

Liver helminths of naturally infected black rats of the city of Três Barras, Santa Catarina State with zoonotic potential

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ABSTRACT

The *Cysticercus fasciolaris*, larval form of *Taenia taeniformis*, is a parasite of the hepatic parenchyma of rodents, which serve as the intermediate hosts of this parasite and can present zoonotic potential. The *Calodium hepaticum* is a nematode that parasitizes the liver parenchyma of rodents, other mammals and humans. The rodents of the genus *Rattus* are the most important hosts and shells of this parasite due to their high capacity of proliferation and of harboring zoonotic agents. Humans are infected by ingesting eggs with first-stage larva through water, soil or food contaminated. In Brazil, were reported five cases of this disease in humans, with three children and two adults. As large populations of these rodents associated with precarious sanitary hygienic are factors that increase the risk of transmission of this parasite to other animals and to humans, this work aims to report the frequency of infection by *C. hepaticum* and *C. fasciolaris* in black rats (*Rattus rattus*) captured in the District of São Cristóvão. The district is located in the urban area of the city of Três Barras, State of Santa Catarina and is an urban area with features of rural area, with a significant presence of farm animals and hygienic-sanitary and economic conditions unfavorable. From September 2016 to March 2017, 134 times were armed traps (Tomahawk®) and captured 26 specimens of *R. rattus*. After trapped, the animals were euthanized and eviscerated. All livers were examined for the presence of lesions and when macroscopic evidence of liver pathology was seen, a microscopic examination of tissue was performed by the tissue press for the presence of the typical eggs, adults or larval stages, and by histopathology. Fisher's test was used to test significant differences in the prevalence of parasites between the sexes of the rodents. Rodent collection permits were obtained from the Committee on Animal Research Ethics (CEUA No. 15/16). Among 26 wild black rats, 50% (13 rats) were infected. In all cases, the animals appeared healthy and showed no visible signs of hepatic failure despite the fact that half of their livers were infected by either one or both parasites. The prevalence rates of *C. hepaticum*, *C. fasciolaris* and mixed infection were 38% (10 rats), 38% (10 rats), 26.9% (seven rats) respectively, with no significant differences between sex. During the necropsy, livers of ten individuals presented macroscopic yellowish-white lesions, firm and pale liver and with slight increase in size. In histopathology, these lesions consisted mainly of multifocal granulomatous hepatitis around a cross-section of adult parasites and/or eggs with a thick shell and polar plugs. The high infection rates observed suggests that urban black rats are common reservoir for both parasites, and it is possible to conclude that the infected rodents are a potential source of parasite transmission to domestic animals in this area, with substantial risk to human health. Considering the zoonotic potential, it is necessary an epidemiological approach to guidance of the population as to the risk of infection and prophylactic methods for avoid contact.

Keywords: *Capillaria hepatica*. *Cysticercus fasciolaris*. *Rattus rattus*. Parasites. Zoonose.

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