COMUNICACIÓN

*Two cestode species in Brazilian turkeys, **Meleagris gallopavo** (Galliformes, Phasianidae): pathology induced by **Hymenolepis cantaniana** and occurrence of **Raillietina tetragona***

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ABSTRACT

*The pathology induced in turkeys (**Meleagris gallopavo**) by one cestode species **Hymenolepis cantaniana** is described together with data on prevalence, mean infection and range of worm burdens. **H. cantaniana** occurred with a prevalence of 5.0 % in the 40 examined hosts in a range of 14-21 specimens and a mean intensity of 17.5. Gross lesions were not observed in the parasitized birds. Lesions due to **H. cantaniana** mainly consisted of multiple segments of parasites, together with a mild mixed inflammatory reaction with the presence of mononuclear cells and heterophils or severe transmural inflammatory processes, characterized by the presence of mononuclear cells along the muscular and serosa layers of the intestinal villi and crypts. These are the first pathological findings related to the presence of cestodes in turkeys to be reported in Brazil so far. **Raillietina tetragona**, not pathogenic to the present investigated turkeys, occurred with a low prevalence and range of infection of 2.5% and 1-2 worms, respectively.*

Key words: cestodes, **Hymenolepis cantaniana**, pathology, **Raillietina tetragona**, occurrence, birds, **Meleagris gallopavo**, turkeys, Brazil.

INTRODUCTION

Recently, results described the pathogenic action of trematodes, nematodes, and one protozoan species infecting turkeys from backyard flocks in Brazil¹⁻³. The present data are related to the pathology induced by *Hymenolepis cantaniana* (Polonio, 1860) Ransom, 1909 and the occurrence of *Raillietina tetragona* Molin, 1858 (Eucestoda, Davaineidae) infecting

specimens of Brazilian turkeys, *Meleagris gallopavo*.

MATERIALS AND METHODS

From May 2004 to October 2005, forty adult specimens, 19 males, 21 females of turkeys (*M. gallopavo* Linnaeus, 1758), weight 950-8,870g, obtained from backyard flocks of different localities in the State of Minas Gerais, Brazil (19

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animals), namely Candeias (20°46'01"S, 45°16'35"W), Caratinga (19°47'23"S, 42°08'21"W), Juiz de Fora (21°45'51"S, 43°21'01"W), Teixeiras (20°39'04"S, 42°51'24"W) and in the State of Rio de Janeiro, Brazil (21 animals), namely Cantagalo (21°58'52"S, 42°22'05"W), Maricá (22°55'10"S, 42°49'07"W), Niterói (22°53'00"S, 43°06'13"W) [Várzea das Moças district], Pirai (22°37'45"S, 43°53'53"W), Rio de Janeiro (22°54'10"S, 43°12'27"W) [Campo Grande district], Teresópolis (22°24'44"S, 42°57'56"W) were investigated for helminths. After individual clinical evaluation, birds were killed and submitted to necropsy in accordance to the usual technique⁴. Organs were opened in Petri dishes containing 0.85% NaCl solution. Cestodes were transferred to tap water and maintained overnight under -8° C to be later, fixed in cold AFA (ethanol 70° GL, 93 ml; formaldehyde, 5 ml; acetic acid, 2 ml). Portions of the parasitized organs were removed and immediately fixed in 10% formalin, to be further routinely processed for paraffin embedding. Five micrometers thick sections were stained with hematoxylin and eosin (H.E.). The recovered cestodes were counted under a stereomicroscope and after, stained with alcoholic chloride carmine, dehydrated in an ethanol series (70°-100° GL), cleared in phenol and mounted in balsam. Classification of the cestodes is according as indicated elsewhere⁵. Micrograph was obtained in a Zeiss Axyophot brightfield microscope. The development of this study has been authorized by the Committee of Ethics for the Use of Animals (CEUA/Fiocruz) no. P0095-01.

RESULTS

Eight turkeys (20%) out of the 40 investigated specimens were positive for cestodes. Gross lesions were absent in animals infected either with *H. cantaniana* or *R. tetragona*. Specimens of the former species were recovered from two turkeys from Maricá, RJ, with a prevalence of 5%, intensity of infection of 14-21 parasites and mean intensity of 17.5. From the other six animals, two also from Maricá, and three from Teixeiras, RJ, and one from Juiz de Fora, MG, only fragments (probably of *H. cantaniana*) were observed. Microscopic lesions due to this species, revealed multiple segments of the parasites and a discrete mixed inflammatory reaction of

mononuclear cells and heterophils of the intestinal villi and crypts. Nevertheless, in another animal harboring 21 *H. cantaniana* specimens, segments of the intestine with an accentuated transmural inflammatory process, characterized by a mixed inflammatory infiltrate, with the predominance of mononuclear cells distributed along the muscular and serosa were observed. On what concerns *Raillietina tetragona* that appeared with a low prevalence and range of infection of 2.5% and 1-2, respectively, microscopic lesions were absent in the single infected bird.

DISCUSSION

Frequently, cestodes have been reported from turkeys worldwide, with lower worm burden rates when compared to those of the parasitizing nematodes. In despite of those previous results, few are related to the species presented here, may be due to the different geographical regions in which data have been reported so far. In Brazil, there is only a reference of specimens of *Hymenolepis* sp. infecting turkeys⁶ and overseas⁷, results related to the finding of *H. cantaniana* specimens in the small intestine in 4.1% of the 390 turkeys investigated for helminths in the USA, without pathological approaches, were obtained. Considering the occurrence of 5% in the animals presented here and assuming that the specimens of *Hymenolepis* sp. recovered from Brazilian turkeys belong to *H. cantaniana*, our infection rates (15%) with this cestode species are significantly higher, when compared to the 4.1% previously reported.

Taking into account the fact that, in the present study, one of the specimens of *M. gallopavo* presented a severe mixed transmural inflammatory process, with the presence of mononuclear cells distributed along the serosa and muscular layers, this can be taken as an indicator of physiological changes in the host, that eventually may interfere in the productivity of the parasitized turkeys and thus, promoting losses to raisers.

Interestingly, in despite of the presence of the double crown of hooks and suckers armed with spines, lesions due to *R. tetragona* were not observed in the single turkey infected with this species. This fact may be due to the very low parasite burden observed, that not permitted a further intestinal attrition, since only two worms

were found free in the lumen of the parasitized bird, at the moment of recovery, somehow justifying the absence of microscopic lesions. Conversely, specimens of *H. cantaniana*, although unarmed with bothridial hooks and presenting spineless suckers, were deeply burrowed in the intestinal mucosa, and thus, able to induce microscopic changes in the presently studied birds.

Raillietina tetragona has already been referred in Brazilian turkeys^{8,9} and, although the species is frequently reported from Galliformes hosts worldwide, data on its occurrence in Brazil are very poor; perhaps, the very low prevalence and intensity of infection of turkeys with *R. tetragona* can serve as indicators for the lack of previous reports of this cestode species in Brazilian birds to date.

The life-cycle of the species was described as heteroxenous and ants are the intermediate hosts. Specimens of *R. tetragona* are considered of economic importance, since they can destroy the intestinal walls, with the deep penetration of the scolex in the muscular mucosa, causing serious disturbances to the infected hosts¹⁰. Taking into account that in the present study only one of the turkeys (2.5%) was parasitized with two specimens of *R. tetragona*, this situation could not be confirmed.

The presence of *Raillietina* sp. was also reported in wild turkeys from the USA¹¹ as well as of *R. tetragona*, with indication of prevalences from 0.5 to 15% of parasitism¹².

RESUMO

Duas espécies de cestóides em perus, *Meleagris gallopavo* (Galliformes, Phasianidae), no Brasil: patologia induzida por *Hymenolepis cantaniana* e ocorrência de *Raillietina tetragona*.

A patologia induzida em perus pelo cestóide *H. cantaniana* é descrita, com dados sobre prevalência, intensidade média e amplitude das cargas parasitárias. *H. cantaniana* ocorreu com uma prevalência de 5.0% nas 40 aves examinadas, com intensidade média de 17.5 e amplitude de 14-21 espécimes de cestóides. Não foram observadas lesões macroscópicas nos perus parasitados. As lesões provocadas por *H. cantaniana* eram representadas, principalmente, ou por múltiplos segmentos dos parasitos,

acompanhados por discreta reação inflamatória mista com a presença de células mononucleares e heterófilos, ou por severos processos inflamatórios transmurais, caracterizados pela presença de células mononucleares, ao longo das camadas muscular e serosa das vilosidades e criptas intestinais. Estes representam os primeiros achados patológicos relacionados à presença de cestóides em perus a serem relatados no Brasil. *Raillietina tetragona*, não patogênica para as aves investigadas, ocorreu com baixa prevalência e amplitude de infecção de 2.5% e 1-2 parasitos, respectivamente.

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Acknowledgements: To the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brazil, for partial financial support in this investigation to Dr Roberto Magalhães Pinto; to Rodrigo Méxas, Laboratório de Produção e Tratamento de Imagens, Instituto Oswaldo Cruz, for technical assistance with the figure.

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