

## Communication

[Comunicação]

### Parasitism by *Paratanaisia bragai* (Digenea, Eucotylidae) in common waxbill (*Estrilda astrild*)

[Parasitismo por *Paratanaisia bragai* em bico-de-lacre (*Estrilda astrild*)]

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The common waxbill (*Estrilda astrild*) is a small passerine native to sub-Saharan Africa. Their diet consists mainly of grass seeds, and insects can also be eaten on certain occasions, especially during the breeding season, when more protein is needed (Goodwin, 1982). The common waxbills have been introduced in several regions of the world during the great explorations and now they occupy an estimated global extent of more than 10 million km<sup>2</sup> (Goodwin, 1982).

The digenetic trematode *Paratanaisia bragai* parasitizes the renal medullary collecting ducts and ureters of domestic and wild birds (Brenner *et al.*, 2005). Some species of birds have been identified as definitive hosts of this parasite including: (1) pigeon (*Columba livia*); (2) domestic chicken (*Gallus gallus domesticus*); (3) ruddy ground-dove (*Columbina talpacoti*); (4) red-winged tinamou (*Rhynchotus rufescens*); (5) guinea fowls (*Numida meleagris*); (6) turkey (*Meleagris gallopavo*); double-toothed barbets (*Lybius bidentatus*); (7) ring necked pheasant (*Phasianus colchicus*); (8) blue and gold macaw (*Ara ararauna*); (9) blue-winged macaw (*Propyrrhura maracana*); and (10) white-eared parakeet (*Pyrrhura leucotis*) (Menezes *et al.*, 2001; Pinto *et al.*, 2004; Brenner *et al.*, 2005; Gomes *et al.*, 2005; Rotstein *et al.*, 2005; Luppi *et al.*, 2007).

According to Menezes *et al.* (2001) and Pinto *et al.* (2004), the birds are infected by *P. bragai* ingesting gastropods that are infected with the metacercariae, the infective form. This parasite is usually little pathogenic, and may cause mild renal lesions in some cases. However, at high parasite load and depending on the susceptibility of hosts, it can cause apathy, weight loss, polyuria, dehydration and death (Portugal *et al.*, 1972). The macroscopic lesions found during the necropsy can be mild or absent (Gomes *et al.*, 2005).

The few available studies on the epidemiology and pathogenesis of this trematoda, especially in Passeriformes like the common waxbill, indicate that the mechanisms of infection and lesions associated with this species are not well established (Menezes *et al.*, 2001; Pinto *et al.*, 2004). Therefore, this study aimed to report the first record of parasitism by *P. bragai* in the common waxbill.

A young male common waxbill was received at the Centro de Triagem de Animais Silvestres (CETAS), located at the Universidade Federal de Viçosa, Brazil. This animal was kept under veterinarian intensive care for about two months. After this period, the animal came to death, being readily necropsied.

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During the necropsy, dehydration and signs of cachexia were observed. Other findings included: (1) visualization of congested lungs and air sacs thickened and opaque, and (2) the liver and kidneys had normal volumes. Parasites were collected from renal tubules and fixed in 10% formalin. The adult helminths and the eggs were measured and morphologically analyzed. Concomitantly, fragments of approximately 0.5 x 0.5 x 0.5cm in the lungs, heart, liver, kidneys and intestines were collected for further histopathological analyses. These fragments were placed in glass vials containing 10% formalin being then transferred to alcohol 70% after the period of 24 hours. Soon after, they were soaked in paraffin, cut 4µm thick, placed in glass slides and stained with hematoxylin and eosin (HE) according to the technique described by Travassos *et al.* (1969), modified. After histological processing, the organs were analyzed by light microscopy, 10x and 40x objectives.

Later, the identification of the parasites was performed according to the criteria established by Travassos *et al.* (1969) and Brandolini and Amato (2007). The results demonstrated the occurrence of the trematode *P. bragai*.

The results of the present work revealed that: (1) in the lungs there were several areas of edema, with inflammatory cells, predominantly heterophils, infiltrate; (2) aspects of heart, liver and intestines were normal and (3) it was observed the presence of various parasites and/or their eggs in the renal parenchyma (Figure 1A, B), mainly in the medullary region.

There was a moderate parasitic load, dilated renal collecting ducts, destruction and flattening of lining epithelial cells and, around the parasites, there was moderate inflammatory reaction and replacement of renal parenchyma by a thin layer of connective tissue cells. However, there was no inflammatory reaction in fragments of the cortical region of the kidneys, where there were no parasites.

*P. bragai* requires a land mollusk to complete its life cycle and, in Brazil, *Leptinaria unilamellata* (Keller and Araújo, 1992) and *Subulina octona*

(Brandolini and Amato, 2007) have already been confirmed as potential intermediate hosts. *L. unilamellata* and *S. octona* have become widely distributed throughout Brazil and can be found in humid and shaded places such as parks and gardens (Araújo and Bessa, 1993).

According to Brandolini and Amato (2007), adult specimens of *P. bragai* kidney ducts are found in several species of domestic and wild birds. Thus, the ingestion of only part of a mollusk infected by *P. bragai* would be enough to infect a bird. In this research, it was observed that the young common waxbill of about two months old showed adult worms and eggs filled with moderate parasite load. Regarding this fact, Keller and Araujo (1992) mentioned that within about 20 to 25 days after ingesting the intermediate host the eggs of this helminth can be found in bird droppings, becoming sources of environmental contamination.

The authors suggest that the infection of the studied bird was accidental, since these land mollusks are not part of the natural diet of common waxbill. Moreover, because of the history of this animal, which was kept in captivity and under veterinary care from a few days after hatching, it would be unlikely the natural infection by *P. bragai*. However, Luppi *et al.* (2007) reported an accidental infection in parrots bred in captivity since its outbreak, which is in accordance with the present report. Thus, under this perspective, the authors suggest that this animal was probably infected shortly after hatching, by eating infected mollusk fragments regurgitated or brought into the nest by their parents.

*P. bragai* is considered to have low pathogenic potential (Pinto *et al.*, 2004). However, clinical signs such as apathy, weight loss, diarrhea and death have been reported in domestic pigeons (Portugal *et al.*, 1972). In this context, although the studied animal has shown signs of cachexia and dehydration, the authors attribute the main cause of death to respiratory complications, which may or may not have been aggravated by a possible renal failure due to a parasitic nephritis.

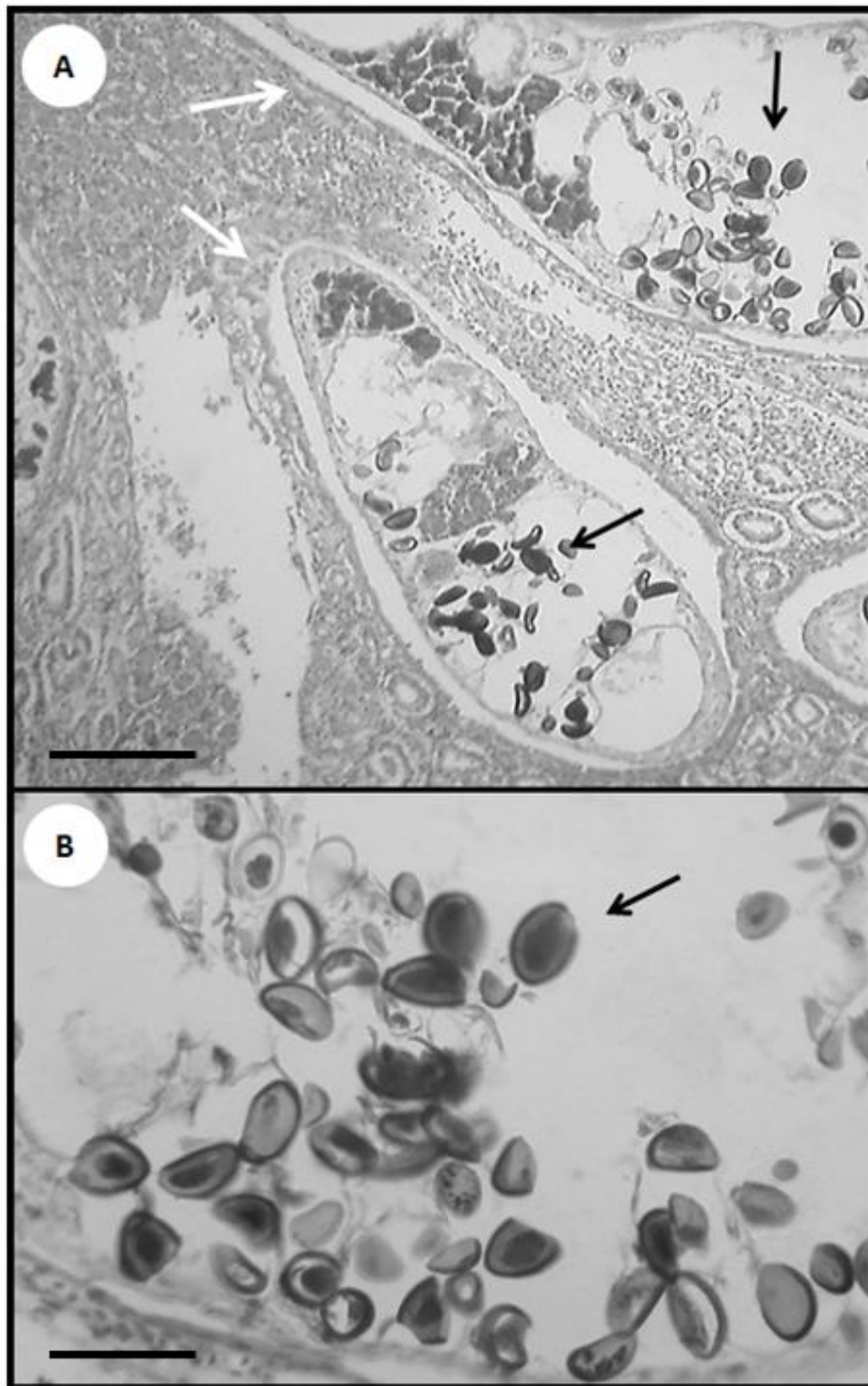


Figure 1 A-B. *Paratanaisia bragai* (white arrows) and eggs (black arrows) in histological cross sections of kidney of common waxbill. Presence of moderate inflammatory reaction and replacement of renal parenchyma by a thin layer of connective tissue cells. HE. Bars: A: 0.5mm; B: 0.05mm.

In conclusion, the authors report the first record of occurrence of *P. bragai* parasitizing the common waxbill, which may contribute in the future for studies of this and other helminths in these birds. On the other hand, this study suggests that more species of Passeriformes

could be added in the epidemiology of the infection by this trematode.

Keywords: kidney, trematode, parasitism, Passeriformes

## RESUMO

O trematodeo digenético *Paratanaisia bragai* é descrito como parasito dos túbulos coletores renais e ureteres de aves. Esse helminto é usualmente pouco patogênico para a maioria dos hospedeiros; porém, em altas cargas parasitárias e em animais mais suscetíveis, pode causar sérios danos que resultam em apatia, perda de peso, desidratação e até mesmo a morte. O presente trabalho objetivou relatar pela primeira vez o trematoide *P. bragai* parasitando os rins de um passeriforme da espécie *Estrilda astrild*, conhecido popularmente como bico-de-lacre, de distribuição cosmopolita. A partir da análise histopatológica dos rins da ave, observou-se a presença dos vermes adultos e de ovos, grande dilatação dos ductos coletores renais, destruição e achatamento das células epiteliais de revestimento e, ao redor dos parasitos, observou-se moderada reação inflamatória. Os autores sugerem que a infecção pode ter sido acidental, uma vez que os moluscos terrestres que servem de hospedeiros intermediários para *P. bragai* não fazem parte da dieta natural descrita para os bico-de-lacre. Os resultados encontrados no presente estudo confirmaram um bico-de-lacre como possível hospedeiro de *P. bragai*, acrescentando essa espécie de ave e possivelmente todo o grupo dos passeriformes na epidemiologia da infecção por esse trematoide.

Palavras-chave: rim, trematoide, parasitismo, passeriformes

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