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Epidemiological studies on intestinal helminth parasites of the patagonian grey fox (*Pseudalopex griseus*) in Tierra del Fuego, Patagonia Argentina

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Abstract

The present work was performed to study the intestinal helminths of the patagonian grey fox (*Pseudalopex griseus*) and to obtain information about its possible role in the sylvatic life cycle of *Echinococcu granulosus* in Tierra del Fuego, Patagonia Argentina. Eighty-one foxes were captured and subject to post-mortem analysis. Thirty-one foxes (38.3%) harboured helminths. A total of six helminth species were recovered. Only one adult of *E. granulosus* was found in the studied samples. The current study is the first report of the intestinal helminths of the patagonian grey fox in Tierra del Fuego, Argentina and showed that this specie is probably not an important reservoir host for *E. granulosus*.

Keywords: Grey fox; *Pseudalopex griseus*; Intestinal helminths; Hydatidosis; *Echinococcus granulosus*

1. Introduction

Cystic echinococcosis is an important zoonosis caused by the tapeworm *Echinococcus granulosus*. The adult stage inhabits the intestine of dogs and other canidae and sheds its eggs into the environment with the feces. Main intermediate hosts of the parasite, livestock and human, acquire the infection by ingestion of the parasite eggs (Eckert et al., 1986).

The list of wild canidae and ungulata found naturally infected with *E. granulosus* is extensive, but it is generally not of great importance in human transmission of the parasite (D'Alessandro, 2002).

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Depending on the region of the world, wolves, dingoes, coyotes, jackals and foxes can be mentioned as definitive hosts (Acha and Szyfres, 1986; Liu et al., 1970; Schantz et al., 1972; D'Alessandro, 2002).

The echinococcocidal infection was found in the South American red fox (*Dusicyon culpaeus*). The isolated parasite was thought to be a new specie and was named *Echinococcus patagonicus* (Szidat, 1960). Something similar occurred with the infection found in the patagonian grey fox (*Dusicyon griseus*) and the grey fox from La Pampa (*Dusicyon gymnocercus)* since the authors suggested to assign the found parasite as a new subspecie *E. granulosus dusicyontis* (Blood and Lelijveld, 1969).

Schantz et al. (1976) fed three fox species, *D. culpaeus*, *D. griseus* and *D. gymnocercus* with larvae of *E. granulosus* domestic sheep in Argentina. The three species of foxes became infected. The susceptibility of *D. culpaeus* compared favorably to that of dogs. Most *D. griseus* and *D. gymnocercus* were less susceptible than dogs but gravid strobilae were recovered from some animals of both species.

At present, hydatidosis control measures tend to interrupt the domestic cycle of transmission. Moreover, the presence of wild cycles adds a new dimension to the problem. Although humans' risk of the infection from wild animals is very low – specially, if it is compared to the infection from domestic dogs – control programs should also determine infection in wild reservoir hosts (Schantz et al., 1975). No surveys for *E. granulosus* in foxes or wild dogs have been conducted in Tierra del Fuego, Patagonia Argentina.

Three wild canidae can be found in the above-mentioned province: the Fuegian red fox (*Pseudalopex culpaeus lycoides*), the grey fox (*Pseudalpex griseus*) and the wild dog (*Canis familiaris*) (Matteazi and Loekemeyer, 1995). An open season was established from May to September to control the ever-increasing population of the fox species, so as to reduce their impact on flocks. For this reason, the Fuegian red fox has been on the verge of extinction. Hence, since 1993 it has been protected by the Provincial Law 101. Concerning to the wild dog, still an unresolved problem, there has been significant advances in the knowledge of their impact on the mortality of sheep and wild fauna as well as in some legal aspects of the problem (INTA, 2003). For those reasons and for its alimentary habits, population and territory, the present work was realized with the grey fox.

The grey fox is an exotic, not endangered species in Tierra del Fuego Island. It was introduced in the 50s so as to control the rabbit (*Oryctolagus cuniculus*) infestation that affected the sheep ranching activities in Tierra del Fuego (Jaksic and Yáñez, 1983). This attempt was rather limited because of the small number of foxes included. The grey fox successfully became adapted to the ecological conditions of the region, inhabiting almost the totality of the agro-ecological areas, specially the Magallanic steppe and, to a lesser degree, the ecotone and the Cordilleran forest of the south (Fig. 1) (Átala et al., 1980; Catalano and Fernández, 1986; Matteazi and Loekemeyer, 1995).

From the nutritional point of view, the grey fox is omnivore with an extremely diverse diet. Depending on the time of the year, up to 12 groups of food were identified. The grey fox's diet includes insects, wild birds, carcasses of sheep and cattle, rodents and vegetables (Crespo, 1971; Átala et al., 1980). As far as cystic echinococcosis is concerned, foxes can be exposed to infected sheep viscera twice a year: in winter, owing to the lack of food that make foxes approach to studs and farmsteads where they scavenge for refuses of slaughtered sheep, and in spring, when the great mortality of sheep occurs.

In spite of the preventive measures implemented by the hydatidosis/echinococcosis control program – that has destabilized the domestic dog–sheep cycle – the infection of wild canidae is possible due to certain epidemiological situations that still persist. For this reason, it is important to study their potential importance in sylvatic cycles.

The present work was performed to study the intestinal helminths of the patagonian grey fox (*Pseudalopex griseus)* and to obtain information about its possible role in a sylvatic life cycle of *E. granulosus* in Tierra del Fuego, Patagonia Argentina.

2. Materials and methods

An authorization and ethical approval to study the grey fox was requested from the Secretary of Natural Resources of Tierra del Fuego Province prior to commencement of the work. In order to accomplish