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NEWSLETTER

Interpreting the FeBart[®] Bartonella Test Results[©]

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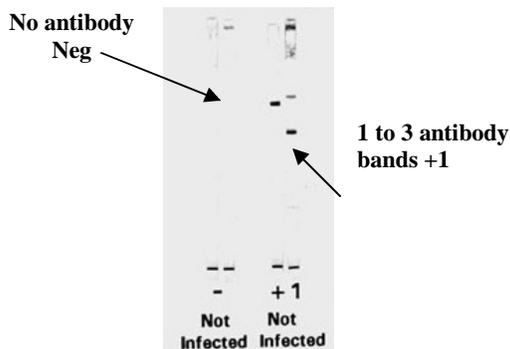
The fall 2005 issue of the NVL Newsletter will discuss the interpretations of the results of the FeBart[®] screening test for determination of *Bartonella* infection. What does a positive result (+3 or +4) mean? What does a negative (-Neg or +1) mean? We will discuss the various test results and what action is required for each result.

The FeBart[®] Bartonella Test:

The FeBart[®] *Bartonella* test is a western immunoblot serological test for antibodies against the structural proteins of *Bartonella*.^{1, 2, 3} Most, though not all, infected cats produce antibodies against 7 to 14 proteins of the infecting *Bartonella* species by 8 weeks after infection. Yes, about 4-6% of infected cats do not produce anti-*Bartonella* antibodies at any time after their infection. This is also true for approximately 16% of *Bartonella* infected people. The western immunoblot is the most sensitive and specific (accurate) serological test compared to immunofluorescence (IFA) and ELISA tests and is discussed in detail in our Vol. 4, Number 2, and Spring 2005 Newsletter. It is also able to detect cross-reactive antibodies to all 6 feline *Bartonella* species (pet cats can be infected with 6 different *Bartonella* species). In order to be considered serologically positive, cats must produce antibodies to at least 7 *Bartonella* proteins.

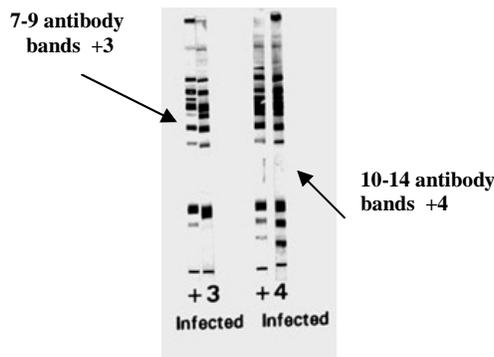
FeBart[®] Negative Tests:

Serologically negative cats are those that produce no antibody or antibody against just 1-3 *Bartonella* proteins. Antibodies against only 3 proteins probably represent antibodies cross-reactive to protein epitopes shared with other bacteria such as *Chlamydia*.



FeBart[®] Positive Tests:

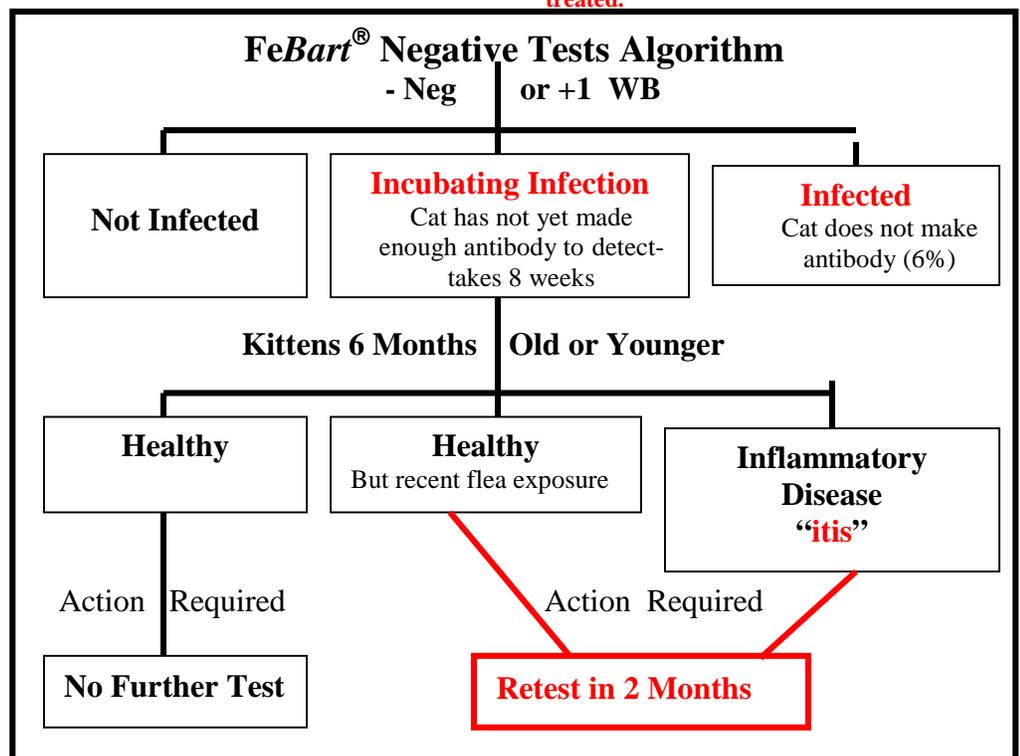
Serologically positive cats are those that produce antibodies against 7 to 14 *Bartonella* proteins. The cross-reactive antibodies against other bacteria are discounted because of the specific *Bartonella* immunologic antibody profile.¹



FeBart[®] Negative Tests

Algorithm:

As shown in the box below, negative FeBart[®] screening tests must be interpreted based on the age and diagnosis of the cat. Kittens less than 6 months old only have 6 months to become infected and 2 months to produce antibody. *Bartonella* can cause inflammation quickly, before the production of antibody, through their ability to attach to a toll-like cellular receptor of the innate immune system which recognizes invading bacteria within hours of infection and sets off a cascade of inflammatory components to combat the infection. Thus kittens 6 months or younger with inflammatory diseases, who are FeBart[®] test negative, should be retested after 2 months to determine if they were incubating the infection at the time of the first test. Approximately 17% of such kittens were found to test positive on retest and were incubating the infection. **We strongly recommend against the treatment of untested cats living with test positive cats. Only serologically positive cats should be treated.**^{4, 5, 6}



FeBart® Positive Tests Algorithm:

As shown in the box below, positive FeBart® screening tests must be interpreted based on the diagnosis of the cat. Both healthy cats and cats with inflammatory diseases that test positive should be treated. However, the interpretation of the test result in cats with inflammatory diseases should consider the role of *Bartonella* as the cause of the disease. The algorithm below summarizes the possible etiological role of *Bartonella* as related to the test positive result.^{1, 2, 3} In short, *Bartonella* may be: 1) the sole cause of the inflammatory disease; 2) a co-etiological agent along with other microorganisms; 3) not causing any of the inflammatory disease, *Bartonella* is “in the background;” and 4) *Bartonella* has been cleared by the cat’s immune response and the remaining antibody is a “history of the infection.”

References:

- Hardy, W.D., Jr., Zuckerman, E.E., Gold, J.W.M., *et al.* Immunogenic proteins of *Bartonella henselae* defined by western immunoblots with naturally infected cat sera. 95th General Meeting, American Society for Microbiology, Washington, D.C., May 21-25, 1995.
- Hardy, WD, Jr., Zuckerman, E, Corbishley, J. Seroprevalence of *Bartonella*-infection in healthy and diseased cats in the United States and Caribbean: Evidence for *Bartonella*-induced diseases in cats. International Conference of the American Society for Rickettsiology, Big Sky, Montana, August 17-22, 2001.
- Hardy, WD, Jr., Zuckerman, E., & Corbishley, J. Serological evidence that *Bartonella* cause gingivitis and stomatitis in cats. American Veterinary Dental Society Meeting, Savannah, GA, October 2002.
- Hardy, WD, Jr., Zuckerman, EE, Corbishley, J, *et al.* Efficacy of high dose, long duration Doxycycline or Azithromycin treatment for *Bartonella* infections in pet cats. International Conference of the American Society for Rickettsiology, Big Sky, Montana, August 17, 2001.
- Hardy, W.D., Jr., Zuckerman, E.E., Corbishley, J, *et al.* Successful therapy of *Bartonella henselae* bacteremic healthy pet cats. Annual Meeting, Infectious Disease Society of America, New Orleans, September, 1996
- Hardy, WD, Jr., Corbishley, J., & Zuckerman, E.E. Azithromycin therapy of *Bartonella*-infected cats with gingivitis and stomatitis. Am. Vet. Dental Soc. Meeting, Savannah, GA, October 2002.

More than 1400 *Bartonella* references are available at: www.nlm.gov

