calving season/pasture with 1=bull with greatest number of calves, 3=bull with least number of calves, and 2=all other bulls.

Results

A total of 681 calves were born from 34 bulls 3 years of age. Average pregnancy risk was 93%. A calving interval by bull rank interaction was present for percentage of calves/cow-exposed. Generally, the percentage of calves/cows exposed decreased as 21-day periods increased. Bulls ranked 1 sired 17% of the calves/cow exposed in the first 21-day period whereas bulls ranked 3 sired only 1% of the calves/cow exposed in the same interval.

Significance

The data shown demonstrates the differences in number of progeny by bull in multiple-sire pastures. Ranking bulls by number of calves sired/cow-exposed for the entire calving season is associated with number of calves sired by individual bulls in each 21-day period of the calving season.

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Evaluation and validation of a paralumbar fossa trans-abdominal rumen fluid sampling technique

Jerry R. Roberson, *DVM, PhD, DACVIM*[1]; **Hilari French**, *DVM, PhD, ACT*[1]; **James Q. Robinson**, *DVM*[2]
[1]*Department of Clinical Sciences, Ross University School of Veterinary Medicine, Basseterre, St. Kitts*
[2]*Oak Lea Veterinary Services, Mendon, MI 49072*

Introduction

Evaluation of rumen fluid for pH and rumen microbes (in particular, rumen protozoa) is helpful for both diagnostic and treatment purposes. Evaluating the pH of the rumen fluid is used to confirm acute ruminal acidosis as well as subacute ruminal acidosis. Evaluation of the ruminal protozoa helps to confirm the necessity of ruminal transfaunation. Protozoa will be dead or dying if the ruminant has been ill and off-feed for some time (usually>4 days). Passage of an oro-ruminal tube is 1 method for obtaining a rumen fluid sample. However, this method may yield rumen fluid that is mixed with saliva and may falsely elevate rumen pH. The tube method also requires more time and effort. A simple means of obtaining rumen fluid is trans-abdominal ruminal aspiration. This method has been used for over 20 years by the primary investigator (Roberson), but has never been evaluated in regards to safety and efficiency. The purpose of this study was to document the methodology, determine the actual time of obtaining the sample, and evaluate any negative consequences of the procedure. Secondary aims were to determine pH and number of protozoa/40x field.

Materials and Methods

The technique was evaluated on all 58 adult cattle from the Ross University School of Veterinary Medicine teaching herd. There was no skin preparation. Cattle were restrained in a chute, and ultrasonographic picture of the paralumbar fossa was taken for each animal in order to document body wall thickness. Tail jack restraint was applied prior to insertion of the needle. A 1.5 inch 16 gauge needle attached to a 12 mL syringe was directed toward the right elbow in the lower "V" of the left paralumbar fossa. The needle was inserted to its full length while suction was applied with the syringe. The needle was then withdrawn. One to 2 drops of rumen fluid was considered a successful tap. Rumen protozoa were evaluated in 3 separate fields and pH paper was used to evaluate pH. If the first attempt was not successful, 1 additional attempt was performed. A stopwatch was used to time from insertion to extraction. After collection, the animal was released back into the herd. Cattle were evaluated within 1 hour of the procedure looking for any evidence of pain or swelling. Cattle were evaluated/ultrasounded 1 day, 4 days, and 2 weeks later for pain, swelling and any evidence of illness. Simple descriptive statistics were used for pH and rumen protozoa numbers. A logistic regression model was fit to the data to determine if body wall thickness was predictive of rumen tap at day 0.

Results

Rumen fluid was successfully collected and evaluated from 45 of 58 head (78%). The primary reason for failure was when the body wall was too thick for a 1.5 inch needle. Body wall thickness was a statistically significant (P value=0.0002) predictor of a successful rumen tap. The odds of a successful tap was >90% when the body wall thickness was <20 mm, 62% successful when 35 mm thick, and only 36% successful when the body wall was ≥40 mm. The average pH was 7.9.

Ross cattle are primarily fed guinea grass with occasional brewer's grains. The average number of protozoa seen a 40X power was 3 and the average maximum seen was 4. No externally obvious hematomas or other swellings were seen during the ~3 week follow-up and no other complications were noted. Possible pathological lesions based on ultrasonographic follow-up were noted for 11 of the 58 head (19%). None of the possible pathological lesions developed into abscesses. The average length of time required to obtain the rumen sample, measured by introduction of the needle to withdraw of the needle was 3 seconds (range <1 second to 8 seconds).

Significance

We conclude that the paralumbar fossa trans-abdominal ruminal fluid sampling technique is a safe and efficient means of obtaining rumen fluid in cattle with a moderately thin body wall.

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A new endoscopic approach for bronchoalveolar lavage compared with traditional trans tracheal lavage for BRD diagnostics

W. Hasseler, *DVM*
Hauptstrasse 53 a, Homberg , Germany, D-35315

Introduction

Bronchoalveolar lavage (BAL) is a very common and useful diagnostic approach for bovine respiratory disease (BRD) management. Traditionally the lavage is carried out through the trachea (trans-tracheal lavage – TAL). A new hand held multiscope (endoscope with several different functions; ivetscope) has been designed for a more convenient way of BAL under field conditions. The aim of this study was to compare 2 different methods of alveolar lung lavage – the puncture of the trachea with the transtracheal lavage against the oral-laryngeal method.

Materials and Methods

The new endoscope approach was used on 64 calves (age 2 to 22 weeks) with BRD history. Bronchoalveolar liquid was sampled and send to the microbial and virological laboratory for identification of the causative agent. Thirty-two (32) calves were collected the traditional way (TAL) and 32 calves were examined by the use of the endoscopic (BAL) method. This endoscope is a pistol-shaped, hand-held, cordless endoscope, 40 cm in length, with 2 working tunnels. A camera is positioned next to the corpus, so that a visual adspection can be carried out simultaneously. Calves were sedated (xylazine, 0.5 mg/lb (1.1 mg/kg)), restrained in sterno-ventral position with the head fixed by the farmer. Each time, 2 samples of broncho-alveolar liquid were collected from the far distal part of the lung (>50 cm distance) and from the upper part of the bronchus (30-40 cm). They were split equally into a modified New York City medium (NYC medium, Biocheck) and a sterile vessel.

Results

Overall in a total of 15.4% of all cases No agent could be identified in 15.4% of cases. The traditional TAL had 25% "no agents" isolated while the new BAL method had "no agents" isolated in 6.1% (4 times less; $p<0.01$). *M. bovis* was found 3 times more often (33.3% vs 9.4%) with the endoscope lavage (BAL). *P. multocida* was the most single prominent bacteria to be found in the lung, in 9.2% of total. 15.6% of all cases with monocausal cases were diagnosed with *P. multocida* by TAL, whereas BAL revealed *P. multocida/M. bovis* 5 times more often.

Significance

This endoscopic diagnostic instrument reduced the number of negative results by a factor 4 compared to the traditional approach. This technique dramatically improved the diagnosis of *M. bovis* by a factor of 3 and increased the diagnosis of combined infections with *P. multocida* and *M. bovis*. The BAL techniques using the instrument provided a better on-site diagnostic rate than the traditional TAL method.