Evaluation of the Embryo Transfer Procedure Proposed by the International Embryo Transfer Society (IETS) as a Method of Controlling Vertical Transmission of *Neospora caninum* in Cattle

Baillargeon Paul, dmv, MSc[1]; Fecteau Gilles, dmv, diplomate of ACVIM[2]; Paré Julie, dmv, PhD[3]; Lamothe Pierre, dmv, MSc[2]; Sauvé Roger, dmv

[1]Clinique Vétérinaire St-Louis- Embryobec, 84 Principale, St-Louis de Gonzague, Québec.
[2]Département de Sciences Cliniques, Faculté de Médecine Vétérinaire, Université de Montréal, St-Hyacinthe, Québec
[3]Biovet Inc., 2900 ave. Vanier, St-Hyacinthe, J2S 6M2, Québec

Introduction

New infections by *Neospora caninum* in cattle occur primarily following vertical transmission, and there is no proven way to prevent it. The embryo transfer procedure proposed by the International Embryo Transfer Society (IETS) has been proven effective against transmission of many pathogens in cattle. The objective of this study was to determine the efficacy of the IETS embryo transfer procedure into seronegative recipients to prevent vertical transmission of *N. caninum* in cattle.

Materials and Methods

Data for this study came from 87 recipient cows and heifers and their embryo transfer calves, from 22 donors originating from 9 different dairy herds. *N. caninum* serologic status of donors and recipients was determined before collection and transfer of embryos. Viable embryos after washing and trypsin treatment were either transferred fresh (n=61), or frozen and transferred after thawing (n=113). Pregnant recipients in experimental groups A (n = 50) and B (n = 29) were seronegative and received embryos from seropositive and seronegative donors, respectively. Pregnant recipients in group C (n = 8) were seropositive and received embryos from seronegative or seropositive donors. Antibodies against *N. caninum* were determined monthly during pregnancy in recipients and in calf blood samples collected at birth. Tissues collected from stillbirths and aborted fetuses were analyzed by use of histology and immunohistochemistry (IHC).

Results and Conclusions

Samples were taken from 76 calves and 11 fetuses and stillborn calves at birth. All calves from groups A and B were seronegative (n = 70) or lacked evidence of infection by use of tissue analysis (n = 9). In group C, five of six calves were seropositive at birth and IHC results were positive for one of two calves. Vertical transmission rate was significantly lower in groups A and B (0%) than in group C (75%). Embryo transfer, using the procedure proposed by IETS into seronegative recipients, is an effective way to prevent vertical transmission of *N. caninum*. Results provide support for pre-transfer testing of all embryo transfer recipients.

References

1. Dubey JP, Lindsay DS: A review of *Neospora caninum* and neosporosis. *Vet Parasitol* 67:1-59, 1996.
2. Wrathall AE, Sutmöller P: Potential of embryo transfer to control transmission of disease. In Stringfellow DA, Seidel SM (eds): Manual of the International Embryo Transfer Society 3(2):17-44, 1998.