

The efficiency of BrucellaCapt method in diagnosis of human brucellosis

Abstract

Background: Brucellosis is a zoonosis of great and worldwide public health concern that can cause a severe febrile illness in humans.

Aims: This study aims to evaluate the efficiency of the TaqMan Real-time PCR and serological methods in detecting *Brucella* spp in clinical specimens that have been collected from suspected patients in Ardabil, Iran.

Materials and Methods: In this cross-sectional study, a total of 113 consecutive patients suspected of brucellosis who were referred to the three hospitals in Ardabil province were selected. In the first step, the diagnosis of brucellosis was performed by serological methods including the Rose Bengal slide agglutination test, Wright test, 2-ME test, and BrucellaCapt test. In the next step, TaqMan real-time PCR with primer and probe targeting the *bcs31* gene was used for the detection of *Brucella* spp. Specificity, sensitivity, and positive and negative predictive values of the TaqMan real-time PCR assay were calculated.

Results: Among 113 suspected patients with different clinical manifestations, the Rose Bengal slide agglutination test, Wright test, and 2ME test were positive in 60 cases; however, the BrucellaCapt test titer was 1:160 for one patient. Seven patients had high initial serum antibody titers. Among positive cases, no correlation was observed among gender, age, and life (residence) in urban or rural areas. The TaqMan real-time PCR was positive in 35% of all 60 positive cases. The comparison of the results of the BrucellaCapt and TaqMan real-time PCR methods revealed that 19 out of 54 (35.2%) and 2 out of 6 (33.4%) BrucellaCapt positive cases with titers of $> 1:320$ and $\leq 1:320$ were positive, respectively. The sensitivities and specificities of the TaqMan real-time PCR assay were 100% and 49.1%, respectively.

Conclusion: The sensitivity of the TaqMan real-time PCR assay was low in the diagnosis of brucellosis, while the BrucellaCapt test turned out to be a very valuable, sensitive and specific test for the diagnosis of brucellosis in suspected patients and, thus, can provide reliable results in medical laboratories.

Keywords: *Brucella* spp, brucellosis, TaqMan real-time PCR, serology, Ardabil, Iran.