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NEWSLETTER

Bartonella and Public Health: Reasons to Test ALL Cats for *Bartonella*[©]

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In This Issue:

The spring issue of the NVL Newsletter will review the recent widening clinical spectrum of *Bartonella* infections in humans:

1. CDC report of CSD in 32 children in Texas Children's Hospital during 1 year.
2. Concurrent CNS infection by the Lyme disease agent and *B. henselae*, transmitted by ticks, caused clinical complications in New Jersey.
3. A mononucleosis-like syndrome in children.
4. Dog fleas also carry *B. henselae*.

Practicing veterinarians across the United States should address these public health issues.

Centers for Disease Control And Prevention:

Morbidity and Mortality Weekly Report:
March 15, 2002, Vol. 51/ No. 10.

Cat-Scratch Disease in Children-

Texas, September 2000-August 2001

S. Kaplan, MD, Texas Children's Hospital, Houston; J. Rawlings, MPH, Texas Dept of Health. C Paddock, MD, J Childs, ScD, R Regnery, PhD, Div of Viral and Rickettsial Diseases, National Centers for Infectious Diseases; M Reynolds, PhD, EIS Officer, CDC.

www.cdc.gov/mmwr

Summary:

The CDC has reported on a one-year study of 32 children with cat scratch disease, median age of 6 years (range: 2-15 years), seen at the Texas Children's Hospital in Houston. All cases were confirmed by serology with antibody titers indicating recent *B. henselae* infection. Fourteen of the 32 children required hospitalization. The study concludes: "The findings emphasize that although CSD is generally a mild, self-limiting

illness, the differential diagnosis often includes more serious conditions (e.g., lymphoma, carcinoma, mycobacterial or fungal infections, or neuroblastoma) that might result in protracted hospital stays, and lengthy treatments before diagnosis."

Case reports:

Case 1. A 5-year-old boy was hospitalized for a chronic fever reaching 104° F for 12 days and pain in the left upper quadrant for 8 days. Laboratory findings showed a mild leukocytosis and an increased erythrocyte sedimentation rate. Retroperitoneal lymphadenopathy was found by abdominal ultrasound. The boy had been scratched by a kitten 2 months before the onset of illness and had an IgG titer for *B. henselae* of 1:4,096 on day 14 of the illness. He recovered completely after antibiotic therapy.

Case 2. A 10-year-old girl with endocarditis and persistent low-grade fever, myalgia and weight loss was hospitalized. An aortic valve homograft was performed. Histology of the vegetative valve lesion showed granulomatous inflammation and numerous gram-negative bacilli within the vegetations. All cultures of the lesions were sterile. The girl had exposure to birds and kittens and the *B. henselae* IgG titer on day 7 was 1:8,192.

Case 3. A 4-year-old boy was hospitalized for intermittent back pain and inability to walk. MRI demonstrated a diffuse abnormal marrow signal in the L1 vertebral body without destruction of the adjacent disc spaces. The boy's back pain resolved without specific therapy within several weeks. There was no history of trauma or cat contact. The *B. henselae* IgG titer was 1:2,048 by day 8 of illness.

Case 4. A 12-year-old girl was hospitalized after 3 weeks of intermittent fevers (101-105.1° F). There were enlarged and tender

inguinal lymph nodes. A colonoscopy showed nodularity with mucosal edema in the terminal ileum. The girl had a recent history of dog and kitten scratches. The *B. henselae* IgG titer during week 4 of illness was 1:8,192.

Remaining 28 cases:

The clinical manifestations of the remaining 28 cases included: fever and regional adenopathy (classic CSD) n=20; chronic fever n=4; hepatosplenic granuloma n=3 and encephalitis n=1. Fourteen of the 32 children (44%) were hospitalized.

Other serious clinical manifestations of *Bartonella henselae* infection in people include: granulomatous conjunctivitis, neuroretinitis, atypical pneumonia, bacillary angiomatosis and peliosis, inflammatory bowel disease, and a mononucleosis-like syndrome.

NVL Editor's Comments:

This year long study of children with *Bartonella* infection highlights the importance of this zoonosis. Although many *Bartonella* infections are mild or go undiagnosed, some may present with severe clinical signs that require invasive diagnostic techniques. The authors of this study state, "Because Texas Children's Hospital is a referral hospital, the frequency of severe manifestations seen in this series is probably disproportionately high relative to general practice." Although CSD usually causes a more severe syndrome in children, it should be noted that 50% of CSD cases occur in people over 21 years of age.

With the advent of accurate serologic assays for the diagnosis of *Bartonella* infection in cats, and with the development of effective and practical antibiotic therapy for infected cats, it appears timely for veterinarians to consider testing all cats, especially kittens, for *Bartonella* infection. This serious public health threat can be greatly reduced by veterinarians with good veterinary medicine and public health awareness.

New Public Health Findings:

Ixodes scapularis, deer ticks, were found to carry *B. henselae* in central New Jersey. **Several ticks recovered from a cat, living with a Bartonella-infected woman, were PCR positive for *B. henselae*.** This is the first observation of *B. henselae* found in ticks removed from a cat and indicates that ticks can apparently act as vectors for *Bartonella* infection between cats and probably between cats and people. In addition, a mononucleosis-like syndrome has recently been described in *Bartonella*-infected children in Italy and Japanese workers found *B. henselae* in dog fleas.

Concurrent Infection of the Central Nervous System by *Borrelia burgdorferi* and *Bartonella henselae*: Evidence for a Novel Tick-Borne Disease Complex

E Eskow, MD, R-V Rao, PhD, and E Mordechai, PhD. Archives of Neurology 58: 1357-1363, September 2001.

This report describes concurrent infection with *Borrelia burgdorferi* and *Bartonella henselae* in four patients in central New Jersey. All four patients were diagnosed within a 1-month period and evidenced neurological symptoms even after antibiotic therapy for Lyme disease. The finding of coinfection may explain the persistent symptoms seen in some people following even aggressive therapy for Lyme disease (neuroborreliosis).

Case 1. A 14-year-old male adolescent developed frontal headaches, fatigue, knee arthralgia, low-grade fever, insomnia, and inability to concentrate in school. Three months earlier he had removed a small tick from his scalp. Further testing revealed antibody to *B. henselae* but not to *B. burgdorferi*. CT brain scans were normal but PCR on a CSF specimen revealed *B. henselae* and *B. burgdorferi* DNA. The patient denied exposure to cats in the months preceding his illness. A live deer tick found in his household was positive for *B. henselae* and *B. burgdorferi* DNA. He recovered fully after a 6-week course of cefotaxime sodium.

Case 2. A 36-year-old man presented with late-stage Lyme disease. Frontal headaches, fatigue, recent memory loss, depression, and arthralgia symptoms persisted despite ceftioxone sodium therapy. He was serologically positive for *B. henselae* antibodies and *B. henselae* specific DNA was amplified from his blood and a CSF specimen revealed *B. henselae* and *B. burgdorferi* DNA. After additional antimicrobial therapy no *B. henselae* DNA was found in a CFS specimen taken 28 days later and all symptoms resolved.

Case 3. The third patient was a 15-year-old female adolescent who was treated for Lyme disease with doxycycline. Symptoms recurred after therapy over a 3-month period. She had arthralgia, fatigue, headaches, photophobia,

depression, insomnia, and inability to concentrate. There was no exposure to cats or known tick bites. She was serologically positive for antibody to *B. henselae* and *B. burgdorferi* DNA was found in a CSF specimen. Symptoms did not improve on doxycycline therapy so therapy was changed to azithromycin. Her symptoms promptly resolved on azithromycin therapy, which has been recently shown to be very effective against *Bartonella*.

Case 4. The final case was a 30-year-old woman who became ill 2 weeks after removing 2 small ticks from her skin. She presented with fever, frontal headaches, dizziness, fatigue, and arthralgia in her arms. Several small ticks (*I. scapularis*) were removed from her pet cat and were found to be positive for *B. henselae* DNA but were negative for *B. burgdorferi* DNA. The patient was serologically positive for antibodies to *B. henselae* but negative for antibodies to *B. burgdorferi* and negative for DNA of both bacteria in her CSF. Her symptoms resolved during 28 days of oral doxycycline therapy.

Discussion

This is the first report of finding *B. henselae* in deer ticks removed from a pet cat. Ticks are an additional arthropod vector for feline *Bartonella* and may also transmit the bacteria from cats to people and even to dogs. *Bartonella henselae*-induced encephalopathy may be a relatively frequent cause of status epilepticus in school-age children. This pathogen can cause persistent dementia after encephalitis. In addition, neuro-ophthalmic effects, including blurred vision or loss of vision have been reported. This important paper documents the possible coinfection with *Bartonella henselae*, obtained from cats via ticks, that can complicate other tick-borne disease syndromes.

***Bartonella henselae* Induced Mononucleosis-like Syndrome**

Widening of the Clinical Spectrum of *Bartonella henselae* Infection as Recognized Through Serodiagnostics

F Massei, et al. Università di Pisa. European Journal of Pediatrics 159: 416-419, 2000.

This report describes the clinical features of *Bartonella henselae* infections in 20 Italian children (14 males) within a 12-month period. All were serologically positive for antibodies to *B. henselae*. The mean age was 7 years 4 months with a range from 1 year 1 month to 14 years of age. All children but one had a history of contact with kittens.

Clinical manifestations included regional lymphadenopathy in 14 patients, and an

infectious mononucleosis-like syndrome in six children. A severe disorder was first suspected in five patients. Fever of unknown origin occurred in 2 children and multiple hepatosplenic granulomas occurred in 1 child. Osteolytic lesions of the bone suggested a bone neoplasm in 1 child and a marked inguinal lymphadenopathy suggested Burkitt's lymphoma in another.

This report again demonstrates the severe nature of *Bartonella* infections in some people, especially children. Invasive diagnostic procedures may be required before *Bartonella* infections are considered.

Dog Fleas Carry *B. henselae*

***Bartonella henselae* Infection in Domestic Cat and Dog Fleas**

C Ishida, et al. Kansenshogaku Zasshi, 75: 133-136, February 2001.

Japanese veterinarians recently found *B. henselae* in 21% (5/24) of cat fleas *Ctenocephalis felis* and in 100% (2/2) of dog fleas *C. canis* removed from dogs. Thus, cat and dog fleas act as vectors for *B. henselae*.

NVL EDITOR'S COMMENT:

***Bartonella*-Public Health and the Role of Veterinarians**

An ever-increasing number of publications regarding the public health aspects of feline-derived *Bartonella* infections of humans should indicate to veterinarians the need to consider counseling cat owners regarding the existing danger from the bacteria. Whether or not veterinarians wish to think about the danger, it still exists. *Bartonella*-infected pet cats, especially kittens, pose a significant danger to children. It is time for the veterinary community, especially those in feline and small animal practice, to consider this situation and alert all cat owners.

An accurate and practical serological test for detection of *Bartonella* infection in cats and an effective antibiotic therapy regime (azithromycin: 10 mg/kg once daily for 21 days), to remove the bacteria from infected cats, presently exists. Practitioners should also recognize the danger to themselves and to their employees. In addition, all potential blood donors should certainly be screened for infection before their use. This can prevent the iatrogenic spread of this dangerous group of bacteria to client's cats.

References:

Bartonella references can be obtained at:

www.nlm.nih.gov/