

Serial progression of experimental *Mannheimia haemolytica* pneumonia

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Introduction

Mannheimia haemolytica (MH) is a major pathogen of the bovine respiratory disease (BRD) complex. The objective of this study was to monitor various parameters of disease in beef feeder calves following experimental intrabronchial inoculation with MH.

Materials and Methods

Fourteen cross-bred beef calves were endoscopically inoculated in the right cranial lung lobe, via the trachea, with live MH. Physical examinations were performed three times daily and activity was continuously monitored using accelerometers. Gross necropsies, histopathology, and lung lesion scoring were performed on all calves on predetermined post-inoculation days (n=2 for days 1, 2, 3 and 5; n=3 for days 7 and 9).

Results

All calves had clinical signs associated with BRD after inoculation. Pathological findings varied over

time. On days one, two, and three there was fibrinous bronchopneumonia with pleuritis. By day five, the same gross lesion was present as above, but histologically there was evidence of resolution. By days seven and nine, lungs were characterized by resolving purulent and fibrinonecrotic pneumonia. Pre- and post-inoculation clinical scores were different, but did not correlate with post-inoculation disease progression. Mean rectal temperatures, heart and respiratory rates were not predictive of the pneumonic lesion. Activity was significantly lower post-inoculation compared to pre-inoculation values.

Significance

This model, using MH alone as the experimental challenge, produced lesions similar to those observed in field BRD cases. Although normal physical exam parameters were not significantly associated with disease progression, the level of activity declined following inoculation.