Seroprevalence of Toxoplasma gondii in Cats from Colombo, Sri Lanka

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ABSTRACT: Cats are essential in the life cycle of Toxoplasma gondii because they are the only hosts that can excrete the environmentally resistant oocysts in nature. Nothing is known of the prevalence of Toxoplasma gondii in cats from Sri Lanka. Serum samples from 86 cats from Colombo, Sri Lanka, were tested for antibodies to T. gondii using the modified agglutination test; antibodies were found in 26 (30.2%) cats with titers of 1:25 in 4, 1:50 in 4, 1:100 in 3, 1:400 in 2, 1:800 in 3, 1:1,600 in 4, and 1:3,200 or higher in 6 cats. Seropositivity increased with age and was higher in stray cats versus pet cats. This is the first report of seroprevalence of T. gondii in cats from Sri Lanka.

Cats are essential in the life cycle of Toxoplasma gondii because they are the only hosts in nature that can excrete the environmentally resistant oocysts (Dubey, 2009). We recently summarized worldwide serological prevalences of T. gondii in cats for the past 20 yr (Dubey, 2009; Jones and Dubey, 2010). To our knowledge, there is no report of T. gondii infection in cats from Sri Lanka and only limited information from cats in the neighboring country, India. The most likely reason for lack of this information is that studies on cats are considered nonreligious. Herein we report seroprevalence of T. gondii in cats from Sri Lanka.

Blood samples were collected from 86 cats at veterinary clinics and households in Colombo during January to April 2008. Serum was separated and stored at –20 C until tested for antibodies to T. gondii. Twofold serial dilutions were made (1:25 to 1:3,200) and tested with a modified agglutination test as described by Dubey and Desmonts (1987). Data on general characteristics, i.e., gender, approximate age, origin (stray and household), and preference to hunt transport hosts of T. gondii, were obtained through a questionnaire survey (Table I).

Seroprevalence of T. gondii was statistically analyzed considering the variables of gender, age, origin, and hunting preferences of cats using MINITAB version 15 and SPSS 15.0 software for Windows (SPSS, Chicago, Illinois). Associations and relationships between variables were tested using the chi square test, Fisher’s exact test, and Pearson’s correlation. Differences were considered statistically significant when the probability (P) value ≤0.05.

Antibodies to T. gondii were found in 26 (30.2%) cats with titers of 1:25 in 4, 1:50 in 4, 1:100 in 3, 1:400 in 2, 1:800 in 3, 1:1,600 in 4, and 1:3,200 or higher in 6 cats. Table I shows the general characteristics of the 86 cats studied. Although a higher percentage of female cats was seropositive compared with male cats, a significant association was not evident between the gender and seropositivity of cats. The studied animals were aged between 4 mo and 16 yr. Four age groups were identified based on an equal distribution of cats among the groups (for statistical purposes). The association between age groups and seropositivity of cats was significant (chi square = 4.801, P < 0.05). However, these data are preliminary because the sample size was small and disproportionate. No significant correlation was evident between the age of cat and the antibody titer. It is well known that prevalence of T. gondii is higher in stray cats that must hunt for food versus pet cats, and seroprevalence increases with age of the cat (Dubey, 2009).

Determination of antibodies is a better measure of the prevalence of T. gondii in cats than fecal examination for oocysts because only a few (1%) cats actually shed oocysts at any given time (Jones and Dubey, 2010). In experimental infections, cats usually stop shedding T. gondii oocysts by the time they seroconvert (Dubey and Frenkel, 1972). As 30 percent of cats in the present study were seropositive, they had probably shed oocysts and contaminated the environment. Although T. gondii infections have been reported in humans and animals from Sri Lanka (Dubey and Beattie, 1988; Ekanayake et al., 2004; Dubey et al., 2007), this is the first report of T. gondii infection in cats from Sri Lanka.

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LITERATURE CITED