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Detection of *Neospora caninum* in the semen and blood during acute and chronic experimental neosporosis in bulls

Ignacio Ferre[1], Antonio Martínez[2], Enrique Serrano[1], Koldo Osoro[2], Aranzazu Mateos-Sanz[1], Carolina Tamargo[3], Carlos O. Hidalgo[3], Itziar del-Pozo[4], Gorka Aduriz[4] and Luis Miguel Ortega-Mora[1]

[1]Departamento de Sanidad Animal, Facultad de Veterinaria, Universidad Complutense de Madrid, Ciudad Universitaria s/n, E-28040 Madrid, Spain
[2]Área de Sistemas de Producción Animal, Servicio Regional de Investigación y Desarrollo Agroalimentario (SERIDA), Consejería de Medio Rural y Pesca, Asturias, E-33300 Villaviciosa, Spain
[3]Área de Selección y Reproducción Animal, Servicio Regional de Investigación y Desarrollo Agroalimentario (SERIDA), Consejería de Medio Rural y Pesca, Asturias, E-33202 Gijón, Spain
[4]Departamento de Sanidad Animal, Instituto Vasco de Investigación y Desarrollo Agrario (NEIKER), Berreaga 1, E-48160 Derio, Bizkaia, Spain

Abstract

Background. The presence of *Neospora caninum* DNA in fresh and frozen semen from naturally-infected bulls has been reported. Our observations indicate intermittent presence of *N. caninum* in blood and semen and shedding in semen in low numbers.

Aims. To investigate the presence of *N. caninum* in semen and blood of experimentally infected bulls.

Methods. Nine bulls were experimentally-infected intravenously with 10^8 live *N. caninum* tachyzoites of NC-1 strain. In parallel, eight seronegative bulls acted as non-infected controls. *Neospora* DNA in semen and blood were assessed using a nested-PCR procedure. Specific anti-*N. caninum* IgG and interferon-gamma (IFN-g) responses were also studied. All bulls were monitored for 24 weeks.

Results. The nine experimentally-infected bulls showed *N. caninum* DNA in their semen samples at some time during the course of the study. Four bulls started to show *Neospora* DNA in their semen at 46 days post-infection (p.i.). The other five bulls began to show *Neospora* DNA in their semen at 56, 79, 107, 114 and 149 days p.i., respectively. The *Neospora* DNA was appeared intermittently in all bulls during the experiment. In all positive semen samples, we consistently found *Neospora*-DNA in the cell fraction and not in seminal plasma. Seven of the bulls showed parasitaemia between 14 and 18 days p.i. and the other two bulls showed parasitaemia at 49 and 72 days p.i., respectively. A significant serum-specific IgG antibody response to *N. caninum* were observed from four to 24 weeks p.i. in all experimentally infected bulls. The responses in all animals were similar in magnitude and kinetics. Serum-specific IFN-g responses in bulls were observed at 3 days p.i. The IFN-g levels in infected bulls were higher than those observed in controls during the experiment, although not significantly.

Conclusions. This study is the first to report the presence of *Neospora* DNA in semen and blood of experimentally-infected bulls. Our observations indicate intermittent presence of *N. caninum* in semen.

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