Pathogenicity of *Bibersteinia trehalosi* in cattle

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Introduction

Bibersteinia trehalosi causes disease in ruminants worldwide, and is associated with pneumonia or septicemia in sheep. Although infection with *B. trehalosi* is uncommon in cattle, it is a potential pathogen responsible for bovine respiratory disease (BRD). Anecdotal reports of increasing prevalence of *B. trehalosi* isolated from cattle with severe disease have heightened producer and veterinary awareness.

Materials and Methods

Thirty-five 2- to 3-month-old calves were inoculated by use of an intratracheal catheter with 1 of 5 treatments (control media, 2.5 x 10^9 CFU of leukotoxin-negative *B. trehalosi*, leukotoxin- positive *B. trehalosi*, *Mannheimia haemolytica*, or a combination of leukotoxin-negative *B. trehalosi* and *Mannheimia haemolytica*). Calves were monitored twice daily; rectal temperatures were obtained and each calf was assigned depression and respiratory scores. Moribund calves were humanely euthanized and necropsied immediately. All calves were humanely euthanized 10 days after inoculation and necropsied. Lungs were examined both grossly and histologically. Temperature, depression and respiratory scores, and extent of lung pathology were compared among the treatment groups.

Results

Mean rectal temperature and depression and respiratory scores varied significantly among the treatment groups, which suggested the challenge model used was acceptable. The mean rectal temperature, depression and respiratory scores, and extent of lung pathology for calves in the control group were similar to those for calves inoculated with *B. trehalosi*. The mean extent of gross lung pathology was 48.2% for calves inoculated with *M. haemolytica*, 13.2% for calves inoculated with leukotoxin-negative *B. trehalosi*, 18.4% for calves inoculated with leukotoxin-positive *B. trehalosi*, and 26.1% for calves inoculated with the combination of leukotoxin-negative *B. trehalosi* and *M. haemolytica*.

Significance

Results suggested that *B. trehalosi* does not cause fatal pneumonia in calves, and calves inoculated with *M. haemolytica* had the most extensive lung pathology.