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BRIEF COMMUNICATION

DOGS MAY BE A RESERVOIR HOST FOR *Angiostrongylus costaricensis*

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SUMMARY

Angiostrongylus costaricensis is a parasitic nematode of wild rodents. Several other vertebrate species including man may become infected by ingestion of the third stage larvae produced by the intermediate hosts, usually slugs from the family Veronicellidae. There is a report of the diagnosis of abdominal angiostrongyliasis in *Canis familiaris* with lesions resembling those found in human disease. As a preliminar evaluation of the adequacy of a canine model for pathogenetic studies, a dog was inoculated with 75 L3 of *A. costaricensis*. Infection was established and fist stage larvae were found in feces up to 88 days post infection, sometimes in very large numbers (9.5 x 10^4 L1/g). No clinical manifestations or significant lesions were detected. These are indications that dog may play a role as a reservoir host for *A. costaricensis*.

KEYWORDS: Metastrongyloidea; *Angiostrongylus costaricensis*; *Canis familiaris*; Abdominal angiostrongyliasis

Angiostrongylus costaricensis is a nematode parasitc of wild rodents. The adult worm lives inside the mesenteric arteries or its branches and may accidentally infect man[1]. There is a report from Costa Rica of a natural infection of *Canis familiaris* with intestinal lesions similar to those described in humans[2]. For this reason a preliminar experiment was planned to evaluate the usefullness of dogs as an experimental model for pathological studies on abdominal angiostrongyliasis. One adult animal (9 kg) of undefined strain was inoculated *per os* with 75 third stage larvae (L3) of *Angiostrongylus costaricensis*, Santa Rosa strain. Metastrongylid larvae with a delicate groove next to the tip of the tail[1] were detected in faeces from the 28th day post-infection (dpi) up to 88th dpi. Daily L1 output (Fig. 1) was very variable with several periods when no larvae was detected as well as days when a huge number was detected (maximum of 9.5 x 10^4L1/g). The identification of these larvae as *A. costaricensis* was obtained after passage through *Biomphalaria glabrata* (Esteio strain) and Swiss mice, where adult worms were recovered inside the mesenteric arteries. The dog remained asymptomatic and no significant macroscopic lesions were visualized at a laparotomy performed at 94th dpi. No significant changes occurred in haemoglobin concentration along the period of observation (data not shown). A slight increase in peripheral blood eosinophils was detected in the first 90 days of infection (Fig. 2). IgG antibodies were detected by ELISA (female worm crude antigen at 7 µg/ml, sample dilution at 1:100 and peroxidase conjugated anti-dog IgG at 1:1000) with a three fold sustained increase from 54th to the 93rd dpi and a return to baseline values (Fig. 3). At microscopic examination, a biopsy taken from the adipose tissue next to splenic hilum showed a recanalized thrombosis in a small artery, surrounded by an intense neutrophilic infiltration. No parasitic structure was identified.

In southern Brazil, several transmission foci are localized in urban areas where wild rodents are not easily found. Since sinantropic rodents

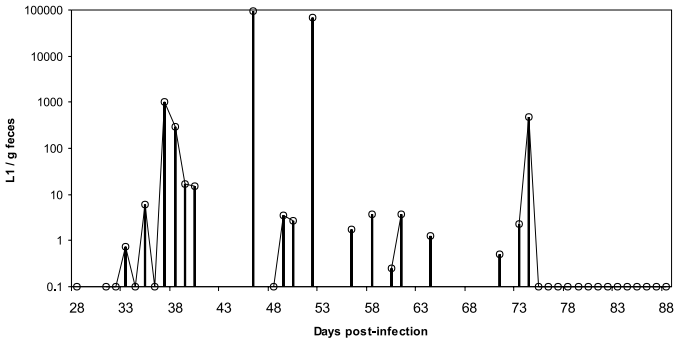

Fig. 1 - *Angiostrongylus costaricensis*' first stage larvae (L1) eliminated in feces from a experimentally infected dog. The counting shown was performed from April 18th (28th day post-infection = dpi) to July 14th (88th dpi). In several days, feces were not available for examination.

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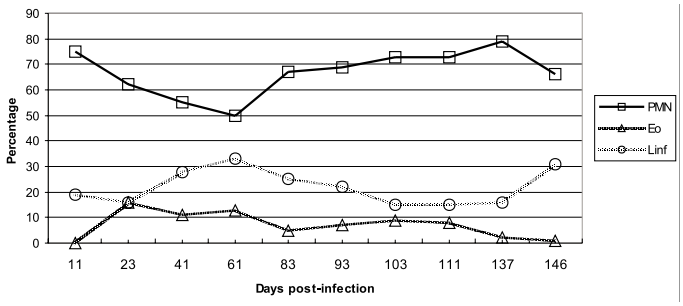

Fig. 2 - Peripheral blood cell counts: neutrophils (PMN = polymorphonuclear leukocytes), eosinophils (Eo) and Lymphocytes (Linf).

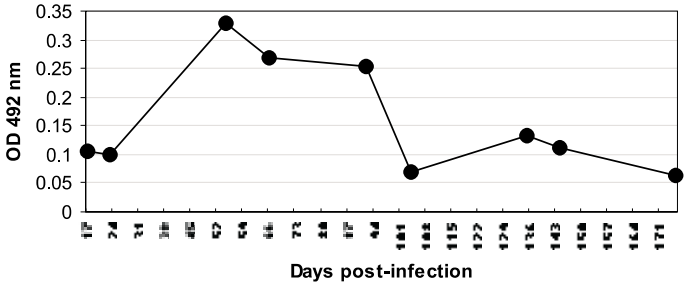

Fig. 3 - Detection of serum antibodies by IgG-ELISA using a crude adult *A. costaricensis* antigen.

are not as well adapted hosts to *A. costaricensis* as the wild rodents like *Oligoryzomys nigripes*[3] another vertebrate species should play the role of definitive host. The present preliminary data indicate the possible role of *Canis familiaris* as a reservoir host for *A. costaricensis*. Dog is a natural host for another metastrongylid species, *Angiostrongylus vasorum* (Baillet, 1866), a nematode living inside the pulmonary arteries[4]. The asymptomatic course of infection and the abscence of macroscopical lesions at laparotomy at 94th dpi may be part of a spectrum of the disease in *C. familiaris*, not fully appreciated in a single preliminary experimental infection. If the low morbidity is a rule, dog would not be a good experimental model for pathological studies. But this data may also mean that dog is a well-adapted host for *A. costaricensis* and it may have in urban areas the role played by rodents in the wild cycle of abdominal angiostrongyliasis[5].

RESUMO

Cães podem ser hospedeiros reservatórios do *Angiostrongylus costaricensis*

Angiostrongylus costaricensis é um nematódeo parasita de roedores silvestres. Várias espécies de vertebrados incluindo o homem, podem se infectar pela ingestão das larvas de terceiro estágio (L3) produzidas no hospedeiro intermediário, geralmente lesmas da família Veronicellidae. Existe um relato do diagnóstico de angiostrongilíase abdominal em *Canis familiaris* com lesões semelhantes ao encontrado na doença humana. Visando uma avaliação preliminar da utilidade do modelo canino para estudos de patogenia, um cão foi inoculado com 75 larvas L3 do *A. costaricensis*. O animal se infectou e larvas de primeiro estágio foram encontradas nas fezes até 88 dias após a inoculação, às vezes em número muito elevado (9,5 x 10^4 L1/g). Não foram detectadas manifestações clínicas ou significantes lesões nos intestinos. Estas são indicações de que cães possam ser hospedeiros reservatórios do *A. costaricensis.*

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