

***Heterodoxus spiniger* (Enderlein, 1909) on domestic dogs (*Canis familiaris*, L. 1758) from the city of Recife, Pernambuco State, Brazil**

Filipe Dantas TORRES¹
Luciana Aguiar FIGUEREDO²

1- Departamento de Imunologia do Centro de Pesquisas Aggeu Magalhães da Fundação Oswaldo Cruz, Recife - PE

2- Departamento de Medicina Veterinária da Universidade Federal Rural de Pernambuco, Recife - PE

Correspondência para:
FILIPE DANTAS TORRES
Departamento de Imunologia
Centro de Pesquisas Aggeu Magalhães
Fundação Oswaldo Cruz
Universidade Federal de Pernambuco
Av. Moraes Rego, s/n
50670-420 – Recife - PE
fdt@cpqam.fiocruz.br

Received: 29/04/2004
Accepted: 01/06/2005

Abstract

In the city of Recife, Pernambuco state, northeastern Brazil, domestic dogs are usually infected by ectoparasites of both veterinary and public health importance. *Heterodoxus spiniger* is a common dog chewing louse, which is known as an intermediate host of *Dipetalonema reconditum*. Despite of its wide geographical diffusion in Brazil, *Heterodoxus spiniger* was only recently recorded in Pernambuco. The aim of this paper was to verify the infestations by *Heterodoxus spiniger* on dogs from Recife. Three hundred and ten dogs were examined and 11 of these were parasitized by *Heterodoxus spiniger*, corresponding to a prevalence rate of 3.5%. This indicates that *Heterodoxus spiniger* can be found on dogs from Recife, but in low prevalence.

Key-words:

Heterodoxus spiniger.
Louse.
Dogs.
Recife.
Pernambuco.

Introduction

Lice (Phthiraptera: Insecta) are wingless insects and are usually highly host-specific^{1,2}. It means that a give species of louse is generally associated with only one kind of animal host. They develop through paurometabolic development (i.e. gradual metamorphosis)¹. Moreover, as obligatory parasites, they are not able to live out of their host's body for a long period of time^{1,2}. The order Phthiraptera is represented by four suborders: Anoplura, Rhyncophthirina, Ischnocera, and Amblycera. These suborders have been traditionally grouped into two groups according to their different feeding habits. The sucking lice (Anoplura) have mouthparts designed for sucking and feed solely on blood, while the chewing lice (Rhyncophthirina, Ischnocera, and Amblycera) have their mouthparts designed for chewing, and feed on feathers, hair and skin scales. Chewing lice may be found on a diverse range of mammals and birds, while sucking lice are restricted of mammalian hosts¹.

The domestic dogs may be infested by two species of chewing lice: *Trichodectes canis* and *Heterodoxus spiniger*^{1,3}. *Trichodectes canis* is a really common dog chewing louse, whose parasitism may cause pruritus, but also transmission of certain pathogens, such as the dog tapeworm *Dipylidium caninum*. *Heterodoxus spiniger*, which is commonly found in both tropical and subtropical regions, is a known intermediate host of *Dipetalonema reconditum*, a filarial parasite that is usually regarded as a non-pathogenic nematode found in either subcutaneous tissues or peripheral blood of dogs. However, a recent paper described the first report of human subconjunctival infestation with an adult unfertilized *Dipetalonema reconditum*⁴.

Heterodoxus spiniger is widely distributed in Brazil^{2,3,5}, thought it was only recently recorded in Pernambuco state. In 2003, two single cases of *Heterodoxus spiniger* infestation on dogs were reported from the cities of Olinda⁶ and Recife⁷, respectively. In this way, the aim of this paper was to further identify the infestations by *Heterodoxus spiniger* on dogs from Recife, Pernambuco, Brazil.

Materials and Methods

From May 2003 to April 2004, 310 domestic dogs (of various ages, breeds and both sexes) naturally infested by ectoparasites were examined for the presence of *Heterodoxus spiniger*. Every specimen found was manually collected from its host and stored in 70% alcohol, until need.

Before examination under the optical microscope, a sample of ectoparasites was placed on a drop of lactophenol solution on a clean glass slides. Later, taxonomic keys were used for determination of family, genus and species levels^{3,8}. The specimens examined are deposited in the personal collection of the first author of the present paper.

Results and Discussion

A total of 11 domestic dogs were found naturally parasitized by *Heterodoxus*

spiniger, which corresponds to a prevalence rate of 3.5%.

Under optical microscope, the specimens present a subtriangular head, with rounded anterior margin and slightly concave posterior margin. Two post-palpal processes growing immediately behind the maxillary palps may be seen in the ventral side of head (Figure 1). These processes are characteristics of the family Boopiidae and therefore are invariably present in *Heterodoxus spiniger*^{3,8}. Maxillary palps are long and slender, while antennae are relatively short. The thorax is longer than wide, while the head is wider than long. The abdomen is long and oval. Adjacent surface between neighboring pleurites are provided with dense triangular spines going over laterally and gradually into tile-like plates. This is an important morphological feature that is expressed in all developmental stages of *Heterodoxus spiniger*⁸.

Heterodoxus spiniger is part of the louse

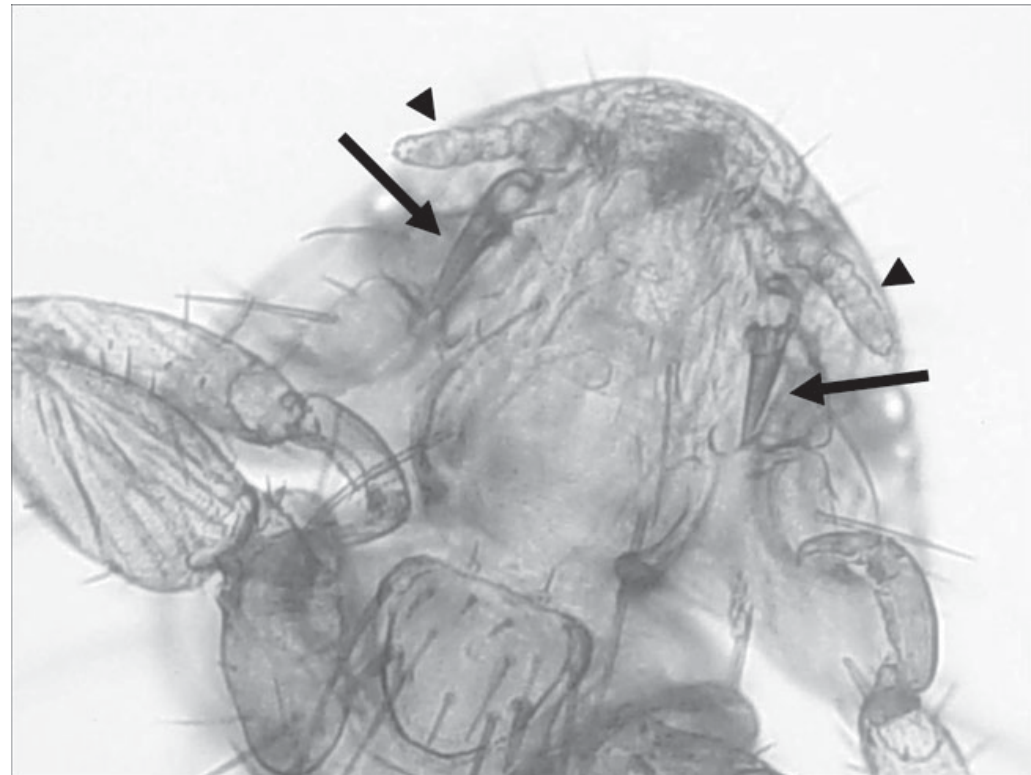


Figure 1 - Post-palpal processes (arrows) growing immediately behind the maxillary palps (arrowheads) of an adult female *Heterodoxus spiniger*. Note also the subtriangular head (original size: 10x magnification)

fauna of Australia, though it can be found on dogs from several countries^{2,3,5,6,7,8,9}. In Brazil, Werneck³ examined specimens of this chewing louse found on dogs from several Brazilian states, but also from Argentina and United States of America. In fact, both *Heterodoxus spiniger* and *Trichodectes canis* are widely distributed in many Brazilian states, such as Goiânia and Minas Gerais^{2,3,5}. In Pernambuco, however, the record of *Heterodoxus spiniger* on dogs is recent^{6,7}. In 2002, a study was carried out in both urban and rural areas of Pernambuco and *Trichodectes canis* was the only louse species encountered on dogs¹⁰. There are many hypotheses to explain this event. The most probable is that *Heterodoxus spiniger* had already been introduced years before, but had not been previously found in Pernambuco due to its low prevalence on the canine population, lack of further studies, or both. Another hypothesis, less probable in our opinion, is

that domestic dogs imported from areas where the parasitism by *Heterodoxus spiniger* is endemic (e.g. Minas Gerais or even Argentina) had recently introduced this dog chewing louse in Pernambuco. Indeed, the question on both chronological and geographical origin of *Heterodoxus spiniger* strains of Pernambuco is a topic to be approached in future studies.

Conclusion

In conclusion, the present study confirms that *Heterodoxus spiniger* can be found on domestic dogs from Recife, though in low prevalence.

Acknowledgements

We wish to thank Cultura Inglesa de Olinda, especially to Alberto Costa and Ellen Smith for their help. We also thank the referees for their constructive comments on the manuscript.

***Heterodoxus spiniger* (Enderlein, 1909) em cães domésticos (*Canis familiaris*, L. 1758) da cidade de Recife, Estado de Pernambuco, Brasil**

Resumo

Na cidade de Recife, Estado de Pernambuco, nordeste do Brasil, os cães domésticos são freqüentemente infestados por ectoparasitos de interesse para medicina veterinária e para a saúde pública. *Heterodoxus spiniger* é um piolho mastigador comum em cães, apontado como hospedeiro intermediário de *Dipetalonema reconditum*. Apesar de sua ampla difusão geográfica no Brasil, apenas recentemente o piolho *Heterodoxus spiniger* foi registrado em Pernambuco. Neste sentido, o objetivo deste estudo foi verificar a presença de piolhos da referida espécie em cães de Recife. Dos 310 cães examinados, 11 estavam parasitados por *Heterodoxus spiniger*, correspondendo a uma taxa de prevalência de 3,5%. Este resultado indica que esta espécie de piolho mastigador pode ser encontrada em cães procedentes de Recife, porém com baixa prevalência.

Palavras-chave:

Heterodoxus spiniger.
Piolho.
Cães.
Recife.
Pernambuco.

References

- 1 LINARDI, P. M. Piolhos (sugadores e mastigadores). In: MARCONDES, C. B. **Entomologia médica e veterinária**. São Paulo: Atheneu, 2001. p. 183-238.
- 2 RODRIGUEZ, A. F. S. F.; DAEMON, E.; D'AGOSTO, M. Investigação sobre alguns ectoparasitos em cães de rua no município de Juiz de Fora, Minas Gerais. *Revista Brasileira de Parasitologia Veterinária*, Rio de Janeiro, v. 10, n. 1, p. 13-19, 2001.
- 3 WERNECK, F. L. Contribuição ao conhecimento dos Mallophagos encontrados nos mamíferos sul-americanos. *Memórias do Instituto Oswaldo Cruz*, Rio de Janeiro, v. 31, n. 3, p. 391-589, 1936.
- 4 HUYNH, T.; THEAN, J.; MAINI, R. *Dipetalonema reconditum* in the human eye. *British Journal of Ophthalmology*, London, v. 85, n. 11, p. 1384-1392, 2001.

5 LUSTOSA, D. S.; CARNEIRO, J. R.; CARVALHO, E. S. D.; JARDIM, J. H. V. Ectoparasitos de cães vadios de Goiânia. *Revista de Patologia Tropical, Goiânia*, v. 4, n. 2, p. 397-399, 1973.

6 DANTAS TORRES, F.; FIGUEREDO, L. A.; FAUSTINO, M. A. G. Ocorrência de *Heterodoxus spiniger* (Enderlein, 1909) em *Canis familiaris* na cidade de Olinda – Pernambuco – Brasil: relato de caso. In: CONGRESSO BRASILEIRO DA ANCLIVEPA, 24., Belo Horizonte, 2003. **Anais...** Belo Horizonte: Associação Nacional de Clínicos Veterinários de Pequenos Animais, 2003a.

7 DANTAS TORRES, F.; FIGUEREDO, L. A.; FAUSTINO, M. A. G. Infestação mista por *Heterodoxus spiniger* (Enderlein, 1909) e *Rhipicephalus sanguineus* (Latreille, 1806) em *Canis familiaris*, no bairro de Campina do Barreto, na Cidade do Recife – Pernambuco – Brasil: relato de caso. In: CONGRESSO DE INICIAÇÃO CIENTÍFICA, 3., Recife, 2003. **Anais...** Recife: Universidade Federal Rural de Pernambuco, 2003b.

8 ZLOTORZYCKA, J.; MODRZEJEWSKA, M.; SAXENA, A.K. *Heterodoxus spiniger* (Boopiiidae, Mallophaga) from *Canis familiaris* from India in the light and scanning electron microscopes. *Wiadomosci Parazytologiczne, Warszawa*, v.41, n.4, p.455-462, 1995.

9 GONZALEZ, A.; CASTRO, D. del C.; GONZALEZ, S. Ectoparasitic species from *Canis familiaris* (Linne) in Buenos Aires province, Argentina. *Veterinary Parasitology, Amsterdam*, v. 120, n. 1-2, p. 123-129, 2004.

10 LOBO, A. P.; BOTÊLHO, M. C. N.; ANDERLINI, G. A.; CAVALCANTI, M. D. B.; OLIVEIRA, J. B. Ectoparasitos em cães de áreas urbanas e rurais do Estado de Pernambuco. In: CONGRESSO BRASILEIRO DE PARASITOLOGIA, 12., Rio de Janeiro, 2002. **Anais...** Rio de Janeiro: Colégio Brasileiro de Parasitologia Veterinária, 2002.