with the requirements of the Michigan Voluntary Johne's Disease Control Status Herd Program.

Results

Prior to and during this investigation, the herd owners and veterinarian reported no clinical evidence of JD. In the winter of 2002, 32/107 (29.9%) and 33/107 (30.8%) animals tested positive by ELISA on testing conducted 72 hours apart. No animals were positive by fecal culture. In the summer of 2002, 17/115 (22.6%) animals tested positive by ELISA while once again, no animals were positive by fecal culture. At this time the herd was granted JD Status level 2 by the state of Michigan. In 2003, 30 animals were tested by the JD ELISA. No animals were found to be positive. In 2004, a whole herd ELISA was conducted on all animals three years of age and greater, and 5/71 (7.0%) animals were classified as inconclusive by ELISA. No MAP was isolated by culture from these animals. In the winter of 2005, 5/30 and 1/30 animals were ELISA inconclusive and positive, respectively. Again, no MAP was isolated by culture. In the winter of 2006, 1/30 and 1/30 animals were ELISA inconclusive and positive, respectively. No MAP was isolated from these animals.

Significance

The JD ELISA is an inexpensive and convenient diagnostic test for use in a JD control program. However, although reported as being relatively high, the specificity of the test may be low on individual herds and may vary over time. Veterinarians should make an effort to confirm the specificity of ELISA results by periodically testing ELISA positive cows by fecal culture.

Quantifying Johne's Disease Infectivity in Dairy Herds in Indiana

C.C. Wu, *DVM, PhD*[1] ; **C.A. Alinovi,** *DVM, MS*[1] ; **M.P. Ward,** *MPVM, PhD*[2] ; **E.A. Raizman,** *DVM, PhD*[1] ; **T.L. Lin,** *DVM, PhD*
[1]*Department of Veterinary Pathobiology, Purdue University, West Lafayette, IN*
[2]*Department of Veterinary Integrative Biosciences, Texas A&M University, College Station, TX*

Introduction

Infectivity is a critical parameter that determines how Johne's Disease agent (*Mycobacterium avium* subspecies *paratuberculosis,* MAP) survives in the population. Infectivity, in conjunction with contact rate, determines the numbers of new infection and, therefore the incidence and prevalence of infection in the population.

Materials and Methods

Epidemiological analysis of fecal culture and ELISA serology results for JD were conducted on four dairy herds.

Results

Various positive management practices have been used to reduce the prevalence of JD in the herds, except for the fourth herd. In a large, open Holstein herd (900 milking), JD prevalence by semi-quantitative fecal culture was 28.9% in 2004 and 18.2% in 2005. 3.3% of cows were positive for JD by ELISA in 2004, and 7.4% of cows were ELISA positive in 2005. Two small, closed herds (50 milking) were studied. In one herd, 15.6% of cows were positive for JD by fecal culture in 2004, and only 7.5% of cows were positive by fecal culture in 2005. The number of ELISA positive cows doubled from 2004 to 2005 (47.6%). In the other small herd, 4% of cows were JD positive by fecal culture in 2004; only 2% were

positive by fecal culture in 2005. The fourth herd is a medium-sized, open dairy herd (250 milking); 16% of cows were fecal positive for MAP in 2003, and 22% were positive for MAP in 2005. 4.4% of cows were positive for JD by ELISA in 2004, and 6% of cows were ELISA positive in 2005.

Significance

In conclusion, positive management practices can reduce JD prevalence within herd. ELISA testing alone is not enough to reduce Johne's prevalence. ELISA is best used to screen the JD status in the herd, followed by fecal culture to identify the infected animals.

Successful Control of Johne's Disease in Nine Wisconsin Dairy Herds

Vic Eggleston, *DVM;* **Michael T. Collins,** *DVM, PhD*
Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI

Introduction

There is general consensus on how to control Johne's Disease (JD) but there are few longitudinal field studies to demonstrate that such recommendations actually work. The goal of the project was to fill this need by testing a single specific affordable control program in ten Wisconsin commercial dairy herds with diverse sizes and management styles.

Materials and Methods

The experimental JD control program consisted of the standard recommendations for heifer rearing plus testing for JD. Every cow in each herd was tested one time during each lactation. In most herds testing was done at the end of lactation. Two herds tested early in lactation. Cows were tested for serum antibodies by ELISA (IDEXX Laboratories, Inc) and also by fecal culture (modified BACTEC 460 system, Becton Dickinson). However, only ELISA results were provided to herd owners. Cows with strong-positive ELISA results were culled at the end of their lactation. Cows with low to moderate ELISA-positive results were visibly labeled, calved in separate maternity pens, and their colostrum was discarded. Compliance with program recommendations was assured by regular visits of the project manager (VE) and principle investigator (MTC). One of the ten original herds in the study was dropped from the study for non-compliance with the specified control program.

Results

The program started in January 2002. After measuring baseline *M. paratuberculosis* infection rates by ELISA and fecal culture, herds implemented the control program. It took bewteen six and ten months before the control program was fully implemented in the study herds. This past year (2005) the first of the heifers raised under the experimental JD control program entered the study herds as milking cows. As an early gauge of success, we measured the percentage of heifers (first lactation cows) that were ELISA-positive before and after the full implementation of the control program. There is some varability among herds, but when test results on all first lactation cows in our nine study herds were combined, we found that the rate of ELISA-positive animals has dropped significantly from 9.0% (73/813) before start of the control program to 4.1% (19/469) ($p<0.001$). In addition, the herd owners report that clinical cases of JD are now rare in their herds. Several owners also report improved calf health as a result of the management changes that were implemented.

Significance

We cautiously interpret these early results as evidence of the positive impact of the program on decreasing the rate of new *M. paratuberculosis* infections. The program is both effective and affordable. Herd owners are encouraged by their success and enthusiastic about the program. This field trial is one of the first well-controlled studies of a specific paratuberculosis control program in multiple dairy herds. The program is applicable to dairy herds of any size that are confirmed *M. paratuberculosis*-infected and have a seroprevalence of 10% or higher.