

Transmission of Border disease virus from a persistently infected calf to pregnant heifers and from a persistently infected bull to bred cows

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Key words

Persistent infection with border disease, Cattle, Transmission, Viraemia, Seroconversion, Immunohistochemistry

Aim of the study

The purpose of this study was to investigate the transmission of Border disease virus (BDV) from a persistently infected calf to pregnant heifers and from a persistently infected bull to bred cows.

Material and methods

Two groups of cattle were investigated:

Group A: Group A consisted of six heifers that were co-housed with the infected calf in a free stall barn from days 50 to 110 of pregnancy. The heifers were examined clinically every day and underwent periodic blood sampling for pestivirus RNA and antibody testing. The heifers were slaughtered after 60 days of exposure to the infected calf, and the fetuses and placentae underwent postmortem and virologic examination.

Group B: Group B consisted of six cows, five of which were artificially inseminated with frozen semen from a young bull persistently infected with BDV. The remaining cow served as a control and was inseminated with normal frozen semen.

Results and significance

Group A: Three heifers had mild viraemia between days 8 and 14 after the start of exposure, and by day 40, all heifers had seroconverted to BDV. The placentae of the three viraemic heifers had histological evidence of inflammation, and immunohistochemical evaluation of various fetal organs showed positive staining for BDV antigen. The organs were positive for BDV RNA. This trial showed that pregnant heifers co-housed with a calf persistently infected with BDV are highly likely to seroconvert and are likely to produce offspring persistently infected with BDV.

Group B: By day 28 post insemination, all five experimental cows, but not the control cow, had developed neutralising antibodies against BDV. None of the cows conceived, which was attributed to poor semen quality. This trial showed that cows inseminated with frozen semen from a bull persistently infected with BDV are highly likely to seroconvert to this virus.

Publications, posters and presentations

Frei, S. (2014): Übertragung des Border-Disease-Virus von einem persistent infizierten Rind auf seronegative Rinder durch Kontaktinfektion und virushaltiges Sperma. Dissertation, Vetsuisse-Fakultät Universität Zürich, Zürich.

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