Detection of antibodies to Neospora caninum in two species of wild canids, Lycalopex gymnocercus and Cercocyon thous from Brazil

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Abstract

Domestic dog (Canis domesticus) and the coyote (Canis latrans) are the only known definitive hosts for the protozoan Neospora caninum that causes abortion in dairy cattle. In the present study, antibodies to N. caninum were sought in three species of wild canids, Cercocyon thous, Lycalopex gymnocercus and Dusicyon vetulus from Brazil. Antibodies to N. caninum were assayed by the indirect fluorescent antibody test (IFAT) and the Neospora agglutination test (NAT). N. caninum antibodies were found in five of 12 L. gymnocercus with IFAT titers of 1:50 in three, 1:100 in one, and 1:1600 in one, and NAT titers of 1:40, 1:80, 1:160, 1:320, and 1:640 in five animals. Antibodies to N. caninum were found in four of 15 C. thous with IFAT titers of 1:50 in one, and

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1:100 in three, and NAT titer of 1:40 in one animal. All 30 *D. ventulus* were seronegative by IFAT and NAT.

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1. Introduction

The coccidium *Neospora caninum* is an important cause of abortion in cattle worldwide (Dubey and Lindsay, 1996; Dubey, 2003a). It also causes mortality in sheep, goats, horses, rhinoceros, and deer. Domestic dog (*Canis domesticus*) and the coyote (*Canis latrans*) are the two known definitive hosts for *N. caninum* that excrete the environmentally resistant oocysts (McAllister et al., 1998; Basso et al., 2001; Gondim et al., 2004). Because both dogs and coyotes excrete only a few *N. caninum* oocysts compared with other coccidians, other wild carnivores have not been ruled out as its definitive hosts. Antibodies to *N. caninum* have been reported in several species of domestic and wild animals (Dubey, 2003b). We report antibodies to *N. caninum* for the first time in two species of wild canids from Brazil.

2. Materials and methods

Sera were collected from three species of wild canids (*Lycalopex gymnocercus*, *Dusicyon vetulus*, and *Cerdocyon thous*) captured in traps and were part of larger project on the epidemiology and control of infections diseases in wild animals in Brazil. The *L. gymnocercus* (*n* = 12) were from the state of Rio Grande do Sul, *D. vetulus* (*n* = 30) were from the state of Paraíba, and *C. thous* (*n* = 15) from the state of São Paulo and Paraná.

Blood samples were collected from a jugular or brachial vein, the sera were separated, and stored at −20 °C until being tested for anti-*N. caninum* antibodies. The indirect immunofluorescent antibody test (IFAT) with a cut-off value of 1:50 and *Neospora* agglutination test (NAT) with cut-off value of 1:40 were used to screen for *N. caninum* antibodies. The seropositive samples were tested further in two-fold serial dilutions.

For IFAT, tachyzoites of the *N. caninum* NC-1 strain were used as antigen (Dubey et al., 1988). Anti-dog IgG–FITC conjugate from rabbit (Sigma, F7884, St. Louis, Missouri) was used as the fluorescent label, and a positive and a negative domestic dog sera were used in each slide as controls. The NAT was performed using mouse-derived *N. caninum* tachyzoites as described by Romand et al. (1998).

3. Results and discussion

*N. caninum* antibodies were found in five of 12 *L. gymnocercus* with IFAT titers of 1:50 in three, 1:100 in one, and 1:1600 in one, and NAT titers of 1:40, 1:80, 1:160, 1:320, and 1:640 in five animals. Antibodies to *N. caninum* were found in four of 15 *C. thous* with
IFAT titers of 1:50 in one, and 1:100 in three, and NAT titer of 1:40 in one animal. All 30 *D. vetulus* were seronegative by IFAT and NAT. Results of the present study indicate that additional species of carnivores have been exposed to *N. caninum*. It remains to be determined if these animals can shed *N. caninum* oocysts.

References


