

The Association between Clinical Signs and Microbiology Results in Dairy Cattle Suspected of Clinical Salmonellosis

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Introduction

Infection with *Salmonella* spp can cause a variety of diseases in the bovine species, from subclinical infections to bacteremia, endotoxemia and death, as well as enteritis, abortion or dry gangrene of the extremities in calves. The aim of our study was to determine which clinical signs were associated with a diagnosis of salmonellosis in dairy cattle.

Materials and Methods

Eight-hundred and thirty-one dairy herds serviced by 35 veterinary clinics in five states were enrolled in a prospective cohort study. The veterinarians examined every suspected case of clinical salmonellosis, and obtained a fecal sample for bacteriological culture. The association of the clinical signs with the result of the bacteriological culture was first examined using chi-square tests of association, after which a generalized linear mixed model was built, including herd as a random effect.

Results

Eighteen percent of the samples submitted from 874 calves were positive for *Salmonella*. Most of the

positive calves suffered from diarrhea (131/153; 86%). A greater proportion of dehydrated calves than the normally hydrated calves were positive for *Salmonella* (23% vs 13%, $P=0.0004$). More than half of the positive calves had blood or mucus in their feces (85/149; 57%). Forty-one percent (61/147) of the positive calves had fever. Samples were submitted from 1,479 dairy cows, of which 431 (29%) were positive for salmonella. Most of the positive cows (358/393; 91%) had diarrhea. A greater proportion of cows with a fever than cows with a normal temperature were salmonella positive (38% vs 22%, $P<0.0001$). Similarly, a greater proportion of the dehydrated cows than the cows with a normal hydration status were positive for salmonella (33% vs 24%, $P=0.0002$). Approximately a third of the positive cows had blood or mucus in their feces (115/364; 31%).

Significance

This study shows that several combinations of clinical signs are possible in a cow or a calf with salmonellosis, and that the clinical signs typically associated with clinical salmonellosis, namely diarrhea, fever, blood or mucus in the feces and dehydration, are generally not all present.