

Abstract

The two classes of cytokines Th1 and Th2 determine the type of immune response elicited. The Th2 immune response is associated with successful pregnancy. Brucellosis is an intracellular bacterium that elicits the Th1 response and is known to cause spontaneous abortion in mammalian species. This study sought to determine if Brucella infection causes spontaneous abortion by causing the circulating cytokine profile be Th1 dominant during pregnancy. Forty-eight Swiss white mice were used in this murine model and the S19 strain of Brucella abortus was used in as the infective agent. Pregnant mice in the test group were injected intraperitoneally with 10(5-8) CFU of Brucella and cytokine profile evaluated over the three trimesters of pregnancy. Pregnant mice in the control group were left to go through normal pregnancy and their cytokine profile evaluated over the three trimesters of pregnancy. Cytokines in serum samples were analyzed by Cytometric Bead Array. The data was analyzed using the Paired T- test and $p < 0.05$ was considered significant. IFN- γ and TNF- α represented the Th1 cytokines while IL-4 and IL-5 represented the Th2 cytokines. None of the mice in the test group had spontaneous abortion. IFN- γ and TNF- α had no significant differences between cytokine levels for infected and uninfected groups in all 3 trimesters of pregnancy. IL-4 levels had significant differences in all three trimesters of pregnancy (t = 13, P = 0.036, 0.0071 and 0.0277). IL-5 levels had significant differences second trimester (t = 14, P = 0.0075). The cytokine profile was robustly Th2. In conclusion, Brucella abortus cannot cause spontaneous abortion by altering the mouse cytokine profile towards Th1 in pregnancy. Elevated IL-4 levels with corresponding suppression of IFN- γ can be used as a marker for successful pregnancy in Brucellosis.