


RESEARCH ARTICLE

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Serology for Neosporosis, Q fever and Brucellosis to assess the cause of abortion in two dairy cattle herds in Ecuador

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Abstract

Background: Determining the infectious cause of abortion in cattle is difficult. This case-control study was set up to investigate the infectious causes of abortion by determining the seroprevalence of three reproductive pathogens in dairy cattle in Ecuador and their association with abortion: *Brucella abortus*, *Neospora caninum* and *Coxiella burnetii*.

Results: Ninety-five blood samples were obtained from cows that had experienced a mid- or late gestation abortion of their first calf and seventy-seven samples from a control group of cows with the same age that did not experience abortion problems. No antibodies were detected for *B. abortus* in any of the serum samples, but a high seroprevalence for both *C. burnetii* (52.9%) and *N. caninum* infection (21.5%) was found in group of cows. The seroprevalence of *N. caninum* infection in cattle that had experienced abortions was significantly higher ($p < 0.05$) than the seroprevalence in the control cows on one of the cattle farms, but no association between abortion and seropositivity for *C. burnetii* was found.

Conclusion: We conclude that Neosporosis plays an important role in the epidemiology of abortion on one cattle farm, but that Q fever is apparently not an important cause for abortion in this setting.

Keywords: Neosporosis, *Neospora*, Q fever, *Coxiella*, Brucellosis, *Brucella*, Cattle, Ecuador

Background

Abortion in cattle is defined as the premature expulsion of the fetus between day 50 and day 270 of gestation. Most cattle herds suffer an abortion rate of 1-2% and it has been suggested that an annual abortion rate up to 5% is considered normal [1]. In general, the percentage of abortion cases for which a definitive diagnosis is made is very low. For example, in Great Britain less than one third of abortion cases are submitted to the laboratory for diagnosis [1]. In developing countries, this percentage is probably much lower and people usually have no intention of seeking a diagnosis, rather cows that have aborted are culled.

Abortions cause significant economic loss, especially those occurring during the last stage of pregnancy. Estimates of the cost of an abortion to a producer range from \$90 to \$1900, depending on the gestation phase in which it occurs. A midterm abortion costs the producer between \$600 and \$1000 [2]. Costs include those associated with establishing the diagnosis, re-breeding cows that aborted, sperm or embryo costs, possible loss of milk yield and replacement costs if cows that have aborted are culled.

Determining the cause of abortion in cattle is difficult and a major challenge to the herd owner and veterinarian. Infectious agents represent the leading etiology and the majority of diagnosed abortions are attributed to infections with the bacteria *Brucella abortus* and *Leptospira interrogans*, the protozoa *Neospora caninum* and two viruses: Infectious Bovine Rhinotracheitis or bovine herpesvirus (IBR or BHV) and Bovine Viral Diarrhoea

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