

Prevalence of zoonotic endoparasites of synanthropic rodents from urban areas of Havana, Cuba

Authors: Ariamys Companioni, Jorge D. Cantillo, Irais Atencio, Aileen Gonzalez, Zulema Menendez, Natividad Hernandez, Fidel A. Nuñez

INSTITUTE OF TROPICAL MEDICINE "PEDRO KOURÍ"

INTRODUCTION

Synanthropic rodents (*Rattus rattus*, *Rattus norvegicus*, and *Mus musculus*) survive and proliferate in close association with humans. They participate as reservoirs and vectors of at least 70 zoonotic diseases, being important sources of parasitic zoonoses. The parasitic diseases transmitted by rodents are caused by several species of protozoans, nematodes and cestodes. Some of these infectious agents are transmitted by direct contact with feces from infected rodents and others through their ectoparasites. In Cuba, very few studies have so far been carried to elucidate the possible role of synanthropic rodents in the transmission of rodent-borne parasites.

OBJETIVE: to determine the prevalence of zoonotic endoparasites of rodents that cohabit with human populations and discuss the risk of transmission.

MATERIAL AND METHODS

Study area: A descriptive study was carried out at four different municipalities (named in this study: A, B, C and D) of Havana, Cuba. Havana has three zones (central, intermediate and periphery zone) based on land occupation rate and population densities (Fig. 1). In the study: **A** belongs to the central zone; **B** Intermediate zone, **C** and **D** periphery zone.

RESULTS

In each area, at least one annual sampling was carried out. A total of 193 rodents identified as *Rattus rattus* and *Rattus norvegicus* were captured and samples of 187 animals were processed. Of total animals analyzed, 72.72% (136) were positive for infection with parasites. A total of 17 species of endoparasites were identified, eight species of zoonotic importance. The highest rates of infection were observed in periphery zone and *R. rattus* (Table).

Table. Prevalence of endoparasites specie according to zone and rodents species from four urban areas of Havana, Cuba.

CONCLUSIONS

The high frequency of infection by endoparasites observed should be considered a risk factor. The results indicate the need to continue these studies to understand the role of these rodents in the transmission of species of significance to public health.

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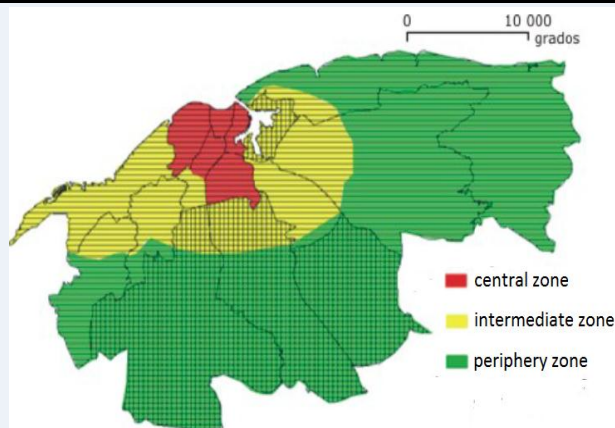


Fig.1. Spatial structure of Havana. (1)

Sampling of rodents: From 2010 to 2018, rats were captured using life traps following the methodology recommended by PAHO/WHO. (2)

Samples collection and laboratory procedures: The rodents were euthanized with sodium pentobarbital. Fecal samples were collected from the last portion of the intestine, as well as samples from organs that showed signs of infection. All the captured rats were identified using identifications keys. The fecal samples were processed by conventional coproparasitological technique and the organ samples by conventional histology. All the endoparasites found were identified through morphological analysis.

Ethical aspects. All the procedures carried out this study were approved by the Institutional Committee for the Care and Use of Laboratory Animals of Institute of Tropical Medicine «Pedro Kourí» (CICUAL-IPK).

Specie	Zone A n= 20 (%)	Zone B n= 16 (%)	Zone C n= 25 (%)	Zone D n= 126 (%)	Rr n= 157 (%)	Rn n= 30 (%)	Prevalence total (%) n=187
Protozoa							
<i>Giardia sp. *</i>	5,0	18.75	16,0	11.90	12.10	13.33	12.30
<i>E. histolytica/E.dispar *</i>	0	18.75	20,0	2.38	3.82	16.67	5.88
<i>Endolimax nana</i>	0	0	0	2.38	1.91	0	1.60
<i>Entamoeba coli</i>	15,0	0	0	2.38	3.82	0	3.21
<i>Coccidias sp.</i>	0	0	4,0	2.38	0.64	10,0	2.14
<i>Amoeba ratti</i>	0	0	0	1.59	1.27	0	1.07
<i>Blastocystis sp. *</i>	0	12.5	16,0	1.59	3.82	13.33	5.35
<i>Chilomastix mesnili</i>	5,0	0	0	2.38	2.55	0	2.14
Nematoda							
<i>Nippostrongylus brasiliensis</i>	25,0	43.75	16,0	44,44	43.31	13.33	38.5
<i>Strongyloides sp.</i>	15,0	0	8,0	19.84	17.83	6.67	16.4
<i>Angiostrongylus sp.*</i>	10,0	6.25	8,0	20.63	19.75	0	16.58
<i>Paraspidodera uncinata</i>	0	0	0	1.59	1.27	0	1.07
<i>Capillaria hepatica *</i>	0	0	40,0	0	0.64	30,0	5.35
<i>Syphacia muris</i>	5,0	0	4,0	1.59	1.91	3.33	2.14
Cestoda							
<i>Hymenolepis diminuta *</i>	0	0	4,0	4.76	4.46	0	3.14
<i>Hymenolepis nana*</i>	0	0	12,0	0.9	1.91	3.33	2.14
<i>Taenia taeniaeformis*</i>	0	0	24,0	7.14	5.10	23.33	8.02
No. species identified	7	5	11	16	17	10	72.72