

Diagnosis and Control of Bovine Neosporosis

Milton M. McAllister, DVM, PhD

KEYWORDS

• *Neospora caninum* • Abortion • Transmission • Prevention • Parasite • Review

KEY POINTS

- Neosporosis is one of the most widespread and frequent causes of bovine abortion.
- The two major methods of parasite transmission to cattle are ingestion of oocysts shed by infected canids and transplacental transmission from infected dams.
- Effective vaccines have not yet been developed.
- Good management practices can help control neosporosis in herds, but complete eradication is usually impractical.
- The long-term key to avoid or reduce high infection prevalence, is to protect Total Mixed Rations and drinking water from contamination by canine feces.

PUTTING NEOSPOROSIS IN PERSPECTIVE

A recent analysis estimated that neosporosis costs the US dairy industry \$546 million and the beef industry \$111 million per year.¹

Worldwide, neosporosis ranks among the most widespread and difficult-to-control causes of bovine abortion. For comparison, consider 4 other common infectious causes of abortion. Bovine *Brucellosis* has been eradicated from most wealthy nations; elsewhere, it may be possible to eliminate it from closed herds, and in other cases, abortion may be prevented or at least partially controlled by vaccination. Bovine *Pestivirus* (BVD virus) infection can be eliminated from closed herds and has even been eradicated from a few European countries, and vaccines are available in most countries. Bovine *Herpesvirus-1* (IBR virus) has been eradicated from some European countries, and elsewhere, abortion can be prevented by vaccination. *Leptospirosis* control is challenging because there are many different serovars that may be transmitted by various wild or domestic animals; nevertheless, vaccines are available to provide short-term protection against the most important serovars, and antibiotic treatment can clear carrier cattle or entire herds from infection with bovine-adapted serovars.²

The author has nothing to disclose.

School of Animal & Veterinary Sciences, University of Adelaide, Roseworthy, South Australia 5371, Australia

E-mail address: milton.mcallister@adelaide.edu.au

Vet Clin Food Anim ■ (2016) ■–■
<http://dx.doi.org/10.1016/j.cvfa.2016.01.012>

vetfood.theclinics.com

0749-0720/16/\$ – see front matter © 2016 Elsevier Inc. All rights reserved.

In contrast, neosporosis occurs in all countries; no vaccine is currently available, and latent infections cannot be cleared by antimicrobials. Maintaining a closed herd cannot guarantee freedom from infection because the causative parasite may be transmitted in feedstuffs or water, and the parasite naturally cycles within wildlife.³

Critically, brucellosis and leptospirosis are zoonotic, whereas neosporosis is not. Furthermore, neosporosis is seldom if ever a cause of regional or international trade restrictions, unlike brucellosis, bovine pestivirus, and bovine herpesvirus. The economic importance of neosporosis lies simply within its effect on the reproductive performance of breeding cows.

CLINICAL MANIFESTATIONS OF BOVINE NEOSPOROSIS

Most infections in cattle are subclinical, but there are frequent exceptions. Abortion is the only major problem, which is generally not associated with other signs of illness in dams. Abortions may occur between 4 months of gestation and birth, but most occur in months 5 through 7. Neosporosis is not a significant cause of infertility or early embryonic resorption. Retained fetal membranes and metritis may be secondary complications that follow abortion.^{4,5}

In addition to abortion, bovine neosporosis is associated with stillbirths or with the occasional birth of premature or neurologically impaired calves.^{6–8} Clinically affected calves may have normal size or be notably small, and signs range from being neurologically moribund to having partial spinal deficits (**Fig. 1**) with poor conscious proprioception of the rear limbs and inadequate balance.

In dairy cattle, one of the costs associated with abortion (from any cause, not just from neosporosis) is reduced milk production. Reduced milk production is expected to occur because of interference with the timing and length of the lactation and dry periods, body conditioning, and udder health.

UNCLEAR ASSOCIATIONS WITH MILK PRODUCTION AND GROWTH RATES

When abortion has not occurred, there are contradictory studies regarding a possible effect of *Neospora* serologic status (ie, the presence of a detectable antibody titer) on milk production. However, the largest studies, involving thousands of dairy cattle and hundreds of herds, indicate that *Neospora* serologic status does not directly reduce milk production. A study in Ontario⁹ concluded that loss of milk production was associated with abortion rather than with simply being seropositive, and a study in the



Fig. 1. Neurologic impairment in calves infected with *Neospora caninum*. The beef calf at left was born following a neosporosis abortion outbreak. It was undersized, had weak hindlimbs, and a conscious proprioceptive deficit that is here demonstrated by the dorsal placement of the left rear hoof. The dairy calf at right was unable to stand, maintain sternal recumbency, or elevate its head.

Download English Version:

<https://daneshyari.com/en/article/2459408>

Download Persian Version:

<https://daneshyari.com/article/2459408>

[Daneshyari.com](https://daneshyari.com)