Objectives: Brucellosis, also called undulant fever, is a highly contagious zoonosis caused by ingestion of unpasteurized milk or undercooked meat of infected animals or close contact with their secretions. Brucella species are small, Gram-negative, nonmotile, nonspore-forming, rod-shaped (coccobacilli) bacteria. They function as facultative intracellular parasites, causing chronic disease, which usually persists for life. Symptoms include profuse sweating and joint and muscle pain. Since the original recognition of the causative agent of brucellosis, Brucella spp, a large number of diagnostic schemes have been developed. The gold standard remains isolation and identification of the bacterium, however, for numerous reasons, alternative methods have been developed. The alternative methods include identification of nucleic acid from the bacterium by molecular biology technology and a large number of serological tests. The aim of the present study was to compare the new serological tests (Brucellacapt test [immunocapture agglutination], Enzyme-linked immunosorbent assay [ELISA]) and the classical tests (standard tube agglutination (STA) test and the culture) for diagnosis of acute, subacute or chronic brucellosis.

Methods: Samples of forty-nine patients admitted to Infectious Disease Department of Erciyes University Hospital presented with fever and clinical suspicion of brucellosis and with agglutination (SAT) titers ≥1/10 were collected between 2010-2012. Additionally, 30 healthy volunteers were enrolled in the study as the control group. All samples were subjected to the Brucella spp. specific culture, STA test, Brucellacapt test and ELISA for detection of IgM, IgA, and IgG. Coombs test were performed for 28 samples having titers <1/160 as measured by STA. Cohen’s kappa test was used to evaluate the agreement between the tests.

Results: Blood culture was positive in six (12.2%), joint fluid culture in two (4%), STA test in 21 (42.8%), Brucellacapt test in 36 (73.4%), ELISA IgG in 33 (67.3%), ELISA IgM in 33 (67.3%), ELISA IgA in 31 (61.2%) of 49 patients. While STA, brucellacapt ve ELISA IgA tests were negative all of the control group (n=30), in four individuals (%)13.3), three individuals (%)10) ELISA IgM were found low positive. When STA test is taken as the reference method, the sensitivities were found to be 100% in brucellacapt test, 85.7%, 90.4%, 90.4% in ELISA IgG, IgM, IgA respectively and 23.8% in blood culture. Specificities were 74.1%, 67.2%, 67.2%, 79.3% and 98.2% respectively. When presence of clinical findings are taken as a reference, brucellacapt test were found to be most compatible (κ=0.66).

Conclusion: STA is unsatisfactory in the diagnosis of brucellosis in patients. Brucellacapt and/or ELISA tests are suggested to be used to verify results of STA.