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RESEARCH NOTE / NOTA CIENTÍFICA

NEW RECORD OF *HISTIOSTRONGYLUS CORONATUS* (NEMATODA, MOLINEIDAE) PARASITING BATS (MAMMALIA, CHIROPTERA) IN BRAZIL

NUEVO REGISTRO DE *HISTIOSTRONGYLUS CORONATUS* (NEMATODA, MOLINEIDAE) PARASITANDO MURCIÉLAGOS (MAMMALIA, CHIROPTERA) EN BRASIL

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ABSTRACT

Histiostrongylus coronatus Molin, 1861 in the small intestine of *Phyllostomus discolor* Wagner, 1843 (Phyllostomidae) is reported. The helminth specimen was described based only an adult female, but this one presented morphological characteristics compatible with previous descriptions of the species. The present study expands the geographic occurrence of *H. coronatus* in Minas Gerais State and reports for the second time this species in Brazil.

Keywords: Trichostrongyloidea – Parasite – Helminth – Gastrointestinal tract – Taxonomy – Minas Gerais

RESUMO

Registramos *Histiostrongylus coronatus* Molin, 1861 no intestino delgado de *Phyllostomus discolor* Wagner, 1843 (Phyllostomidae). O helminto foi descrito baseado apenas em uma fêmea adulta, porém esta apresentou caraterísticas morfológicas compatíveis com descrições prévias da espécie. O presente trabalho amplia a ocorrência geográfica do parasito para o Estado de Minas Gerais e constitui o segundo relato da espécie do helminto no Brasil.

Palavras-chave: Trichostrongyloidea – Parasito – Helminto – Trato gastrointestinal – Taxonomia – Minas Gerais

INTRODUCTION

Histiostrongylus includes helminth species characterized by the presence of an umbrella-shaped cephalic dilation surrounded by 8 large triangular spines directed to the back, body and cervical cuticle without spines, divergent uterus with muscular, and unequal branches of the vestibules, being the posterior branch larger than the anterior one. Species of the genus are reported exclusively in bats, however, its occurrence is rare (Vigueras, 1941; Barus & Valle, 1967; Santos & Gibson, 2015).

Currently there are two valid species, *Histiostrongylus coronatus* Molin, 1861 and *Histiostrongylus spineus* Vaucher & Durette-Desset, 1999, both parasites of *Phyllostomus discolor* Wagner, 1843 (Phyllostomidae). The former was recorded in Brazil, Colombia, and Venezuela (Travassos, 1921; Diaz-Ungria, 1978; Cuartas-Calle & Muñoz-Arango, 1999), and the latter in Peru and Nicaragua (Vaucher & Duretle-Desset, 1999). Both species are differentiated by the esophagus and arrangement of the bursal rays 6, 8, and dorsal in the tail of the males (Vaucher & Duretle-Desset, 1999). *Histiostrongylus coronatus* has also been found in *Phyllonycteris poeyi* Gundlach, 1861 and *Chilonycteris fuliginosa torrei* Gray, 1843 in Cuba (Vigueras, 1941; Barus & Valle, 1967). This study aims to report the occurrence of *H. coronatus* infecting a bat in the State of Minas Gerais, Brazil.

MATERIAL AND METHODS

An adult female of *P. discolor* from the municipality of Uberlandia, Minas Gerais State, Brazil was received dead and was frozen in a freezer at -20ºC in the Urban Bats Laboratory of the Zoonoses Control Center of the municipality of Belo Horizonte, Minas Gerais State, Brazil. The bat was thawed at room temperature and the necropsy was performed. All helminth found was fixed in 70% alcohol and clarified with Amann's Lactophenol solution. The parasite was photographed with a digital camera (AxioCam ERc 5s, Carl Zeiss) coupled to the microscope and the morphological measurements performed through the photos by AxioVision 4.8 software (Carl Zeiss Vision). Drawings were made on CorelDRAW X8 software using the photos as a background for a more accurate drawing. The helminth was deposited under the number 7907 in the Helminthological Collection of the Institute of Biosciences (CHIBB), São Paulo State University (UNESP), municipality of Botucatu, São Paulo State, Brazil. This study was approved by the Ethics Committee in Animal Experimentation (CEUA/UFMG) under the protocol number 194/2015.

RESULTS

An adult female of *H. coronatus* (Figures 1-2) was found in the small intestine *P. discolor*, presenting the features following: Whitish color before or after fixation. Body of more or less uniform width, length 12.15 mm, width of the body at the height of the nerve ring 251.5 µm, width of the body at the level of the esophagus-intestine junction 252.8 µm and largest body width 319 µm (middle of the body). Cuticle without spines in the cervical region or along the body. Presence of umbrella-shaped head dilation surrounded by 8 large, backward-directed, triangular spines with an average length of 83 µm. Simple mouth. Claviform and well-marked esophagus of length 786.5 µm. Nervous ring 465 µm away from the anterior end, excretory pore not visualized. Vulva simple at the end of the second third of the body, with protruding lips, 5.07 mm away from the posterior extremity. Uterus divergent and with muscular and unequal branches of vestibules, the length posterior branch larger (1.029 µm) than the anterior branch (130.5 µm), well-marked sphincters. Uterus with few large eggs of smooth and very thin eggshell (borderless definition), with well-developed larvae. Egg length 119 µm by 87 µm wide (n = 1). Tail length 136.6 µm and presence of a protrusion after the anus. Presence of three small conical tubercules of length 18 µm. Together to the tubercules, there is a thin spiniform projection, slightly more elongated than the tubercules, 26 µm in length.

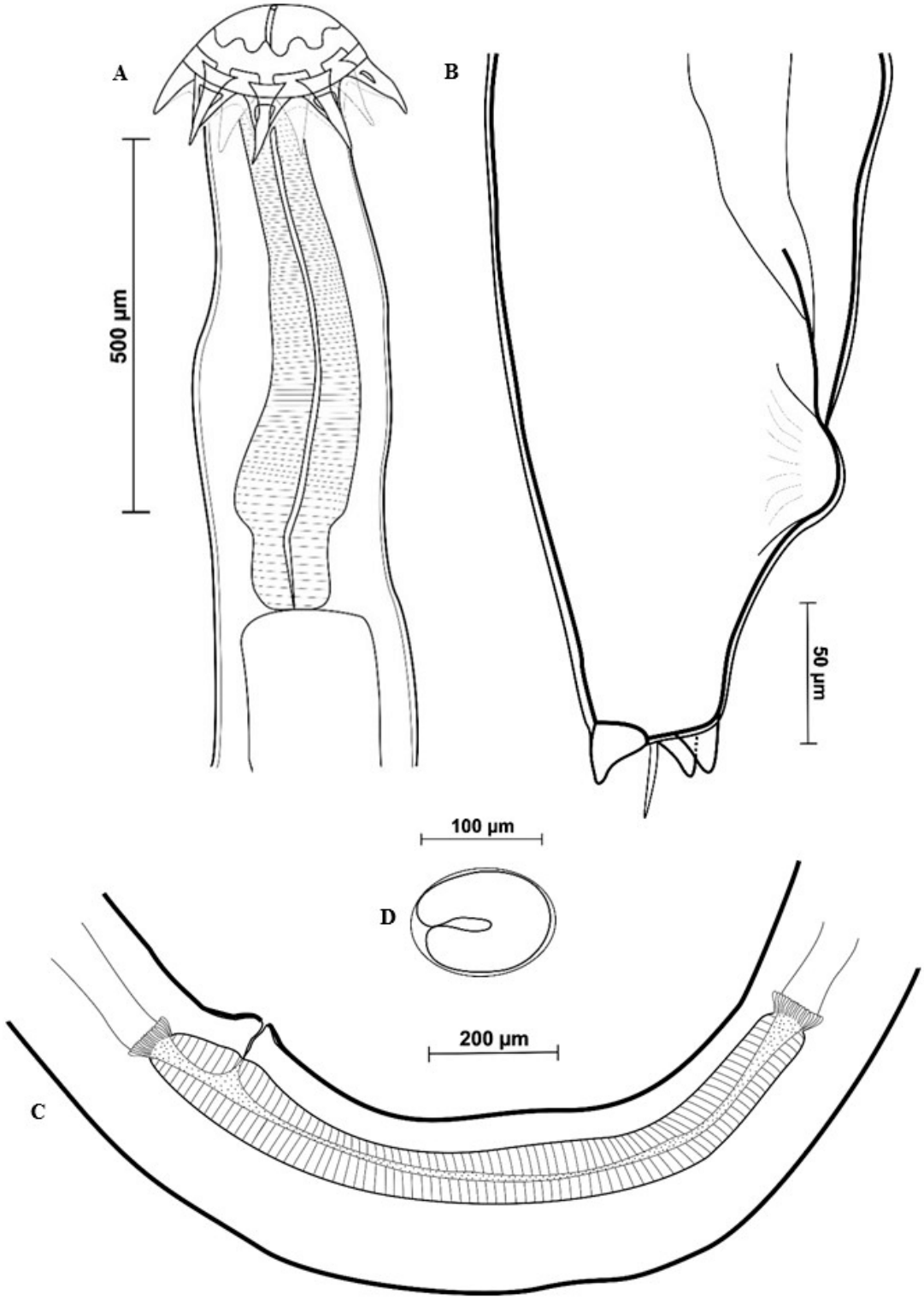

Figure 1. Schematic representation of *Histiostrongylus coronatus*. A - Anterior end; B – Posterior end with spines; C - Vulva and muscular and unequal branches of vestibules; D – Egg with well-developed larva.

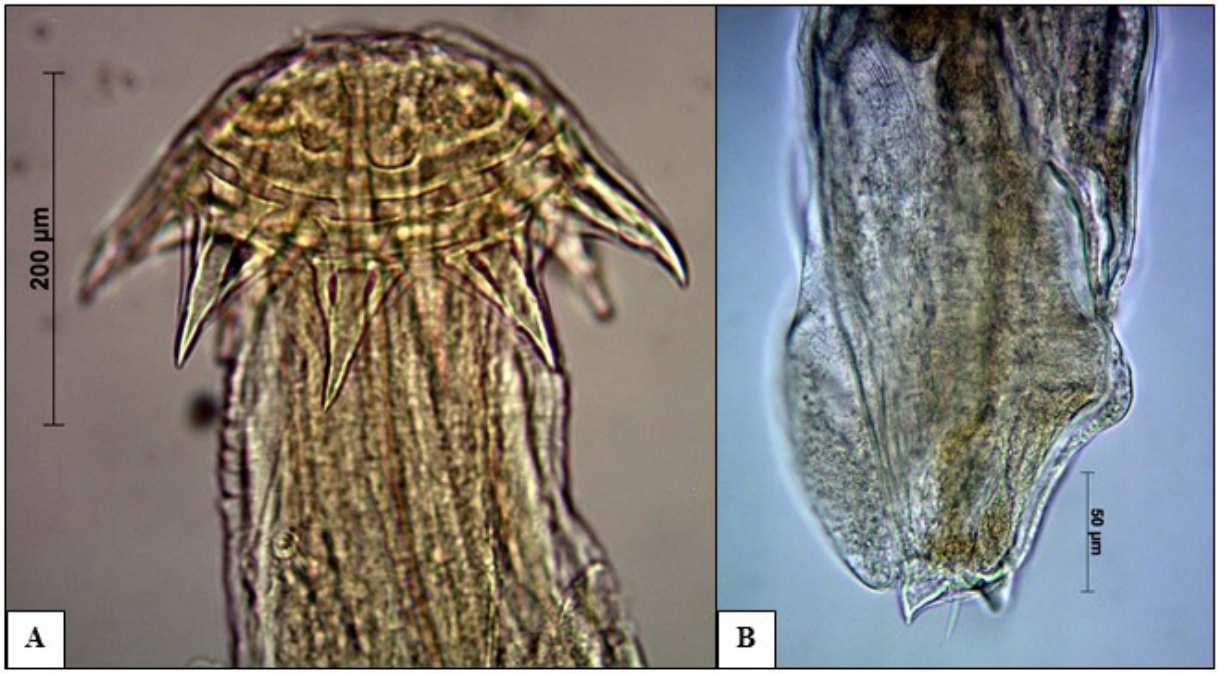

Figure 2. Microphotography of *Histiostrongylus coronatus*. A - Anterior end; B – Posterior end with spines.

DISCUSSION

Some studies in South America reported the occurrence of *Histiostrongylus* spp. in bats, but the parasites do not present the features of the genus' diagnosis. The species *Histiostrongylus paradoxus* Travassos, 1918 was described in Brazil, and nowadays this description is considered synonymy of *Anoplostrongylus paradoxus* (Travassos, 1918) (Vicente *et al*., 1997). Cuartas-Calle & Muñoz-Arango (1999) reported three species, *H. coronatus*, *H. paradoxus* (it identified wrongly for being *A. paradoxus*) and *Histiostrongylus* sp., in Colombia. According to the information in this study, the description of *H. coronatus* specimens is compatible with the description of the specimens found in the present study. However, the reported specimens of *Histiostrongylus* sp. probably do not belong to this genus in fact, because the authors present only the measurements of their specimens and do not mention the presence of the cephalic end in the umbrella-shaped with 8 spines, but only umbrella form, a feature observed in other genera of the Molineidae family.

Other cases of synonymy were recorded in the world literature, as follow: *Histiostrongylus octacanthus* Lent & Freitas, 1940 (synonymy of *Stilestrongylus octacanthus* (Lent & Freitas, 1940), according to Duretle-Desset & Chabaud (1981), and again synonymized in *Parahistiostrongylus octacanthus* (Lent & Freitas, 1940), according to Vaucher & Durette-Desset (1999)), *Histiostrongylus parnelli* Webster, 1971 (synonymy of *Websternema parnelli* (Webster, 1971), according to Vaucher & Duretle-Desset (1986)), *Histiostrongylus tipula* (Beneden, 1873) (synonymy of *Molinostrongylus tipula* (Beneden, 1873), according to Genov et al. (1992)), *Histiostrongylus spinosus* Boulenger, 1926 (synonymy of *Spinostrongylus spinosus* (Boulenger, 1926) according to Barus (1973)), and *Histiostrongylus ornatus* Mönnig, 1926 (synonymy of *Molinostrongylus ornatus* (Mönnig, 1926), and again synonymized in *Molinostrongylus panousei* Dollfus, 1954, according to Genov *et al.* (1992)). In addition to these synonyms, Vigueras (1941) summarized the history of the classification of the genus up to the date of publication of his study, presenting a redescription of *H. coronatus*.

In Brazil, *H. coronatus* has been identified in *P. discolor* in the state of Mato Grosso (Travassos, 1921). Due to the helminth morphology and dimensions, we identified it as *H. coronatus*, although without the analysis of male morphology. This is the second report of the species in Brazil and the first report of occurrence in the State of Minas Gerais.

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