

First report of *Angiostrongylus cantonensis* in Porto Alegre, State of Rio Grande do Sul, Southern Brazil

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Dear Editor,

Angiostrongylus cantonensis is a lungworm found in rats (mainly *Rattus norvegicus*) and is the main etiologic agent of eosinophilic meningitis after accidental human infection. Parasitological diagnosis is difficult because larvae are seldom found during cerebrospinal fluid examinations; molecular methods are thus required. According to Wang et al.¹, more than 2,820 cases have been reported in approximately 30 countries, mostly in Asia and the Pacific Islands. *A. cantonensis* infection has been increasingly detected in travelers returning from endemic areas² and is now considered to be a growing food safety concern³. Laboratory isolation and identification of this parasite were reported for the first time in Brazil in the State of Espírito Santo after eosinophilic meningitis was diagnosed in two patients⁴, followed by its detection in two patients in Pernambuco⁵. *A. cantonensis* larvae and adult worms or their deoxyribonucleic acid (DNA) have been detected in hosts from several coastal locations in Brazil, ranging from Pará in the north to Santa Catarina in the south⁶⁻⁸. However, *A. cantonensis* was not found in Rio Grande do Sul⁹. While trying to isolate larvae of *Strongyloides ratti* and *S. venezuelensis* in an investigation of antigens that are cross-reactive with *A. costaricensis*, a rat (*R. norvegicus*) was captured in Vila Fátima, Porto Alegre, Brazil (30° 2' 53.99" S 51° 9' 30.69" W). The animal was kept alive for the collection of larvae from its feces. The animal died several hours after capture, and necropsy was performed. The lungs showed several areas with white, hard and consolidated lesions that were removed and analyzed under a stereomicroscope. Eleven female and two male worms were found in the pulmonary arteries. The worms were clarified with creosote and mounted on slides for

examination under an optical microscope. The morphology of the males' copulatory bursa (Figure 1) and the average length of the worms (females, 26.8 ± 2.41mm; males, 20 ± 1.41mm) were in accordance with data from the literature¹⁰. A real-time polymerase chain reaction demonstrated a similarity in cycle thresholds (CTs) between DNA sequences from the worms (CT=12) and from the Akita strain of *A. cantonensis* (CT=8). *A. cantonensis* most likely entered Brazil on cargo ships from endemic areas carrying infected rats or an intermediate host¹¹. Porto Alegre is a commercial port city on the Guaíba River to which ships deliver many products, such as fertilizers, soybeans and salt, from many parts of the world, including India, Egypt, China and other areas of Brazil. Other Brazilian locations in which the presence of *A. cantonensis* has been reported are also in or adjacent to harbors, indicating that dispersion of the nematode may be occurring through rats on ships. Vila Fátima is approximately 11km from the Guaíba harbor and is linked to the port by a stream, Arroio Dilúvio, that is also partially linked to the wastepipe effluent system, which provides a natural habitat and pathway for rats. Although raw mollusks are not typically consumed in Brazil, currently available data indicate that sanitary education and epidemiological surveillance must be urgently updated. The increasing global transit of people and goods is rapidly changing the distribution pattern of infectious agents, such as *A. cantonensis*.

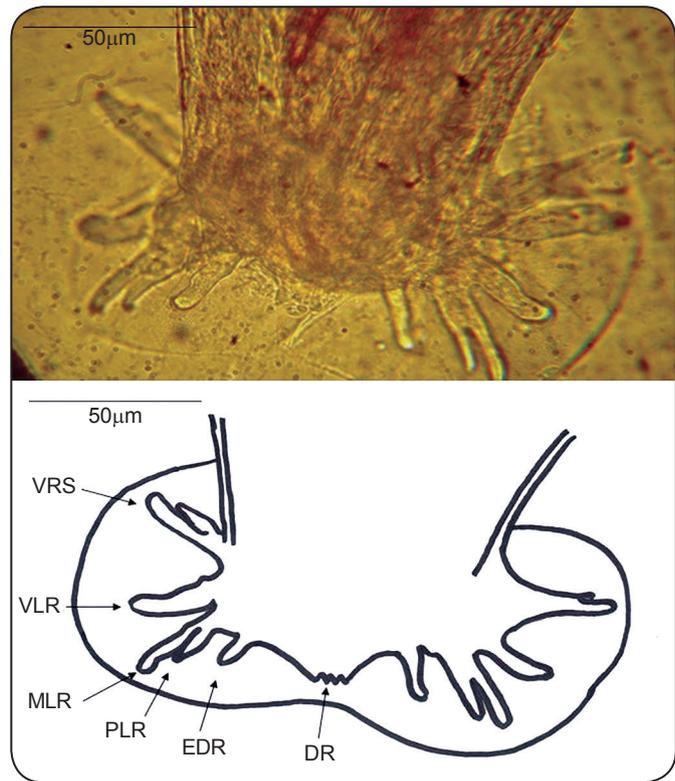


FIGURE 1 - Adult worms detected in the pulmonary arteries of a rat in Porto Alegre, Southern Brazil. A) Ventral image and B) drawing of a male worm's copulatory bursa, indicating the bursal rays. VRS: ventral; VLR: ventrolateral; MLR: mediolateral; PLR: posterolateral; EDR: externolateral; DR: dorsal.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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