Re-emerging canine brucellosis—and the role of veterinary diagnostic laboratories

Canine brucellosis may not have reached the importance of bovine brucellosis to species and human health yet; however, the Center for Disease Control and Prevention (CDC) is studying if this will continue.

In June 2016, the CDC began to solicit participation of 119 U.S. veterinary diagnostic laboratories in an online assessment program, “The Burden of Canine Brucellosis Collection,” to determine the magnitude of canine brucellosis.

Rita Traxler, an epidemiologist with the CDC, proposed this assessment to her CDC colleagues in August 2015 with the goal of being able to determine the significance of *Brucella canis* infections to human public health, including the transmission of *B. canis* from dogs to humans. The CDC asks laboratory personnel to report the types of tests it uses for diagnosing *B. canis* and the number of requisitions for each test offered. In Traxler’s 2015 proposal, she wrote that the CDC had received recent reports of human *B. canis* infections, prompting her and colleagues to evaluate the prevalence of canine brucellosis within the United States.¹

With only a few published reports of dog-to-human transmission of *B. canis* in the scientific literature²-⁴ such transmission is thought to rarely occur. However, researchers suspect human *B. canis* infections are more frequent but undiagnosed because clinical signs are often nonspecific and a validated, serological test to diagnose *B. canis* within humans does not currently exist.¹,², ⁵

Data gleaned from this CDC survey may induce diagnostic companies to develop a validated serological test for human patients suspected with *B. canis* infections. Additionally, both The Council of State and Territorial Epidemiologists⁶ and the American Veterinary Medical Association⁷ have encouraged federal and state agencies to develop a disease management plan and a nationwide surveillance program in an attempt to eradicate all forms of brucellosis, including canine.

Ohio is one state that has been leading the battle against canine brucellosis. With the persistent effort of Dr. Tony Forshey, State Veterinarian, high-volume breeders are required to test their dogs for *B. canis* and report all results—positive and negative—to the state.⁸ A high-volume breeder, as defined in the Ohio Commercial Dog Breeders Act, is any establishment that keeps, houses, and maintains adult breeding dogs that produce at least nine litters of puppies in any given calendar year and sells 60 or more adult dogs or puppies per calendar year.⁹

From Aug. 22, 2015, to February 2016, approximately 8,000 dogs were tested through the Animal Disease Diagnostic Laboratory (ADDL) at the Ohio Department of Agriculture and the infection rate was 2%.¹⁰

Although isolation of *B. canis* from infected tissues is the gold standard for diagnosis for both humans and dogs, veterinary medicine fortunately has adequate serological tests to identify suspected and infected dogs to reduce the risk of dog-to-dog and dog-to-human transmission. Serological test methods
include rapid slide agglutination (RSAT), immunofluorescent antibody (IFA), tube agglutination (TAT), and agar gel immunodiffusion (AGID).2

Practicing veterinarians may initially test suspect dogs with D-Tec®CB from Zoetis—a rapid slide agglutination test and the only point-of-care test for detecting antibodies to B. canis—and subsequently confirm positive test results with other tests offered through veterinary diagnostic laboratories.

Within Ohio, for example, suspect samples should be submitted to the Animal Disease Diagnostic Laboratory at the Ohio Department of Agriculture for IFA or TAT.11 A negative result with D-Tec®CB or another antibody test suggests a dog is not infected with B. canis. Yet two consecutive negative test results four weeks apart are necessary to fully confirm a dog as brucellosis-free because of a potential lag time between infection and development of sufficient antibodies for detection by the serological tests.5

In a 2011 survey, participating state public health veterinarians responded that canine B. canis infections are reportable in at least 28 states;5 however, some dog producers and their veterinarians may not report infected dogs, thereby leading to probable perpetuation of the infection within and across states.5

Ohio mandates reporting the infections, which often leads to the quarantine of all dogs on the premise, and therefore, the inability to transport and sell dogs until the quarantine has been removed.11

Despite testing and reporting limitations, however, the state of Ohio and, now, the CDC have at least initiated an investigation into the contemporary prevalence of B. canis-infected dogs, the latter using laboratory-submissions for B. canis testing as an estimate.

Knowledge of this data may lead to increased testing of dogs within specific areas of the U.S. and mitigation of intra- and interstate movement of infected dogs and of the risk of zoonotic infection. Stay tuned for the results.

References—


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