

Parasitic otitis caused by *Rhabditis (Rhabditis) freitasi* (Nematoda: Rhabditidae) in the cattle Gir breed in the state of Acre*

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ABSTRACT. Silva F.M., Santos F.G.A., Montoya L.M., Rocha N.S. & Alves J.V. **Parasitic otitis caused by *Rhabditis (Rhabditis) freitasi* (Nematoda: Rhabditidae) in the cattle Gir breed in the state of Acre.** [Otite parasitária causada por *Rhabditis (Rhabditis) freitasi* (Nematoda: Rhabditidae) em animais da raça Gir no estado do Acre.] *Revista Brasileira de Medicina Veterinária*, 38(2):116-120, 2016. Universidade Federal do Acre, Campus Universitário, BR 364, Km 4, Distrito Industrial, Rio Branco, AC 69920-900, Brasil. E-mail: fcoglaucoas@ufac.br

The bovine parasitic otitis has been reported in several states of Brazil. It is caused by rhabditiforms nematodes, attacking cattle Gir and Indubrasil breeds. The aim of this work was to describe the occurrence of the disease in animals of the cattle Gir breed in Rio Branco, State of Acre, Brazil. The animals belonged to the Station of Improvement and Animal Genetic Diffusion. Samples were collected from five of these individuals, with swabs aid, conditioned in plastic tubes and kept in alcohol 70%. The specimens were visualized using optical microscopy, and the morphometry was accomplished through a micrometrical ocular. The data were inserted in the Excel spreadsheet, running on Windows 7, and analyzed through descriptive statistics. The animals presented purulent secretion in the external ear canals, shook their heads, showed inquietude and sensibility to the touch during the clinical trials, when intense infestation was observed. One of the individuals died. Animal genetic improvement programs are negatively interfered by infestations like these. It was possible and opportune to find out the moment and place how such illness has entered in the state of Acre. This work aims to help reinforce the importance of future studies to report new cases in the state of Acre.

KEY WORDS. *Rhabditis* sp., parasitic otitis, cattle, Gir breed.

RESUMO. A otite parasitária bovina tem sido relatada em vários estados do Brasil. É causada por nematódeos rhabditiformes, acometendo bovinos das raças Gir e Indubrasil. O objetivo desse trabalho foi descrever a ocorrência da doença em animais da raça Gir em Rio Banco, Acre. Os animais

pertenciam à Estação de Melhoramento e Difusão Genética Animal. Amostras foram obtidas de cinco indivíduos, com auxílio de swabs, acondicionadas em tubos plásticos e fixadas em álcool a 70%. Os espécimes foram visualizados sob microscopia óptica e a morfometria realizada através de uma

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ocular micrometrada. Os dados postados em planilha do Excel, Windows 7, foram analisados através de estatística descritiva. Os animais apresentavam otorrêia, meneios de cabeça, inquietação e sensibilidade ao toque durante o exame clínico quando se observou intensa infestação pelo parasito. Um animal veio a óbito. A infestação interfere negativamente nos programas de melhoramento genético animal. Foi possível e oportuno localizar, no tempo e no espaço, a entrada dessa enfermidade no Estado. Este trabalho visa ajudar a reforçar a importância de futuros estudos objetivando o relato de novos casos no Estado.

PALAVRAS-CHAVE. *Rhabditis* sp., otite parasitária, bovino, raça Gir.

INTRODUCTION

The parasitic otitis caused by the rhabditiforms nematode has accentuated economical repercussions, above all in what it refers to the expenses with medicines, handling, and decrease of the milk production, loss in the gain of weight, and even death of animals (Msolla 1986, Vieira et al. 2001, Duarte & Hamdan 2004).

In Brazil, such otitis was described, firstly, by Martins Jr et al. (1971) that marked the occurrence of the Rhabditidae family nematode in otitis-infected bovine in Brasilia (Federal District), in 94% of the studied animals. This disease has been reported in States, as Minas Gerais and Goiás (Leite et al. 1993, Duarte et al. 2001, Vieira et al. 2001) Pernambuco (Brito et al. 2005) and Rio de Janeiro (Verocai et al. 2007).

While the responsible species for the parasitic otitis for nematodes in Africa is *Rhabditis bovis*, in Brazil, four different species were described, among them, *R. freitasi* and *R. costai* (Martins 1985). The illness affects, mainly, Gir (93%) and Indubrasil (53%) breeds cattle (Leite et al. 1993, Abdalla et al. 2008).

Although the otitis has been observed in Brazil since the 1970s, with prevalence rates ranging from 78.4% to 100%, the disease is not well known (Leite et al. 1993, Vieira et al. 1998) and can be considered a serious sanitary problem in Gir herds (Leite et al. 2012).

The aim of this work was to describe the presence of the *Rhabditis* sp. parasite in the ear pavilion, as one of the etiological agents that causes the parasitic otitis, in a herd of the Gir breed cattle, in the municipal district at Rio Branco, as well as to discover the moment and place the illness has entered in the state of Acre.

MATERIALS AND METHODS

The animals belonged to the Station of Improvement and Animal Genetic Diffusion (SIAGD), located at the headquarters of the Brazilian Company of Agricultural Research (BCAR = EMBRAPA), at Km 14, BR-364 highway, from Rio Branco towards Porto Velho). They were females of the Gir breed cattle, with pedigree, properly maintained in contention trunk and randomly chosen in the local herd.

The sample collections were accomplished from five individuals, weekly, in the period from 22/03 to 26/04/2012. The samples were obtained with the swab use for the collection of ceruminous sample in both hearing conduits. After the collection, the material was kept in alcohol at 70%, in plastic tubes and sent to the Laboratory of Parasitology of the Federal University of Acre - UFAC. On the occasion of the collection, the animals were photographed and the procedures were registered, using a 12.1 mega pixels Sony[®], digital camera.

For the analysis of the material kept in alcohol 70% in the laboratory, the decanted content was aspirated from each of the plastic tubes which contained the collected samples, using a pipette and a drop was put on each microscopic slide, followed by overlaying it on a smaller slide and taken to a binocular optical microscope (Olympus CH 30, model CH30RF100), coupled with a photographic camera (Olympus PM-C35B).

For visualization, 40x magnifying lens were used by a micrometric ocular (Carl Zeiss, KF 10x/18 make), aiming to accomplish the morphometry of the eggs, larvae and adults (males and females). Those data were inserted in the Excel spreadsheet, running on Windows 7, and analyzed through descriptive statistics.

The identification of the parasite was made according to Martins Jr (1985) and Leite et al. (1994).

RESULTS AND DISCUSSION

The herd of the property is composed only of animals of the Gir breed pedigree cattle used in reproduction programs (artificial insemination, collection of embryos, estrus synchronization and follicular aspiration) raising in system of pasture rotation with forage *Panicum maximum* cv. *Mombaca* with corrected and fertilized soil besides the appropriate mineralization.

The infected animals presented otorrhea, with purulent exudation and unpleasant odor. As well as shaking of head, restlessness and sensibility to the touch, in the affected area. On the clinical trial, intense infestation was observed by the parasite. This happened in both hearing conduits of the animals, and the visualization larval movements were possible by the naked eye. According to Leite et al. (1993), Duarte et al. (2001), Verocai et al. (2007) and Abdalla et al. (2008), Rhabditiform parasite's preference for the Gir and Indubrasil breeds cattle is due to the anatomical conformation of the ear pavilion

which is longer and tubular in such animals, besides the fact that their ears be pending and present a gutter form, what provides a favorable environment for the permanence, development, and reproduction of the nematode.

During the inspections of the heard in the facilities, itching of ears was observed, when the same ones used their rear paws to scratch themselves. Msolla et al. (1986) related the nematode diffusion to the act of scratching their ears with their dirty paws covered by manure and to the presence of flies. Verocai et al. (2007) suggested that *M. domestica* could have an important role in this parasite dissemination, although in the north region of the country, the presence of the fly of the horn has not been observed as transmission agent.

The country's north region presents a high rainfall rate, what could contribute to the proliferation of the dipterans, propitiating the occurrence of parasitic otitis cases, as suggested by Verocai et al. (2007) and Leite et al. (2012) which contradicts a study accomplished by Vieira (1998). Also the myiasis presence was not observed, in animals infected by the illness, as suggested by Abdalla et al. (2008).

It is suspected that the outbreak of parasitic otitis happened due to the purchase and introduction of parasitic-infested animals, coming from endemic areas. It is presumed that the routinely taken clinical examinations were not accomplished satisfactorily, mainly the otologic ones, having its importance undervalued, unless the animals present a chronic feature, with suppuration or that there is some neuronal damaging, as commented on by Verocai et al. (2007) and Leite & Leite (2010). In addition, the ear presents an anatomy of difficult access, which impedes the evaluation of an existing gravity to the case, without any exam and appropriate equipments.

The animals used in the collection were brought from cattle breeders who raise the Gir breed in the states of Goiás and Minas Gerais; they were acquired with the purpose to be used in reproductive programs. According to the reports by Msolla et al. (1993), Leite et al. (1993) and Vasconcelos et al. (2011), episodes of the illness were diagnosed in animals of the Gir and Indubrasil breeds cattle, in those places. Besides, the Gir breed cattle present phenotypic characteristics that favor the occurrence of the "parasitic otitis complex". The peculiar growth of the horns favors the compression of the ear pavilions, which are consequently long and in pendular forms, hindering the aeration and causing the earwax accumulation and secretions inside

the external hearing conduits. Such problems tend to increase as the animal grows old, propitiating a favorable atmosphere to the development of these parasites (Vieira et al. 1998, Duarte et al. 2001).

It was even reported that a reproducer of the same breed besides holding a severe otitis, also presented ptosis, exhaustion, anorexia, weight loss, inclination of head and subsequent death, from which it is suspected to bear a more advanced feature of otitis. Similar symptomatology were observed by Vasconcelos et al. (2011), in a case report, in bovine, in the state of Bahia, and Leite et al. (2012) in a study of perception about parasitic otitis in Gyr breed.

The method for collecting the ceruminous content was carried out using swabs, because it is easy and good to accomplish besides being both fast and cheap to diagnosis. To prove the nematode's presence, a simple observation of the external hearing conduit was enough once the infestation goes from moderate to serious, due, mainly, to the presence of secretion with aspect and characteristic odor. Technique and observations, as those described by Leite et al. (2011) and Vasconcelos et al. (2011), complemented the investigation. However, in cases of sub-clinical infestations, 20% rates were found in agreement with Duarte et al. (2001), which are not usually diagnosed, then it is recommended to wash the hearing canal with water or boric alcohol to 3%, besides the observation of the material collected with the aid of a stereo microscope (binocular) (Leite et al. 2011).

When analyzing the material under stereo microscope, the nematodes presence was revealed in different evolutionary stages in all five animals. Under microscopy, it was possible to identify eggs and larvae, besides adults of both sexes and to classify them as belonging to the *Rhabditis* - Dujardin (1844) gender, as described by Martins Jr (1985).

A total of 100 eggs, 90 larvae, 59 adult females and 56 adult males was measured. The dimensions

Tabela 1. Specimens morphometric measures of eggs, larvae, female adults and male adults of *Rhabditis* (*Rhabditis*) *freitasi* (Ob. 40X).

	Medium (mm)	Standard deviation	Maximum (mm)	Minimum (mm)
Length of the egg	0.080	0.0086	0.090	0.030
Width of the egg	0.060	0.0025	0.550	0.030
Length of the larvae	0.554	0.0508	0.900	0.400
Width of the larvae	0.036	0.0049	0.060	0.024
Length of the female	1.304	0.1848	1.322	0.750
Width of the female	0.110	0.0182	0.200	0.050
Length of the male	1.032	0.0611	1.324	0.650
Width of the male	0.090	0.0083	0.130	0.050

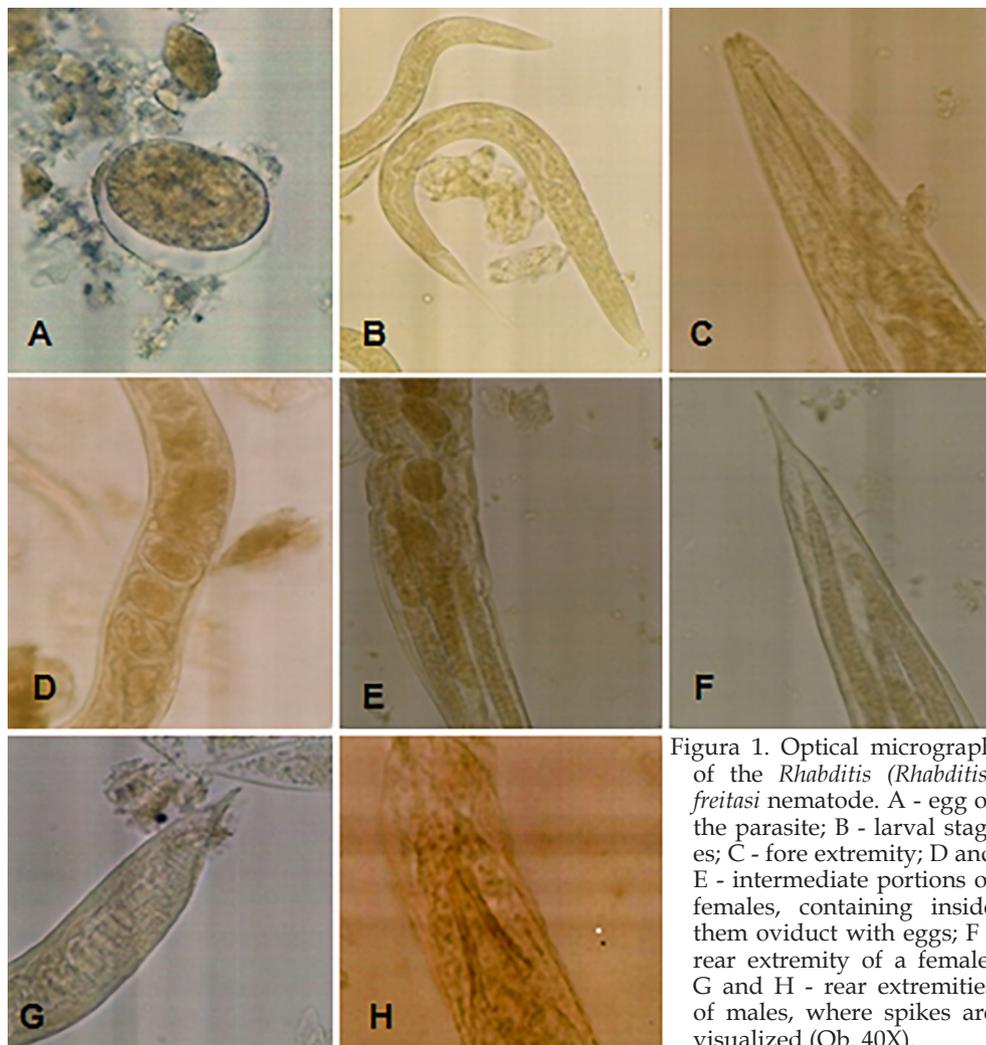


Figura 1. Optical micrograph of the *Rhabditis (Rhabditis) freitasi* nematode. A - egg of the parasite; B - larval stages; C - fore extremity; D and E - intermediate portions of females, containing inside them oviduct with eggs; F - rear extremity of a female; G and H - rear extremities of males, where spikes are visualized (Ob. 40X).

for eggs, larvae, female adults and male adults, had their averages, low, maxims and deviation standard, logged (Table 1, Figure 1). These figures are similar to those described by Martins Jr (1985), corroborating, besides the morphology, for the identification of the parasite.

CONCLUSION

This work represents a description of the occurrence of parasitic otitis in animals of the Gir breed cattle, which is caused by *Rhabditis* sp. nematodes in the municipality of Rio Branco in the state of Acre.

Finding out the right moment and space the illness has entered in the state of Acre was possible and opportune.

This works also aims to help reinforce the importance of future studies to report new cases in the state of Acre, as well as efficient treatment protocols, prophylaxis and control.

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