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Comparison between Polymerase Chain Reaction (PCR), bacteriologic culture and 2ME Rapid Slide Agglutination Test for the diagnosis of canine brucellosis
Wanke, M.M.a, Elena, Sb, and Boeri E.J.c

aTheriogenology Area, Faculty of Veterinary Sciences, University of Buenos Aires, CABA Argentina, SENASA, Martinez, Pcia, Buenos Aires, Argentina, bInstituto de Zoonosis Luis Pasteur CABA, Argentina. 
wanke@fvet.uba.ar

The diagnosis of brucellosis in the dog continues to be problematic. The most widely used screening test is the rapid slide agglutination test in the presence of 2-mercaptoethanol (2ME-RSAT) using whole cells of the M(-) strain of Brucella canis as antigen [1]. The diagnosis is definitively confirmed by bacteriologic isolation, but the sensitivity of this test is low. PCR has been proposed as an alternative diagnostic method [2]. The objective of this study was to compare the results of PCR in blood and semen with those of 2ME-RSAT, clinical findings and bacteriologic culture.

Blood PCR versus blood culture and 2ME-RSAT. B. canis was isolated from 52 blood samples, from which only 21 (40%) were positive by PCR. From these 21 dogs, 13 had positive PCR in vaginal swab or urine samples. Only one dog with positive blood culture was negative by 2ME-RSAT. Negative results by both blood PCR and blood culture were obtained in 198 dogs, from which 18 were positive by 2ME-RSAT (with positive bacteriology in vaginal or urine samples). Vaginal PCR versus bacteriologic culture and 2ME-RSAT. B. canis was isolated from vaginal discharge in 4 bitches, all of which had positive results by PCR and 2ME-RSAT. Other 26 bitches had negative results by culture and PCR, from which two were positive by 2ME-RSAT. Negative vaginal cultures with positive vaginal PCR were obtained in 12 bitches, from which 8 had positive 2ME-RSAT results. Clinical findings correlated mostly with 2ME-RSAT results. PCR was performed in vaginal samples from 145 bitches from which bacteriological studies were unavailable. Positive results were obtained in 106 bitches, from which only 20 were positive by 2ME-RSAT. Among the 39 bitches with negative results in vaginal PCR, 14 were positive by 2ME-RSAT. Bacteriological studies versus semen PCR and RSAT. B. canis was isolated from semen samples from two dogs, which were also positive by PCR and 2ME-RSAT. Seven males were negative by the three tests, whereas a dog with negative semen culture was positive by PCR and 2ME-RSAT, and had compatible clinical findings. Urine culture versus urine PCR and 2ME-RSAT. From 7 dogs with positive urine cultures, 6 were also positive by PCR and 2ME-RSAT (whereas one was negative by PCR). Negative results by both urine culture and PCR were obtained in 25 cases, from which 7 had positive 2ME-RSAT (one of them with bacteriological isolation from testicular tissue). Urine PCR was positive in other 12 cases with negative urine culture, from which 7 were positive by 2ME-RSAT and had compatible clinical findings. These results seem to indicate that blood PCR for B. canis has low sensitivity, yielding negative results in many cases in which the presence of bacteria is demonstrated by other means. In contrast, vaginal PCR was the only positive test in many bitches. These animals were not treated or moved and had normal pregnancies, showing that the positive PCR result was not due to active infection. Urine PCR seems to have better sensitivity and its results coincided with clinical findings. Globally, the results of this investigation do not agree with those previously described by Keid et al., who reported a 100% specificity and a high sensitivity. According to our results, PCR is not a reliable test for the diagnosis of canine brucellosis.