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**NEOSPORA AND ABORTION IN NEW ZEALAND DAIRY CATTLE.**

A thesis presented in partial fulfilment of the requirements  
for the degree of Master Philosophy in Veterinary Science at  
Massey University.

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1994

## ABSTRACT.

*Neospora caninum* is a newly recognized *Toxoplasma*-like protozoan organism that infects dogs; *Neospora* also causes spontaneous abortion and neonatal disease in cattle and other animals although it is not clear if the organism concerned is *N. caninum* or another species. The present study aimed to improve the epidemiological knowledge of bovine *Neospora* abortion in New Zealand and describe the pathologic features of *Neospora* sp. infection in cattle and in dogs.

In a retrospective study of preserved material, *N. caninum* was identified for the first time in New Zealand dogs in histologic sections of the CNS of 3/15 animals with a variety of CNS lesions and nervous signs. The diagnosis was confirmed by immunohistochemistry and, in one case, electron microscopy. Two cases of toxoplasmosis were confirmed but neither *N. caninum* or *T. gondii* could be demonstrated in ten cases with granulomatous meningoencephalomyelitis. In neosporosis the histopathological lesions were distributed more widely throughout the CNS and displayed a more marked inflammatory reaction than in toxoplasmosis cases. In an attempt to transmit the disease to dogs, puppies were inoculated with aborted bovine CNS material infected with *Neospora* organisms but this was unsuccessful.

An epidemiological study of *Neospora* abortion in dairy cattle in the North Island revealed that the disease was diagnosed in 15% of abortion material submitted to Batchelar Animal Health Laboratory and Ruakura Animal Health Laboratory in 1992, thus making it the most frequently diagnosed cause of abortion. Descriptive epidemiologic information including age of aborted fetuses, age of aborting cows and seasonal distribution of the disease were obtained through a questionnaire survey of dairy farmers whose herds experienced *Neospora* abortion that year. Information on risk factors was sought but could not be related to *Neospora* infection because of the small scale of the survey. Nevertheless, some useful preliminary data which could be used in future investigations were obtained. An investigation of a herd with a recent history of neosporosis detected

antibodies in cattle of different age groups using an indirect fluorescent antibody (IFA) test. A "cutoff" point of 1:400 was used in sera obtained one month after an abortion "storm". In all age groups on the farm at the time of the abortion there was a prevalence of approximately 29% (56/194) seropositive. However, the weaner heifers which were off the farm at that time, had a prevalence of 3% (1/32) ( $p < 0.01$ ) seropositive. This finding indicated that all cattle on the farm were exposed to a source of infection at the same time and no age-susceptibility was evident. The significance of these results and directions for future research are discussed.

## **ACKNOWLEDGEMENTS.**

The work presented here would not have been possible without the help of many people. I am grateful to Rotary International for providing me with the financial assistance to undertake this course. I would like to express my special gratitude to my wife Maria Jose for her love, support and endurance during our time in New Zealand.

Recognition needs to go to my supervisors Associate-Professors M. R. Alley and W.A.G. Charleston for their valuable advice and criticism, constant patience and continuous encouragement. Thanks also to Professor B.W. Mantkelow for allowing me to undertake this study in the Department of Veterinary Pathology and Public Health.

I would also like to thank Dr R. Thornton and Dr D. Lake for allowing me to use information and material from the Batchelar and Ruakura Animal Health Laboratories in the preparation of this thesis. Thanks must also go to the veterinarians and farmers involved in the epidemiologic study.

Special thanks are due to Dr D. Pfeiffer and Dr D. Hayes for their advice in the design of the experiments and also with the statistical analysis.

Technical assistance was provided by Mrs P. Slack and Mrs P. Davey in the preparation of histological and ultrastructural material as well as Mr M.J. Birtles and Mr R. Sparksman with the immunohistochemistry procedures. I am grateful for their excellent work.

Finally I wish to express my sincere appreciation to all those people who were involved in our stay in New Zealand. I first planned to identify individuals but changed my mind because I may inadvertently overlook someone. Many unforgettable memories both within and outside of Massey University remain with us. Thanks very much to all of you.

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