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Citation	Japanese Journal of Veterinary Research, 48(1), 79-79
Issue Date	2000-05-31
Doc URL	http://hdl.handle.net/2115/2835
Type	bulletin (article)
File Information	KJ00003408169.pdf



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Demonstration of vertical transmission *Neospora caninum* in latently infected mice

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Neospora caninum, a major cause of abortion in cattle, has induced severe economic loss in many countries including Japan.

Some researchers postulate that pregnancy can account for the reactivation of latently infected *N. caninum* and thus results in vertical transmission of the parasite for generations.

I established the mouse model of latent infection with *N. caninum*. The mice were inoculated with *N. caninum* and raised the antibody titers, but were clinically inapparent for 70 days. Reactivation and vertical transmission of *N. caninum* at pregnancy or immunosuppression in this mice model were examined by polymerase chain reaction and enzyme-linked immunosorbent assay.

N. caninum DNA was frequently detected in the fetuses and pups of the latently infected dams. This is the demonstration of the vertical transmission of *N. caninum* in latently infected mice. *N. caninum* DNA were detected in the blood of the dams for approxi-

mately one month after the parturition. The antibody titers of the dams suddenly raised on day 20 after gestation and gradually decreased thereafter. Parasitemia was also caused by medication of prednisolone in this model. These results suggest that reactivation of *N. caninum* and subsequent parasitemia were evolved by the pregnancy. Immunosuppression using prednisolone on the latently infected mice also induced parasitemia and reactivation of the parasite. *N. caninum* was detected in the blood at early stage of post-inoculation, disappeared from the blood afterwards, and reappeared in the brain. These results suggest that *N. caninum* tachyzoites inoculated subcutaneously reached the brain via blood circulation and established latent infection.

These results suggest that reactivation of *N. caninum* and subsequent parasitemia may be evolved by the pregnancy and immunosuppression in latently infected cattle.