Prince Edward Island

Neospora-induced protozoal bovine abortion in Prince Edward Island

During a five-month period between July and November 1993, a 70- cow dairy herd experienced five abortions. These abortions occurred between three and eight months of gestation in cows ranging from two to six years of age. The abortion rate was less than 5% during each of the previous two years. No systemic illness was noted in aborting dams, and seroconversion was not demonstrated in paired serum sample testing for infectious bovine rhinotracheitis (IBR) virus, bovine viral diarrhea virus (BVDV), or leptospira.

One fetus submitted to the Diagnostic Services Laboratory of the Atlantic Veterinary College was partially macerated and deemed unsuitable for diagnostic evaluation. A second, moderately autolysed fetus (gestational age approximately six months) was examined and had no gross abnormalities. The placenta was not available for examination. Bacterial species isolated from fetal stomach contents and organs were not pathogenic. Fluorescent antibody testing of various fetal tissues for BVDV and IBR virus were negative. Formalin-fixed sections of heart, brain and liver revealed microscopic changes typical of neospora-induced abortion (1,2). Cardiac changes included a mixed mononuclear cell infiltrate in the epicardium, myocardium, and endocardium, with multifocal myocardial necrosis and associated mild mineralization. Foci of necrosis and microgliosis were scattered throughout all areas that were examined in the brain, and they were especially prominent in the brainstem. Microglial nodules in the cerebral cortex were often located adjacent to blood vessels at the interface of grey and white matter. Hepatic changes consisted of prominent cuffing of portal areas by mononuclear cells. No abnormalities were noted in the adrenal glands, kidneys, thymus, skin or lungs.

Neither protozoal tissue cysts nor tachyzoites were observed in hematoxylin and eosin stained sections. Immunohistochemical stains utilizing polyclonal anti-*Neospora caninum* antiserum (Agriculture Research Service, USDA, Beltsville, Maryland), as previously described (3), demonstrated tachyzoites within brain lesions. **This is the first confirmed case of neospora-induced bovine abortion in the maritime provinces.** Identification of this condition on the east coast of Canada suggests that neospora-induced bovine abortion may prove to be a cause of bovine reproductive failure in most Canadian provinces.

References

1. Lindsay DS, Dubey JP, Cole RA, Nuehring LP, Blagburn BL. *Neospora*-induced protozoal abortions in cattle. Compend Contin Educ Pract Vet 1993; 15: 882–889.
2. Bryan LA, Gajadhar AA, Dubey JP, Haines, DM. Bovine neonatal encephalitis associated with a *Neospora* sp. protozoan. Can Vet J 1994; 35: 111–113
3. Lindsay DS, Dubey JP. Immunohistochemical diagnosis of *Neospora caninum* in tissue sections. Am J Vet Res 1989; 50: 1981–1983.

***Rob Bildfell**, Department of Pathology and Microbiology, **Jeff Davidson**, Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island, 550 University Avenue, Charlottetown, Prince Edward Island C1A 4P3. **J.P. Dubey**, Zoonotic Diseases Laboratory, Livestock and Poultry Sciences Institute, Agriculture Research Service, U.S. Department of Agriculture, Beltsville, Maryland, USA*

Quebec

Attaching and effacing *Escherichia coli* in a goat with diarrhea

A severe problem of neonatal diarrhea occurred in kids from a herd of French alpine dairy goats. Over a period of about three weeks, 21 kids died out of a total of 34 born live. The main clinical sign observed by the owner was a profuse diarrhea, beginning approximately one week after birth, followed by dehydration and death two to three days later. Antibiotics and electrolyte solutions given orally did not significantly improve the condition.

A ten-day-old kid was submitted alive for necropsy. On gross examination, the animal was dehydrated and the feces were liquid and yellowish. **Microscopic lesions were essentially confined to the large intestine, which showed typical attaching and effacing lesions characterized by focally extensive colonization of the surface epithelium by a thin layer of broad and dark-stained coccobacilli, often oriented in a palisade pattern.** The brush border of the colonized enterocytes was often disrupted and some cells showed degenerative changes. A mild to moderate neutrophil exocytosis was found in the lamina propria. Bacterial culture from the intestines yielded a mixed growth of nonhemolytic *Escherichia coli* and *Streptococcus* spp. The *E. coli* isolate was negative for the fimbrial antigens tested (F4, F5, F6, F41, F165), as well as for the presence of genes for enterotoxin (STap, STb, LT) or verotoxin

(VT1, VT2). This isolate was EAE (*E. coli* attaching and effacing locus)-positive and BFP (bundle-forming pilus locus)-negative by colony hybridization. The isolate did not type with the available O antisera. No other enteric pathogens were found.

Since necropsy was performed on only one affected animal, it is not known if some of the other kids were similarly infected. Enteric infection with attaching and effacing *E. coli* (AEEC) has rarely been reported in goats. Recently, one such case was reported in a kid and was associated with an enterohemorrhagic *E. coli* (EHEC) strain (1). In contrast to enterotoxigenic *E. coli* (ETEC), both enteropathogenic *E. coli* (EPEC) and EHEC are known to cause the attaching and effacing lesions. They can be differentiated on the basis of several criteria, including the generally high production of VT or shiga-like toxin by EHEC. The *E. coli* isolated from this young goat was VT-negative and EAE-positive, supporting its classification as an EPEC. Non VT-producing AEEC infections have been described in lambs (2). The prevalence of these infections in goats and their zoonotic potential remain to be determined.

References

1. Duhamel GE, Moxley RA, Maddox CW, Erickson ED. Enteric infection of a goat with enterohemorrhagic *Escherichia coli* (0103:H2). J Vet Diagn Invest 1992; 4: 197–200.
2. Janke BH, Francis DH, Collins JE, Libal MC, Zeman DH, Johnson DD. Attaching and effacing *Escherichia coli* infections in calves, pigs, lambs, and dogs. J Vet Diagn Invest 1989; 1: 6–11.

Richard Drolet, John M. Fairbrother, Denis Vaillancourt, *Faculté de médecine vétérinaire, Université de Montréal, C.P. 5000, 3200, rue Sicotte, Saint-Hyacinthe, Québec J2S 7C6*

Alberta

Heartworm in an Alberta dog

A stray mature, red, female doberman pinscher was confined by an animal control officer in the Sylvan Lake area of Alberta in October 1990. In November 1990, she was sold to a person living between Olds and Torrington. According to the owner, the dog had not been out of this area. In June 1992, the dog was given to people living between Olds and Bowden. They noticed a growth on the dog's skin and brought her in for physical examination. The vaccination status and previous health record were unknown. On examination, there were no obvious abnormalities. A biopsy of the growth was submitted to the Western College of Veterinary Medicine in June 1992.

Skin biopsy evaluation revealed a severe, predominantly eosinophil-rich, superficial and deep perivascular dermatitis with moderate numbers of histiocytes in the middle to deep dermis. Occasional microfilaria were found in small venules and lymphatics of the very superficial dermis. The owner refused further testing and treatment and requested that the dog be euthanized, but gave permission for confirmatory testing prior to euthanasia.

On reevaluation, the dog appeared in good health and had no obvious clinical signs. A Dirochek test (Synbiotics Corporation, San Diego, California, USA) was positive for heartworm antigen. A direct smear of peripheral blood showed 40–50 microfilaria per drop of blood. The motility of the microfilaria was non-progressive. A modified Knott's test was used to differentiate *Dirofilaria imitis* from *Dipetalonema reconditium*. Radiographs showed mild pulmonary arterial enlargement. Postmortem examination revealed 25 adult worms, ranging from five to twenty-five centimeters in length, in the right ventricle and atrium, and extending into the pulmonary artery.

Previous cases of heartworm found in dogs in Alberta have occurred in animals believed to have travelled to endemic areas or in those of unknown history (1). This case was unique in that the dog had been resident in central Alberta for at least 20 months prior to diagnosis. Testing of other dogs in the area was increased, but until November 1993, no additional positive cases have been identified.

References

1. Owen J, Slocombe D, McMillan I. Heartworm in dogs in Canada in 1988. Can Vet J 1989; 30: 504–508.

Cameron French, *Olds Veterinary Centre, 6110 Imperial Way, Olds, Alberta T4H 1M5;* ***Daphne Vasconcelos,*** *Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0*

Cross-Canada Disease Report *provides rapid publication of brief reports of disease trends or new diseases — maximum of 500 words and two references. The Report is edited but is not refereed.*

Le ***Rapport des maladies diagnostiquées au Canada*** *permet de publier rapidement un bref compte rendu sur l'évolution de certaines maladies ou sur l'apparition de nouvelles pathologies. Comptant au maximum 500 mots et deux références, le Rapport est corrigé, mais n'est pas expédié en relecture critique.*

Contributions are welcome and may be sent to:/
Les articles sont les bienvenus et peuvent être adressés comme suit :
Dr. Mary VanderKop
Regional Veterinary Laboratory
Alberta Agriculture
Postal Bag Service 1
Airdrie, Alberta
T4B 2C1
Tel.: (403) 948-8575
Fax: (403) 948-2063