

## PREVALENCE OF *BARTONELLA HENSELAE* ANTIBODIES IN CAPTIVE WILD FELIDS, CALIFORNIA, AND ASSOCIATION WITH ECTOPARASITE INFESTATION

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*Les chats représentent le réservoir naturel de l'agent de la maladie des griffes du chat, Bartonella henselae. Afin de déterminer le rôle possible joué par les félins sauvages dans l'épidémiologie des infections par Bartonella, 125 sérums collectés de 114 félins sauvages, représentant 26 espèces ou sous-espèces, détenus en captivité dans 4 parcs zoologiques en Californie furent testés pour la présence d'anticorps anti-Bartonella. Les sérums furent collectés entre 1991 et 1995. Trente-quatre félins (30%) étaient séropositifs. La distribution des séropositifs était similaire pour les mâles et les femelles. Les félins positifs avaient plus de chance d'appartenir au genre Felis qu'aux genres Acinonyx (guépard) ou Panthera. La séoprévalence augmente aussi avec l'âge des animaux. Les espèces traditionnellement infestées par les ectoparasites (puces et gâles) avaient plus de chance d'être séropositives que celles qui ne le sont pas.*

Cent vingt cinq serum samples from 114 captive wild cats representing 26 species or subspecies collected between 1991 and 1995, were retrieved from the serum banks of 4 California zoological parks: the San Diego Zoo, the Sacramento Zoo, the Micke Grove Zoo (Lodi) and the Folsom Zoo and were tested for presence of *B. henselae* antibodies (titer  $\geq$  1:64) by immunofluorescent antibody assay (IFA), as previously described [1]. Thirty-four (30%) of the 114 captive wild cats had *B. henselae* antibodies. The prevalence varied widely (0 to 100%) among the various species and subspecies of wild cats, but seropositivity was more likely to occur in the genus *Felis* than in the genus *Acinonyx* (cheetah) or *Panthera* (lion, tiger, leopard, jaguar) (relative risk (RR)=2.77, 95% confidence interval (CI)=1.50, 5.13). Small cats (average adult weight less than 20 kg) were 2.5 times more likely than the large cats (average adult weight 20 kg) to be seropositive (RR=2.53; 95% CI=1.46, 4.41). There was no difference of antibody prevalence by sex, as 30.3% of the males (17/56) and 28.0% of the females (16/57) were seropositive. Seroprevalence increased with age from 25% in the 0-2 yr-old group to 35% in cats  $\geq$  9 yr-old. However, within the 0-2 yr old group, seroprevalence was the lowest (12%) in the cats <1 year old (3/25) and the highest (37%) in the cats 1-2 yr-old (10/27). Cats with the highest *B. henselae* titers (1:256) were all < 5 years of age. Cats of the genus *Felis*, aged 0-5 years (13/29) were more likely (RR=2.88; 95% CI=1.31, 6.36) to be seropositive than cats of the genus *Panthera* and *Acinonyx* (7/45).

Cats of the genus *Felis* and *Acinonyx* were reported to frequently have fleas, presumed to be *Ctenocephalides felis* and/or ear mites, *Otodectes cynotis*, whereas these ectoparasites were uncommon in most of the cats of the genus *Panthera*. Wild felids species infested by fleas and/or ear mites (22/56) were 1.9 times more likely to be seropositive for *B. henselae* (95% CI=1.04, 3.46) than the non-infested species (12/58). Cat species known to be infested by ear mites were 2.31 times more likely to be seropositive (15/29) than cat species not exposed to ear mites (19/85) (95% CI= 1.36, 3.93). This risk was higher than the risk associated with flea infestation (RR=1.9, 95% CI= 1.04, 3.46). Among the subgroups of cats with personal records of ectoparasite exposure, infested cats (11/21) were significantly more likely to be seropositive (RR=2.12; 95% CI=1.23, 3.64) than non-infested animals (23/93). Ear mite infestation was once again found to be significantly linked to *B. henselae* seropositivity (Fisher's exact test,  $p=0.003$ ), while flea infestation was not any more. A single free-roaming domestic cat from the San Diego Zoo, infested by fleas, was captured and tested. It was positive for *B. henselae* antibodies with a titer of 1:256. This is the first report of *B. henselae* infection in captive wild cats and of an epidemiological association with ear mite infestation in felids.

The agent of cat scratch disease, *Bartonella henselae*, is isolated from the blood of naturally infected domestic cats. Epidemiologically, domestic cats play a major role as reservoir for this bacterium. In order to determine the role, if any, played by wild felids in the epidemiology of *Bartonella* infection, 125 serum samples from 114 captive wild cats representing 26 species or subspecies collected from the serum banks of four California zoological parks between 1991 and 1995, were tested for presence of *B. henselae* antibodies. Among the 114 captive wild cats, 34(30%) had antibodies against *B. henselae*. The seropositivity was evenly distributed among sexes, but it was more likely to occur in the genus *Felis* than in the genus *Acinonyx* or *Panthera*, and increased with age. Cat species usually infested with flea and/or ear mites were more likely seropositive for *B. henselae* than the non-infested wild felids.

[1] Chomel BB., Abbott RC., Kasten RW., et al, 1995. *Bartonella henselae* prevalence in domestic cats in California: Risk factors and association between bacteremia and antibody titers. *J. Clin. Microbiol.*;33:2445-2450.

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