultural changes and efficient health education.

Acknowledgement

This study is the result of a project developed during an undergraduate course (BP 820) at the Institute of Biology of UNICAMP.

¹ Neves, D. P. *Parasitologia Humana*. 13ª ed. **2016**.

² Guimarães, A. M.; Alves, E. G. L.; Rezende, G. F. and Rodrigues, M. C. *Rev. Saúde Públ.* **2005**, *39*, 293-295.

³ Fuchs, T.; Pessadrini, D. and Branco, R. *Ágora: Rev. Div. Cien.* **2011**, *18*, 1.

⁴ Almeida, F. P. B. A et al. *Braz. J. Vet. Res. An. Sci.* **2007**, *44*, 132-136.

⁵ Oliveira, G. T. A. et al. *Rev. Semente.* **2011**, *6*, 21-29.

⁶ Maciel, S. J. et al. *Natureza on line.* **2016**, *14*, 15-22.