MATERNAL AND FETAL IMMUNE RESPONSES OF CATTLE INOCULATED WITH A NEW ISOLATE OF NEOSPORA CANINUM AT EARLY GESTATION

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The Nc-Spain 7 isolate of Neospora caninum, which was newly obtained from a congenitally asymptomatic infected calf, demonstrated a similar virulence than Nc-1 strain in mouse models. The objective of the study was to evaluate the humoral and cells mediated immune responses of pregnant cattle and the congenital transmission to their fetuses after infection with N. caninum tachyzoites at early-gestation. For this purpose, 13 naïve pregnant heifers were divided into three groups and were experimentally challenged intravenously with either 1x10\textsuperscript{8} tachyzoites of Nc-Spain 7 (group A, n=7), Nc-1 (group B, n=4) isolates or phosphate-buffered saline (group C, n=2) at 65 days of gestation. Blood samples were collected weekly by jugular venipuncture and the white blood cell fractions (WBC) were collected twice. Also, peritoneal fluids were collected from fetuses at time of necropsy 48 days post inoculation (PI). Specific antibody response in the dams was tested by indirect fluorescent antibody test (IFAT), indirect ELISA, rNcGRA7 based-ELISA and rNcSAG4 based-ELISA. γ-IFN levels were measured in WBC by BOVIGAM γ-IFN (commercial kit). Specific antibody response in fetal fluids was tested by IFAT. A significant increase in mean serum specific antibody response to N. caninum was detected in groups A and B by IFAT and i-ELISA since 14 days post inoculation. In addition, similar response was observed by NcGra 7- ELISA verifying the infection. Besides, two heifers, one of group A and one of group B, were positive to Nc-SAG 4- ELISA, and appeared to be progressing to a chronic infection. In groups A and B there were considerable increases in γ-IFN concentrations, in supernatants from cells responding to N. caninum antigens, from days 14 PI onwards, as compared to pre-inoculation concentrations and to control group. Four fetuses of group A and one of group B were aborted between 3 and 5 weeks after infection. In the recovered fetuses, only 3 of 4 fetuses of group A and 1 of 3 of group B, were seropositive (IFAT titers of 1:16 was considered positive). Control animals and their fetuses remained negative for all parameters recorded. The magnitude of the immune response was similar in both groups (A and B) In addition; Nc-Spain 7 isolate inoculated in cows at 9 weeks gestation was transmitted vertically and resulted in foetopathy. This study results demonstrate that the Nc-Spain 7 isolate is pathogenic in cattle.